LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 1

2015

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Longhorn Army Ammunition Plant

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

VOLUME 1

2015

A.	Title:	Meeting Minutes – Longhorn Army Ammunition Plant Restoration Advisory Board (RAB) Meeting Minutes
	Author(s):	AECOM Technical Services
	Recipient:	All Stakeholders
	Date:	August 7, 2014
	Bate Stamp:	00193504 - 00193560
B.	Title:	Meeting Minutes – Longhorn Army Ammunition Plant Restoration Advisory Board (RAB) Meeting Minutes
	Author(s):	AECOM Technical Services
	Recipient:	All Stakeholders
	Date:	November 20, 2014
	Bate Stamp:	00193561 - 00193605
C.	Title:	Meeting Minutes – Longhorn Army Ammunition Plant Monthly Managers' Meeting Minutes
	Author(s):	AECOM Technical Services
	Recipient:	All Stakeholders
	Date:	December 11, 2014
	Bate Stamp:	00193606 - 00193649
D.	Title:	Report - 2014 Installation Action Plan, Longhorn Army Ammunition Plant, Karnack, Texas
	Author(s):	U.S. Army Corps of Engineers
	Recipient:	U.S. Environmental Protection Agency, Texas Commission on Environmental Quality
	Date:	January 5, 2015
	Bate Stamp:	00193650 - 00193742
E.	Title:	Meeting Minutes – Longhorn Army Ammunition Plant Monthly Managers' Meeting Minutes
	Author(s):	AECOM Technical Services
	Recipient:	All Stakeholders
	Date:	January 20, 2015
	Bate Stamp:	00193743 - 00193786

LONGHORN ARMY AMMUNITION PLANT
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VOLUME 1

2015

F.	Title:	Meeting Minutes – Longhorn Army Ammunition Plant Monthly Managers' Meeting Minutes
	Author(s):	AECOM Technical Services
	Recipient:	All Stakeholders
	Date:	February 19, 2015
	Bate Stamp:	00193787 - 00193820
G.	Title:	Memorandum for File - Surface Water Transmittal February 2014-August 2014, Perimeter Well Data Transmittal April 2014-August 2014, Longhorn Army Ammunition Plant, Karnack, Texas
	Author(s):	AECOM Technical Services
	Recipient:	U.S. Army Corps of Engineers
	Date:	February 19, 2015
	Bate Stamp:	00193821 - 00194638
H.	Title:	Report - Comprehensive Land Use Control (LUC) Management Plan, Former Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas
	Author(s):	U.S. Army Corps of Engineers
	Recipient:	All Stakeholders
	Date:	March 5, 2015
	Bate Stamp:	00194639 - 00195005

AECOM

Subject:	**Final Minutes, Quarterly Restoration Advisory Board (RAB) Meeting, Longhorn Army Ammunition Plant (LHAAP)**
Location of Meeting:	**Karnack Community Center, Karnack, Texas**
Date of Meeting:	**August 7, 2014, 6:00 – 7:00 PM**

Meeting Participants:

LHAAP/BRAC:	Rose M. Zeiler,
USACE:	Aaron Williams
USAEC:	Robin Paul
AECOM:	Dave Wacker, Bill Gabehart
TCEQ:	April Palmie
USEPA Region 6:	Rich Mayer, Kent Becher (USGS liaison)
USFWS:	Paul Bruckwicki, Jason Roesner
RAB:	**Present:** Charles Dixon, Paul Fortune, Carol Fortune, Judy Vandeventer, Judith Johnson, Tom Walker, Richard LeTourneau, Terry Britt **Absent:** Ken Burkhalter, Robert Cargill, Lee Guice, Ted Kurz, James Lambright, Nigel Shivers, Pickens Winters, John Pollard, Jr.
Public:	

An agenda handout for the RAB meeting, fact sheets on the Groundwater Treatment Plant performance, Harrison Bayou and Goose Prairie Creek and Perimeter Well data, in addition to a hard copy of the AECOM slide presentation were provided for the meeting. Draft May 15, 2014 RAB meeting minutes will be provided with these minutes for combined review. (Note: May 15, 2014 minutes were provided to RAB members on August 15 for a 30-day review period.)

Welcome and Introduction

Dr. Zeiler opened the meeting and asked that Mr. Wacker introduce guest Mr. Bill Gabehart with AECOM who has supported on-site work for over a year and is substituting for Gretchen McDonnell who was absent due to illness.

Tour of Longhorn Sites Recap

Mr. Wacker spoke briefly about the highlights of the tour and site visit to LHAAP-29 and showed pictures from the tour. The tour took place at 3:00 p.m. on May 15 with three RAB members attending. (The tour handout and sign-in sheet were appended to the May 2014 RAB meeting minutes for the record.)

Open Items – Dr. Rose Zeiler

Website Update

Dr. Zeiler informed the group that the "Longhorn Army Ammunition Plant, Environmental Restoration Program" website is ready to launch for public viewing and will be available within the week. She said the RAB will have a chance to review the website before it is made available to the public, and that a notice introducing the website to the local public will be published in the Marshall and Shreveport newspapers.

Mr. Wacker then explained the website contains information varying from the history of Longhorn to current activities taking place for each site where remediation is occurring today. He discussed how the website will have an interactive map, in which the viewer can click on individual sites to view more detailed information. Mr. Wacker said there will also be a *Remedial Technologies* page on the website where viewers can see some of the remedies that are currently in place, ranging from the use of a ground water treatment plant (GWTP), to in-situ bioremediation. He stated there will also be interactive *Plume Maps*, and a section where viewers can click on a specific site to see the most current final documents for that site. The *Administrative Record* section of the website will contain the entire Longhorn Administrative Record for the last 30 years, and will be available for viewer download. Finally, Mr. Wacker stated that there is a *RAB* page on the website, detailing the purpose of the RAB, providing a link to the charter, and announcing the schedule and location for the next RAB meeting schedule.

Defense Environmental Restoration Program (DERP) Update – AECOM (Dave Wacker)

<u>Environmental Status of Sites (LHAAP-18/24 and LHAAP-29)</u>

Mr. Wacker began the DERP Update discussion, and said that since the last RAB meeting, the majority of field work has been completed at sites LHAAP-18/24 and LHAAP-29. He explained that LHAAP-18/24, known as Burning Grounds Number 3 and the Unlined Evaporation Pond (where the Groundwater Treatment Plant is located), is comprised of approximately 34.5 acres, with the primary contaminants of concern (COCs) being: perchlorate, VOCs (TCE and MC) and metals. Two primary groundwater contamination source areas have been identified within site LHAAP-18/24: the Air Curtain Destructor area and the Unlined Evaporation Pond area. One of the main objectives of this summer's field work in these two locations was to further identify COC source areas in groundwater. In the Unlined Evaporation Pond area, this most recent investigation using a grid pattern sampling

technique identified additional source contamination resulting in the delineation of a larger source area in this location.

Mr. Wacker said that historical data for the Air Curtain Destructor indicated estimated dimensions of the contamination source area to be approximately 300 feet x 200 feet in area. This most recent investigation indicates the source area is actually significantly smaller than previously presumed, approximately 70 feet x 70 feet in horizontal dimension, at a shallow depth range of approximately 30 feet to 50 feet below ground surface. Because of the additional investigation of these two areas, Mr. Wacker stated there is an increased level of confidence in the measurements of extent of COCs for both locations.

Treatability Studies

Mr. Wacker explained that different treatment technologies have been or will be evaluated for multiple sites at Longhorn, with information on site soil type, groundwater characteristics, site specific COCs and concentrations of COCs used to determine which technology would be best-suited in treating a specific contamination problem. He said that these studies also provide data supporting the estimated cost to implement each remedy.

Mr. Wacker discussed the four different treatability studies at LHAAP-18/24 that are currently being completed. These studies include: thermal treatability testing, in-situ microcosm testing, bench-scale microcosm testing, and zero-valent iron/emulsified zero-valent iron microcosm testing. He stated that once all of these test are completed, a Revised Feasibility Study and a Proposed Plan for the preferred remedy will be presented.

Mr. Wacker said that similar treatability studies are underway at LHAAP-29, but aquifer testing will also be completed at this site to assess specific aquifer characteristics.

Monitored Natural Attenuation (MNA) Sites (LHAAP-46, 50, 58 and 67)

Data for the first year of groundwater MNA monitoring should be available for several sites at the next RAB meeting, and the annual reports for these sites will be underway. The annual reports will include an analysis of COC trends, and an initial evaluation of MNA effectiveness at each site.

GWTP Update

Mr. Wacker said that treated water continues to be returned to LHAAP-18/24 through the sprinkler system, or to Harrison Bayou when sufficient flow is present. Due to the current lack of flow in the bayou, water is being discharged back to LHAAP-18/24 via a sprinkler system.

Mr. Wacker stated that another round of compliance sampling data has been collected, and is currently under review by EPA and TCEQ. He said that maintenance and repairs of wells, pumps, tanks and ancillary equipment is on-going.

Dr. Zeiler asked the RAB if the supplied data handouts are useful to the members. Mr. Britt replied that they were useful, especially the information applying to Harrison Bayou.

Mr. Walker asked why water cannot be discharged to the bayou all the time? Ms. Palmie replied that GWTP treated water is not allowed to negatively impact the bayou, and nutrients in the discharge could disrupt water quality in the bayou if released when insufficient water is present to dilute the nutrients. Dr. Zeiler added that the holding pond is not being used much anymore, instead the water is being returned to the LHAAP-18/24 ground surface through the sprinkler system.

Mr. Wacker presented the surface water handout, showing four years of historical data compared to the most recent data collected June 2014.

Ms. Palmie asked if it would be possible to add a quarterly summary showing how much treated water was discharged into the Bayou versus applied to the ground surface within the site by sprinkler. Mr. Wacker replied that since it is a lot of information to add, that the best way to present this information will be explored and presented to the group.

Other Environmental Restoration Issues – Rose Zeiler

Site LHAAP-37 Bioplug Demonstration

Dr. Zeiler discussed the July 23rd sampling event that results will be returned in August, which is important because the demonstration ends in October, and it is hopeful to get positive results guiding us toward our best options moving forward to either continue the study or bring it to a close.

Ms. Paul discussed the benefits of sampling short term vs. long term to identify if there really was a trend in contamination to support continuing or ending the study.

Dispute Status Update

Mr. Mayer informed the group that we should hear a result in mid-August. Dr. Zeiler added that next month the dispute will have been going on for three years and that the data is getting old. She also stated that Army is considering moving forward with groundwater remedies at some of the disputed sites, where the TCEQ and USEPA have concurred with the clean-up approach, but won't sign the ROD due to the dispute. Ms. Robin Paul, AEC commented that obtaining regulator concurrence with implementation of the groundwater remedies outside the disputed RODs is important to AEC, which funds the work. Mr. Mayer indicated that he will consult with others at Region 6 on this issue.

Schedule

Mr. Wacker said the next RAB meeting is scheduled for November 20th from 6:00PM to 7:30PM at the Karnack Community Center.

Environmental Condition of Property VI and VII

Dr. Zeiler presented a map of the transferred and transferring acreage. She discussed the ECP VI acreage stating that Site 49, the Static Test and Igniter Areas and other sites are included in ECOP VI which is being reviewed by USFWS. The next ECP, ECP VII will include the former range sites and the Construction Debris Landfill Parcel. The ECOP V area was transferred to USFWS earlier this year.

Upcoming Field Work Update

Mr. Wacker discussed that sampling will continue for groundwater monitoring networks at LHAAP-46, 50, 58, 67 in addition to semi-annual compliance sampling for LHAAP-18/24.

Mr. Wacker said that completion reports are in-progress for remedial actions conducted at LHAAP-37, 46, 50, 58 and 67. He said that the first annual Remedial Action Operation reports are also being developed for LHAAP-46 and 67. Results for all the field work completed over the summer for LHAAP-18/24 and 29 will also be put into reports over the winter. Sites where work has ceased pending the dispute resolution include: LHAAP–03, 04, 47, 16, 17, 29, 001-R-01 and 003-R-01.

Questions or Comments

Ms. Vandeventer reported that someone from the EPA called Karnack Water Supply Corporation saying they wanted to do some sampling. Mr. Mayer said it was he who had made the call, and all EPA wants to do is take a sample out of the Karnack Water Supply Corporation well closest to site LHAAP–46. Ms. Vandeventer asked Mr. Mayer to please provide the results of sampling to Karnack Water Supply Corporation when available. He agreed to do so.

Adjourn

August Meeting Attachments and Handouts:

- *Meeting Agenda*
- *AECOM PowerPoint Presentation*
- *GWTP Treated Groundwater Volumes Handout*
- *Surface Water Sampling Results Handout*
- *LHAAP Perimeter Well Sampling Results Handout*

Acronyms

ACD	Air curtain destructor
AECOM	AECOM Technical Services, Inc.
BRAC	Base Realignment and Closure
CERCLA	Comprehensive, Environmental Response, Compensation, and Liability Act
CLI	Caddo Lake Institute
CPT/MIP	Cone Penetrometer Testing/Membrane Interface Probe
DERP	Defense Environment Response Program

DNAPL	Dense Non-Aqueous Phase Liquid
DPT	Direct Push Technology
FFA	Federal Facility Agreement
GWTP	Groundwater Treatment Plant
ICT	interceptor-collector trench
INF	Intermediate-Range Nuclear Forces
ISB	In-Situ Bioremediation
LHAAP	Longhorn Army Ammunition Plant
LNAPL	Light Non-Aqueous Phase Liquid
MNA	Monitored Natural Attenuation
PCE	tetrachloroethylene
RAB	Restoration Advisory Board
ROD	Record of Decision
TAG	Technical Assistance Grant
TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
UEP	Unlined Evaporation Pond
USACE	United States Army Corps of Engineers
USAEC	United States Army Environmental Center
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
µg/L	micrograms per liter
VOC	volatile organic compound

LONGHORN ARMY AMMUNITION PLANT
RESTORATION ADVISORY BOARD
Karnack, Texas
(479) 635-0110

AGENDA

DATE:	Thursday, August 7, 2014
TIME:	6:00 – 7:30 PM
PLACE:	Karnack Community Center, Karnack, Texas

06:00 Welcome and Introduction

06:05 Open Items {RMZ}
- RAB Administrative Issues
- Minutes
- Tour Recap
- Website

06:15 Defense Environmental Restoration Program (DERP) Update {AECOM}
- On-going work LHAAP 18/24, LHAAP 29
- Treatability Studies Overview
- MNA Site Overview (LHAAP-46, 50, 58, 67)
- Groundwater Treatment Plant (GWTP) Update
- Surface Water and Perimeter Well Sampling

07:15 Other Environmental Restoration Issues {RMZ}
- Bioplug Demonstration at LHAAP-37
- Dispute Status Update
- Schedule
- Environmental Condition of Property VII

07:20 Next RAB Meeting Schedule (November 20) and Closing Remarks

07:30 Adjourn {RMZ}

AECOM

Longhorn Army Ammunition Plant Restoration Advisory Board Meeting August 7, 2014

AECOM Environment

Agenda

AGENDA

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RAB Administrative Issues

– RAB Tour Recap

RAB Administrative Issues

– RAB Tour Recap

RAB Administrative Issues

- Minutes from May RAB Meeting
- Website Update

RAB Administrative Issues

HOME BACKGROUND SITES REMEDIAL TECHNOLOGIES PLUME MAPS ADMIN RECORD GET INVOLVED

Overview

Print this Overview

Welcome

Welcome to the website for Longhorn Army Ammunition Plant (also known as LHAAP). LHAAP is a former government-owned facility located in Karnack, Texas, about 40 miles west of Shreveport, Louisiana. The site was placed on the National Priorities List on August 9, 1990. The cleanup is taking place under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) with the United States Army as the lead agency in coordination with the United States Environmental Protection Agency (USEPA) Region 6 and the Texas Commission on Environmental Quality (TCEQ). The Army Base Realignment and Closure Division (BRAC) is overseeing the environmental cleanup of contamination at the site that resulted from the production of various defense items (such as explosives, pyrotechnics, illuminants and rocket motors) beginning near the start of WWII, through the early 1990s. As a result of these efforts, approximately 7,000 acres of the 8,416-acre former installation have been found suitable for transfer to the United States Fish and Wildlife Service (USFWS) and are now being managed as the Caddo Lake National Wildlife Refuge.

RAB Administrative Issues

HOME | BACKGROUND | SITES | REMEDIAL TECHNOLOGIES | PLUME MAPS | ADMIN RECORD | GET INVOLVED

Background

Longhorn Army Ammunition Plant (LHAAP) is a former, government-owned, contractor-operated and maintained Department of Defense facility located in central-east Texas in the northeastern corner of Harrison County. The footprint of the former U.S. Army installation occupies 8,416 acres between State Highway 43 at Karnack, Texas, and the southwestern shore of Caddo Lake. The nearest cities are Marshall, Texas, approximately 14 miles to the southwest, and Shreveport, Louisiana, approximately 40 miles to the southeast. Caddo Lake, a large freshwater lake situated on the Texas-Louisiana border, bounds LHAAP to the north and east. (See maps below).

Photos

Historical Photos (PDF)

RAB Administrative Issues

RAB Administrative Issues

HOME | BACKGROUND | SITES | REMEDIAL TECHNOLOGIES | PLUME MAPS | ADMIN RECORD | GET INVOLVED

Remedial Technologies

Groundwater Treatment Plant

The Groundwater Treatment Plant (GWTP) is a wastewater treatment plant, located just outside of Site LHAAP-18/24.

The GWTP treats extracted water through air stripping, precipitation, and biological methods. Treated water that is deemed below regulated contamination standards (or clean) is released to Harrison Bayou, if the Bayou has ample flowing water. If the water flow in Harrison Bayou is low, the treated water is then released onto LHAAP-18/24 via a sprinkler system, or into a holding pond, for later treatment.

Monitored Natural Attenuation

Monitored natural attenuation (MNA) is the monitoring of groundwater to confirm whether natural attenuation (or gradual lessening of contaminants) processes are occurring, and occurring at a sufficient rate.

Monitoring is achieved by periodic groundwater sampling of monitoring wells at each site. These wells are located both inside the known contaminant plume, and outside of it. This helps to find the extent of the contamination, and determine if the plume is growing, shrinking, or moving.

ISB

In-situ bioremediation (ISB) can sound like a very complicated procedure, but it explains

Groundwater Treatment Plant

RAB Administrative Issues

HOME BACKGROUND SITES REMEDIAL TECHNOLOGIES PLUME MAPS ADMIN RECORD GET INVOLVED

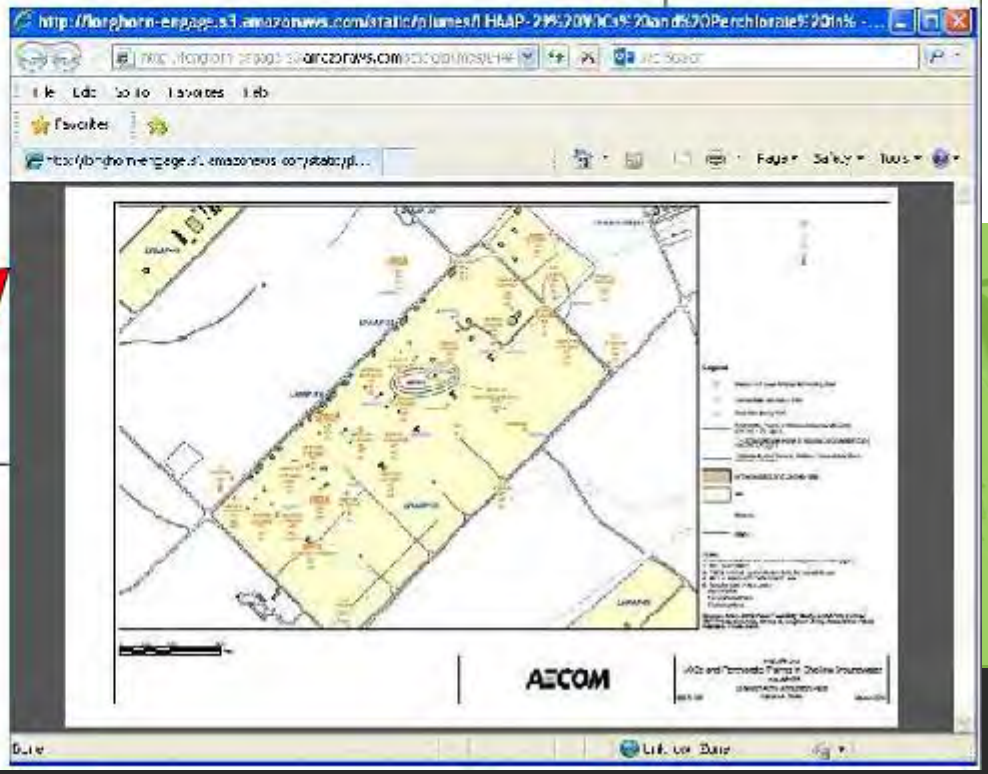
Longhorn Army Ammunition Plant

Environmental Restoration Program

Plume Maps

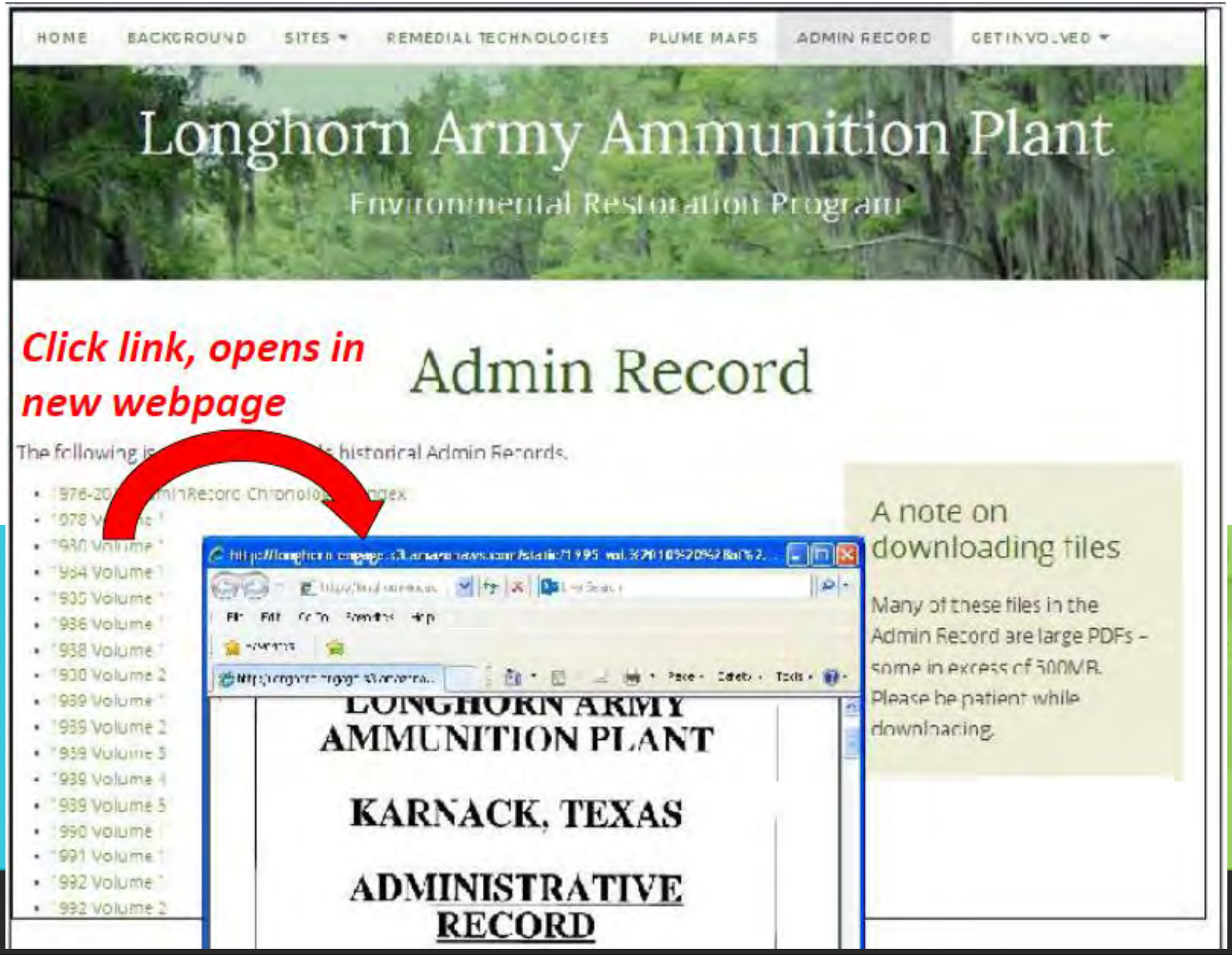
- LHAAP-04 Perchlorate Concentration in Groundwater.pdf
- LHAAP-12 GwPlumesJul2009.pdf
- LHAAP-17 VOC and Perchlorate Plume Map.pdf
- LHAAP-29 VOCs and Perchlorate in Shallow Groundwater.pdf
- LHAAP-46 TCE in Intermediate Zone.pdf
- LHAAP-46 TCE in Shallow Zone.pdf
- LHAAP-47 cis and VC in Shallow Interme...GW.pdf
- LHAAP-47 Perchlorate in Shallow GW.pdf
- LHAAP-47 TCE and PCE in Shallow Intermedia...
- LHAAP-47 TCE in Intermediate Groundwater.pdf
- LHAAP-47 TCE in Shallow GW.pdf
- LHAAP-50 Extent of Perchlorate in Shallow GW.pdf
- LHAAP-50 Extent of VOCs in Shallow GW.pdf
- LHAAP-58 VOC Groundwater Plume Map.pdf
- LHAAP-67 Contaminant Plumes in Shallow Groundwater.pdf

Click map link, opens in new webpage

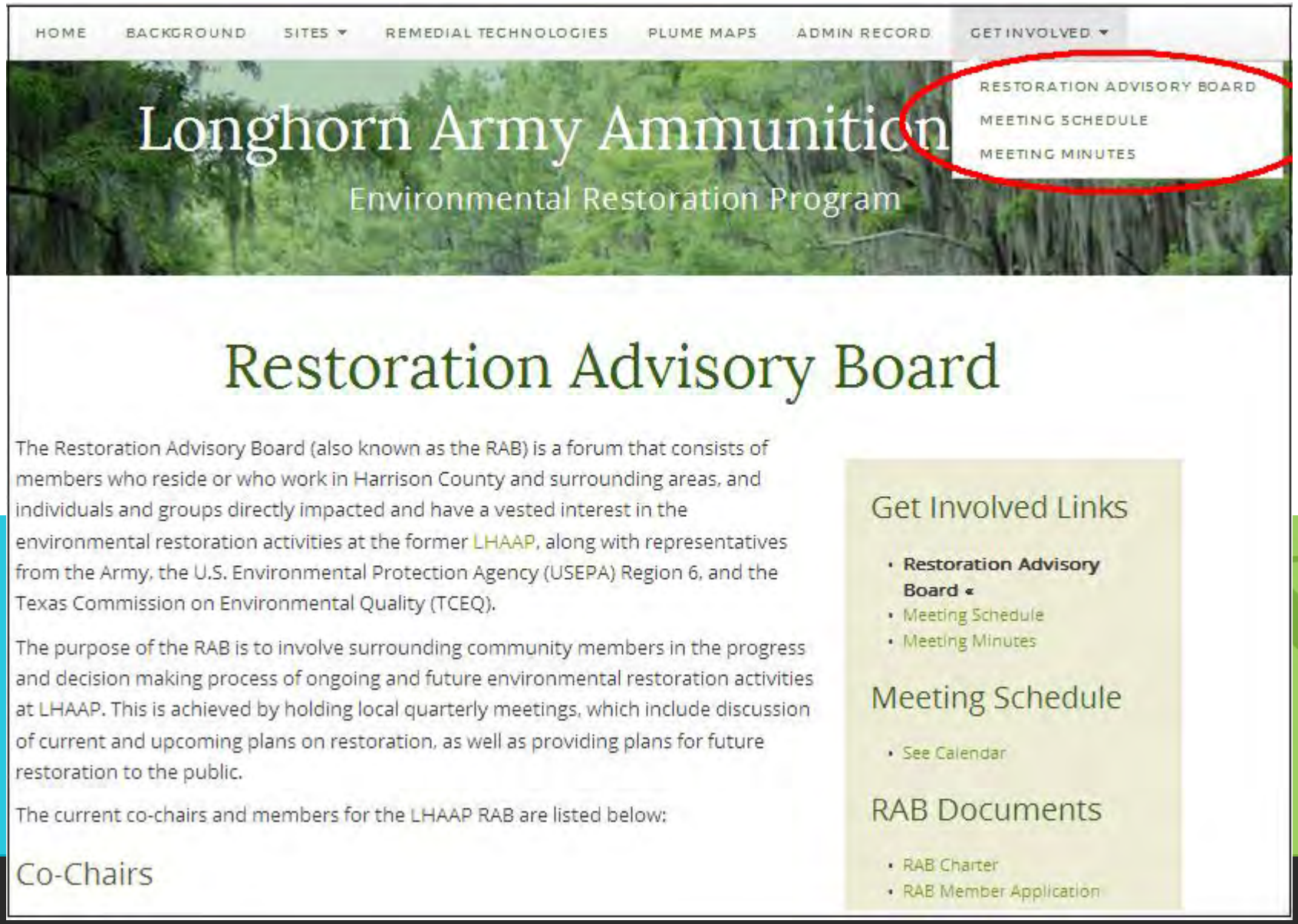


AECOM

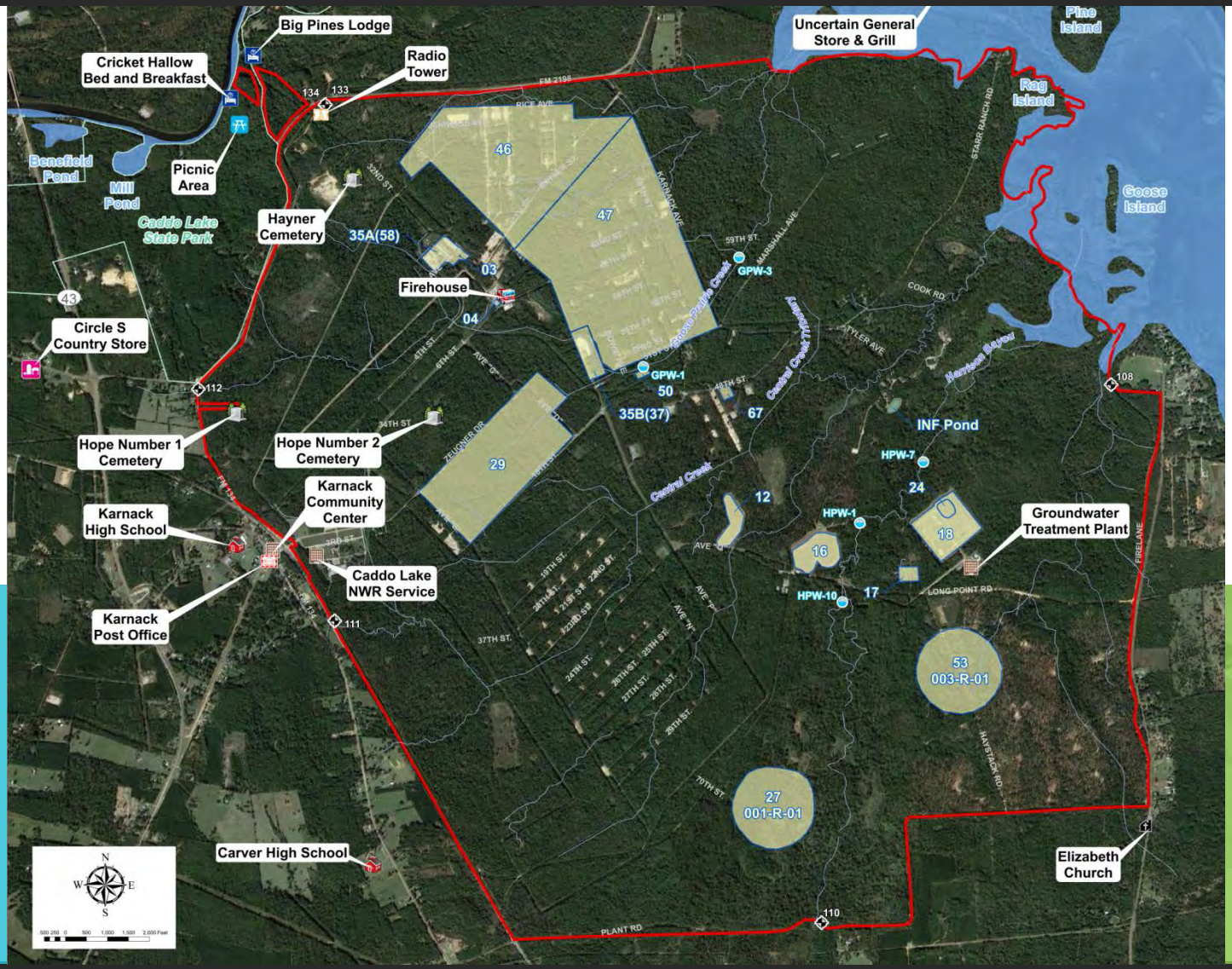
RAB Administrative Issues



RAB Administrative Issues



Longhorn Map



AECOM

Longhorn Active Site List

LHAAP-03	Building 722 Paint Shop
LHAAP-04	Pilot Wastewater Treatment Plant
LHAAP-12	Landfill 12
LHAAP-16	Landfill 16
LHAAP-17	Burning Ground No.2/Flashing Area
LHAAP-18	Burning Ground No.3
LHAAP-24	Unlined Evaporation Pond
LHAAP-29	Former TNT Production Area
LHAAP-37	Chemical Laboratory Waste Pad
LHAAP-46	Plant Area 2
LHAAP-47	Plant Area 3
LHAAP-50	Former Sump Water Tank
LHAAP-58	Maintenance Complex
LHAAP-67	Aboveground Storage Tank Farm
LHAAP-001-R-01	South Test Area/Bomb Test Area
LHAAP-003-R-01	Ground Signal Test Area

Status of Environmental Sites

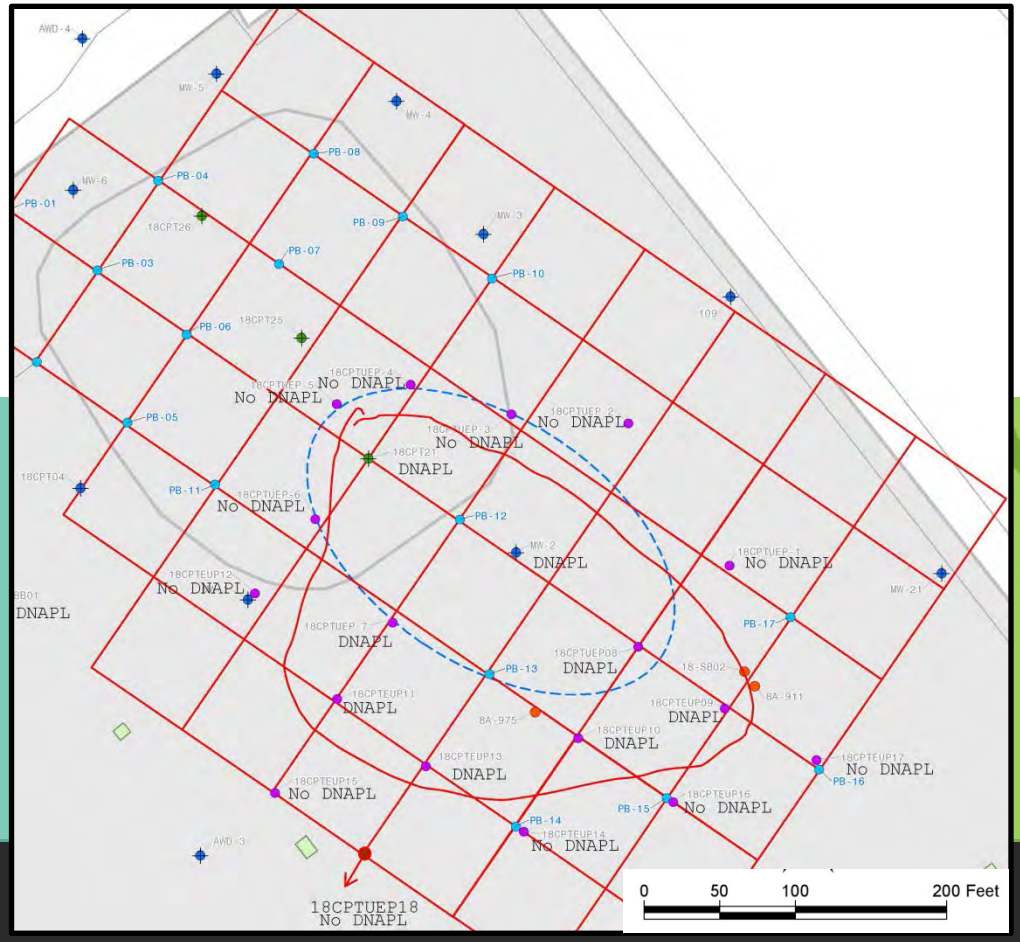
– Primary work activities completed since last RAB meeting were for sites LHAAP-18/24 and LHAAP-29

– LHAAP-18/24 – Burning Grounds #3 and Unlined Evaporation Pond
  - Interim remedy: Continuous extraction and treatment of groundwater from collection trenches surrounding and within the site (green in image below)
  - Contaminants of Concern: Perchlorate, VOCs (TCE, MC), Metals

Status of Environmental Sites (cont)

LHAAP-18/24 – Burning Grounds #3 and Unlined Evaporation Pond

- Investigation of Dense Non-Aqueous Phase Liquid and Soil Source Material at Unlined Evaporation Pond
- DNAPL area extends farther south and east than previously estimated
- Work activities appear to have delineated extent of DNAPL

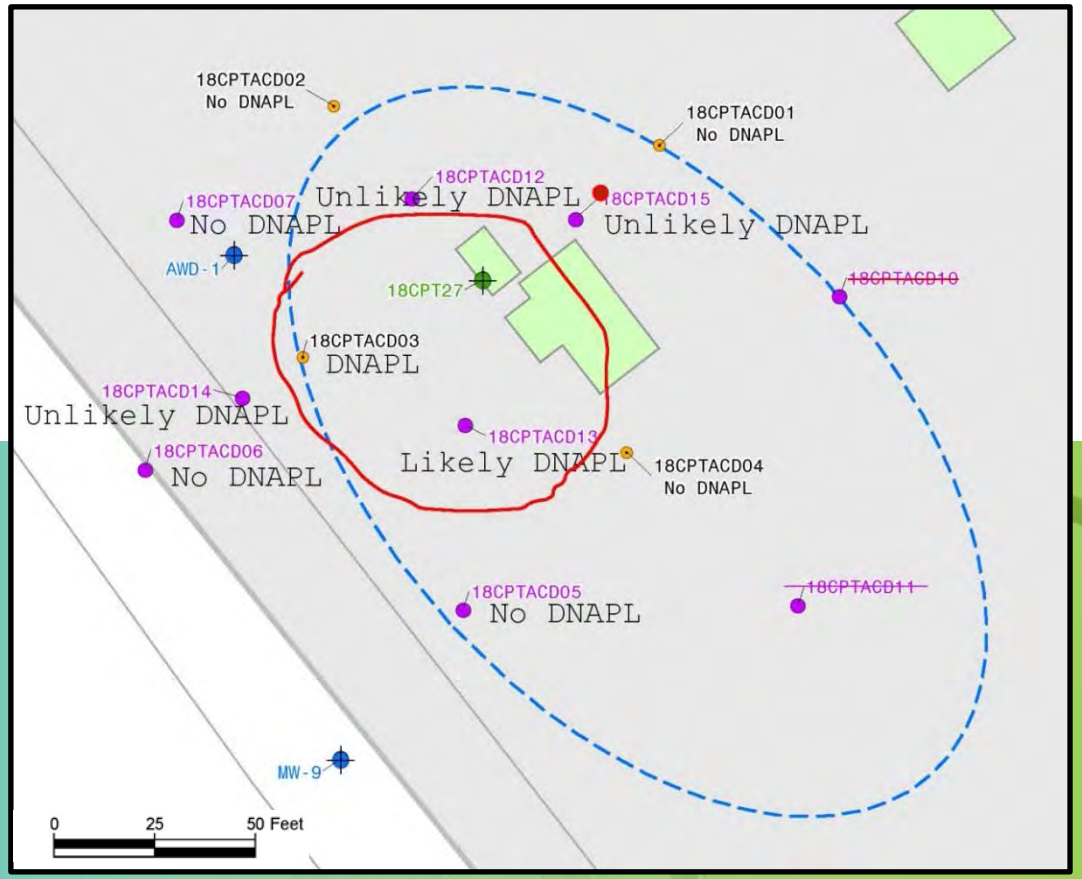


AECOM

Status of Environmental Sites (cont)

LHAAP-18/24 – Burning Grounds #3 and Air Curtain Destructor

- Investigation of Dense Non-Aqueous Phase Liquid and Soil Source Material at Air Curtain Destructor
- DNAPL area smaller than previously estimated
- Work activities appear to have delineated extent of DNAPL



Treatability Studies Overview

Treatability testing is often conducted to:

1) Determine whether a potential remediation treatment technology should be successful in treating a specific contamination problem; and,

2) Evaluate site-specific characteristics that will impact the estimated cost to implement the remedy

Treatability Studies Overview

LHAAP-18/24 Treatability Testing

- Thermal Treatability Testing – Determines the amount of electric current needed to heat soil or groundwater to break the bonds of contaminant molecules, allowing evaluation of whether thermal or electrokinetic remediation is suitable and cost effective
- In-Situ Microcosm Testing – evaluates the occurrence and extent of biodegradation in a groundwater plume; testing conducted in the field utilizing Bio-Trap® passive samplers that are submitted for laboratory analysis
- Bench-Scale Microcosm Testing – determines whether bacteria that can degrade the target contaminant are present at the site and demonstrates whether the natural biodegradation processes can be enhanced to remediate contamination; testing is conducted in the laboratory using soil and groundwater collected from the site
- Emulsified Zero Valent Iron Microcosm Testing – determines the optimum ZVI-to-soil ratio to degrade contaminants

Treatability Studies Overview (cont)

LHAAP-29 Treatability Testing

- Thermal Treatability Testing – Determines the amount of electric current needed to heat soil or groundwater to break the bonds of contaminant molecules, allowing evaluation of whether thermal or electrokinetic remediation is suitable and cost effective

- In-Situ Microcosm Testing – evaluates the occurrence and extent of biodegradation in a groundwater plume; testing conducted in the field utilizing Bio-Trap® passive samplers that are submitted for laboratory analysis

- Aquifer Pumping Test – provides information on groundwater flow characteristics required to estimate costs for remedies that include a groundwater extraction or hydraulic control component

Status of Environmental Sites (cont)

- Monitored Natural Attenuation Sites
  - LHAAP-46 – Plant Area 2
  - LHAAP-35B (37) – Chemical Laboratory
  - LHAAP-50 – Former Sump Water Tank
  - LHAAP-58 – Shops Area
  - LHAAP-67 – Aboveground Storage Tank Farm

- 1st Annual Report for each of these sites will be developed in the next quarter containing trend analysis

Status of Environmental Sites (cont)

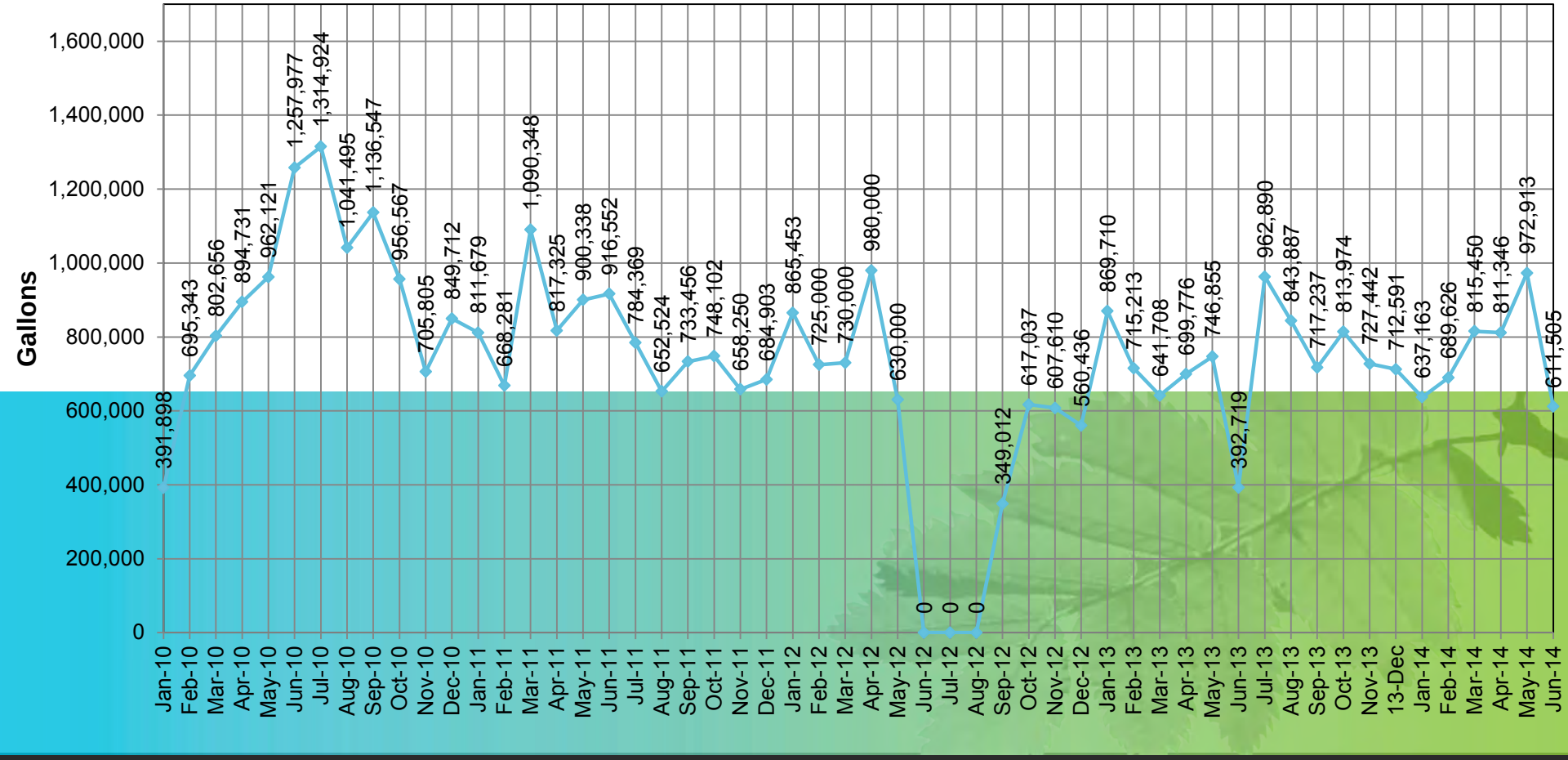
- LHAAP-03 - Record of Decision, Remedial Design/Remedial Action Work Plan On-hold Due to Dispute
- LHAAP-04 - Record of Decision, Remedial Design/Remedial Action Work Plan On-hold Due to Dispute
- LHAAP-16 - Record of Decision, Remedial Design/Remedial Action Work Plan On-hold Due to Dispute
- LHAAP-17 - Record of Decision, Remedial Design/Remedial Action Work Plan On-hold Due to Dispute
- LHAAP-47 - Record of Decision, Remedial Design/Remedial Action Work Plan On-hold Due to Dispute
- LHAAP-001-R-01 - Record of Decision, Remedial Design/Remedial Action Work Plan On-hold Due to Dispute
- LHAAP-003-R-01 - Record of Decision, Remedial Design/Remedial Action Work Plan On-hold Due to Dispute

Groundwater Treatment Plant Operations and Management

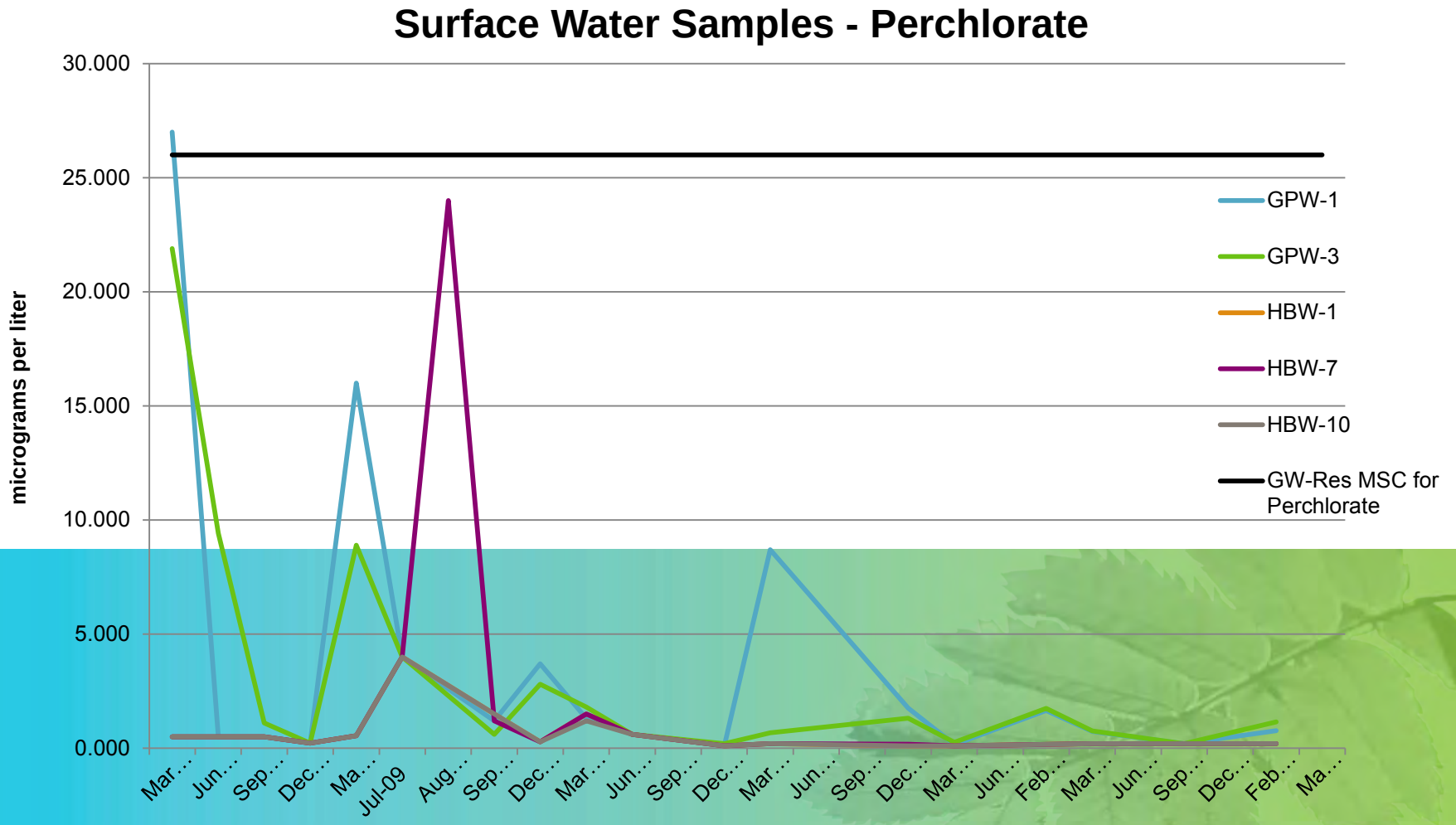
- The Groundwater Treatment Plant continues to operate to contain the plume at LHAAP-18/24 and LHAAP-16.
- Water continues to be returned to LHAAP-18/24 or into Harrison Bayou, depending on the amount of water in the bayou.
- Compliance monitoring continues per existing sampling plan.
- Maintenance and repairs of wells, pumps, tanks, and ancillary equipment is on-going.

GWTP O&M (cont)

Figure ES-3
Water Treated Monthly from January 2010 through June 2014



Surface Water Sample Results



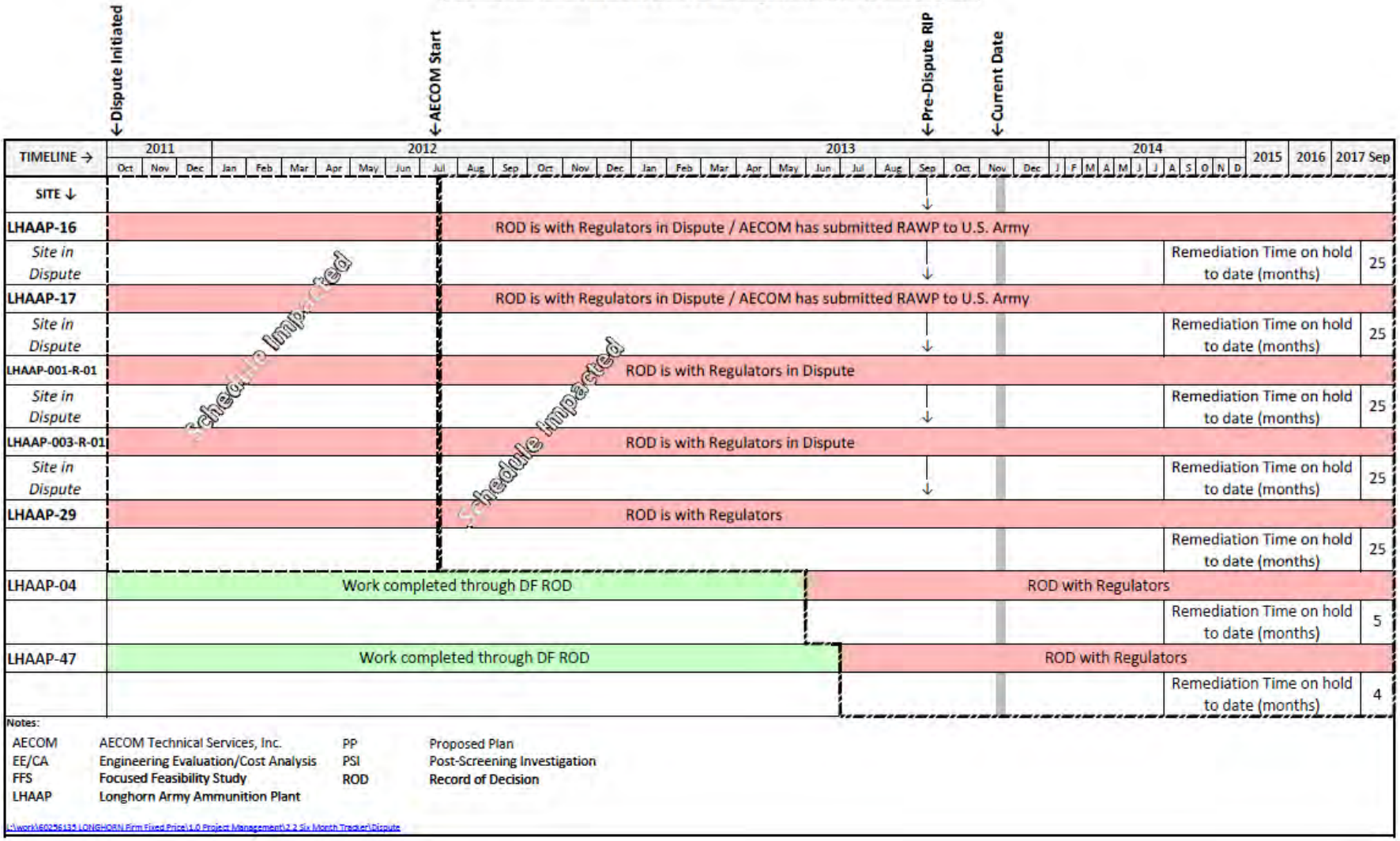
GPW – Goose Prairie Creek
HBW – Harrison Bayou

LHAAP-37 Bioplug Demonstration Update

- Demonstration scheduled to end October 2014.
- Data from July sampling event will be reviewed to determine effectiveness of the demonstration.
- Additional update will be provided at next RAB meeting.

Dispute Status

Sites at which Work has Ceased Pending Resolution of the Dispute



Notes:

AECOM	AECOM Technical Services, Inc.	PP	Proposed Plan
EE/CA	Engineering Evaluation/Cost Analysis	PSI	Post-Screening Investigation
FFS	Focused Feasibility Study	ROD	Record of Decision
LHAAP	Longhorn Army Ammunition Plant		

L:\work\60256135 LONGHORN Firm Fixed Price\1.0 Project Management\2.2 Six Month Tracker\Dispute

Path Forward - Interim Remedies

Code of Federal Regulations – 40 CFR 300.415

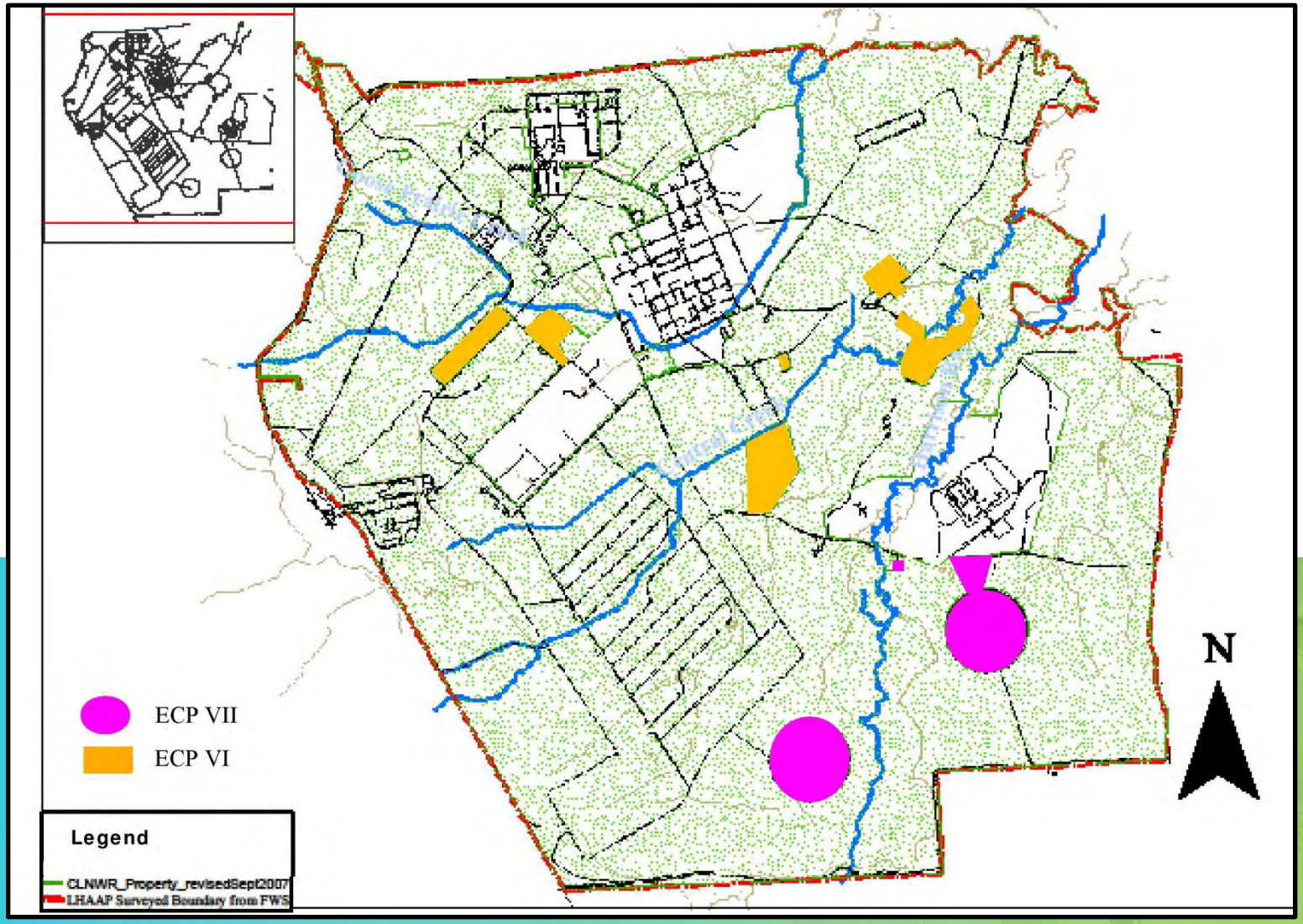
At any release, regardless of whether the site is on the NPL, where the lead agency makes the determination, based on the factors in paragraph (b)(2) of this section, that there is a threat to public health or welfare of the United States or the environment, the lead agency may take any appropriate removal action to abate, prevent, minimize, stabilize, mitigate, or eliminate the release or the threat of release.

The lead agency at Longhorn is the United States Army.

Upcoming Fieldwork, Meetings, and Documents

1. Continue sampling for groundwater monitoring networks at LHAAP-46, 50, 58, 67, in addition to semi-annual compliance sampling for LHAAP-18/24.
2. Final Completion Reports in progress for LHAAP-37, 46, 50, 58, 67.
3. First annual Remedial Action Operation reports being developed for LHAAP-46 and LHAAP-67, followed by 37, 50, 58.
4. LHAAP-18/24 and LHAAP-29 – Reports for current activities leading to an FS for each site planned for fall 2014.
5. Sites where work has ceased pending dispute resolution:
    1. LHAAP-03
    2. LHAAP-04
    3. LHAAP-47
    4. LHAAP-16
    5. LHAAP-17
    6. LHAAP-29
    7. LHAAP-001-R-01
    8. LHAAP-003-R-01

ECP VI and VII



Back-up Slides

Dense Non-Aqueous Phase Liquid (DNAPL)

- Dense Non-Aqueous Phase Liquids are present at LHAAP-29 and LHAAP-18/24
  - Typically chlorinated hydrocarbons, such as trichloroethylene (TCE) and Methylene Chloride (MC)
  - Compounds with densities greater than water or specific gravity greater than 1
  - These compounds ‘sink’ until they reach an confined unit (aquitard) then spread via preferential pathways along the aquitard (which may be opposite of groundwater flow direction)
- Present in two locations in shallow groundwater at LHAAP-18/24 and one location at LHAAP-29, all three of these locations are proposed for further work to delineate the extent of DNAPL this spring

DNAPL (cont)

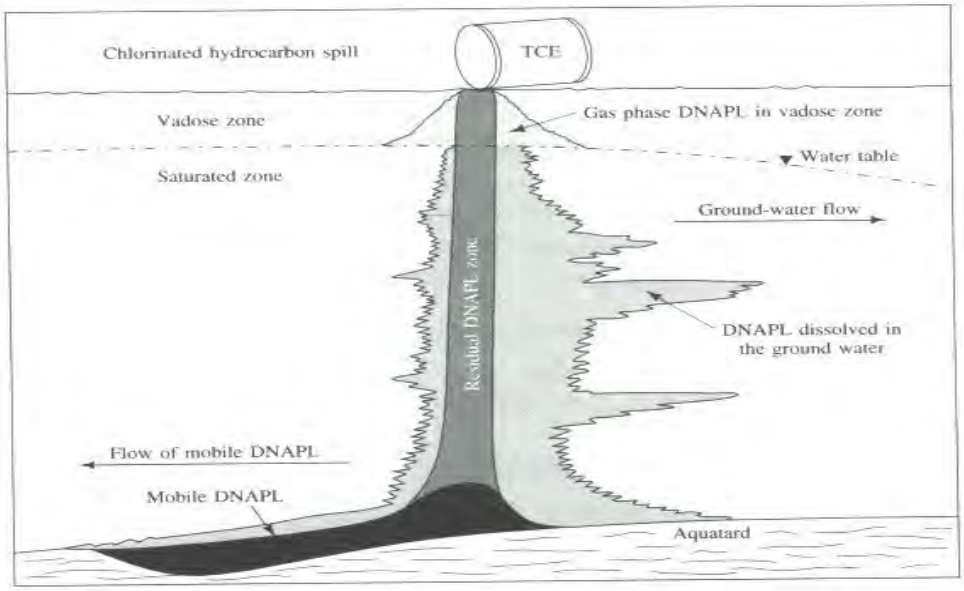


FIGURE 5.28 Distribution of a dense nonaqueous phase liquid in the vadose and saturated zone.

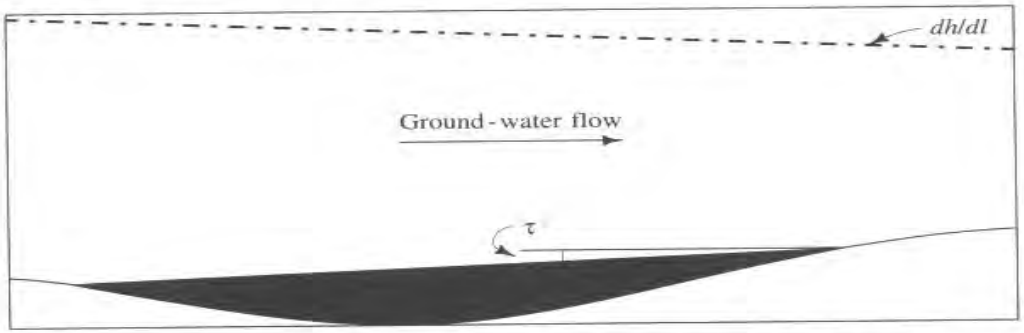


FIGURE 5.29 Sloping interface between a static layer of DNAPL and flowing ground water.

DNAPL (cont)

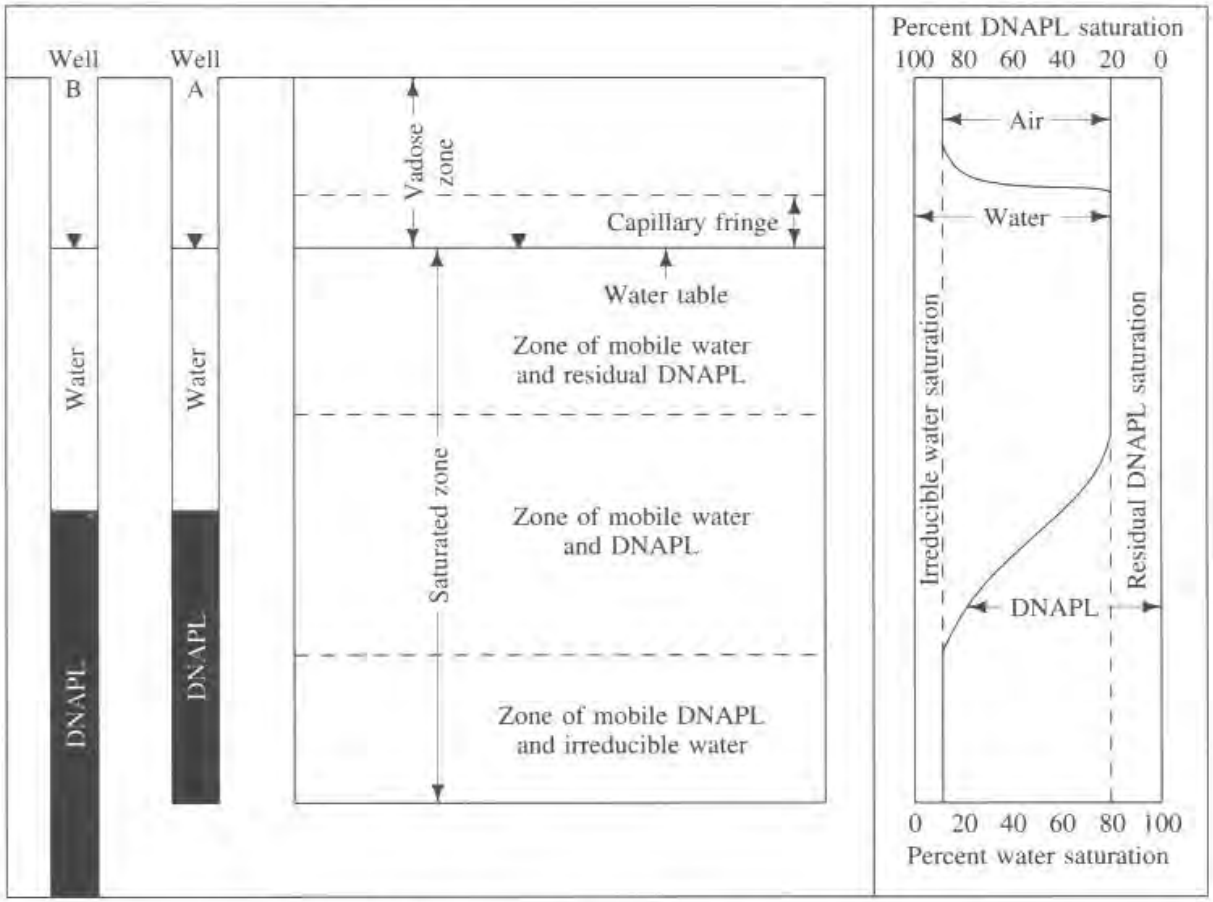


FIGURE 5.26 Zones of a DNAPL and the relationship of mobile DNAPL and nonmobile DNAPL to the DNAPL saturation; relationship of mobile DNAPL thickness to thickness of DNAPL is measured in a monitoring well.

Additional DNAPL Information

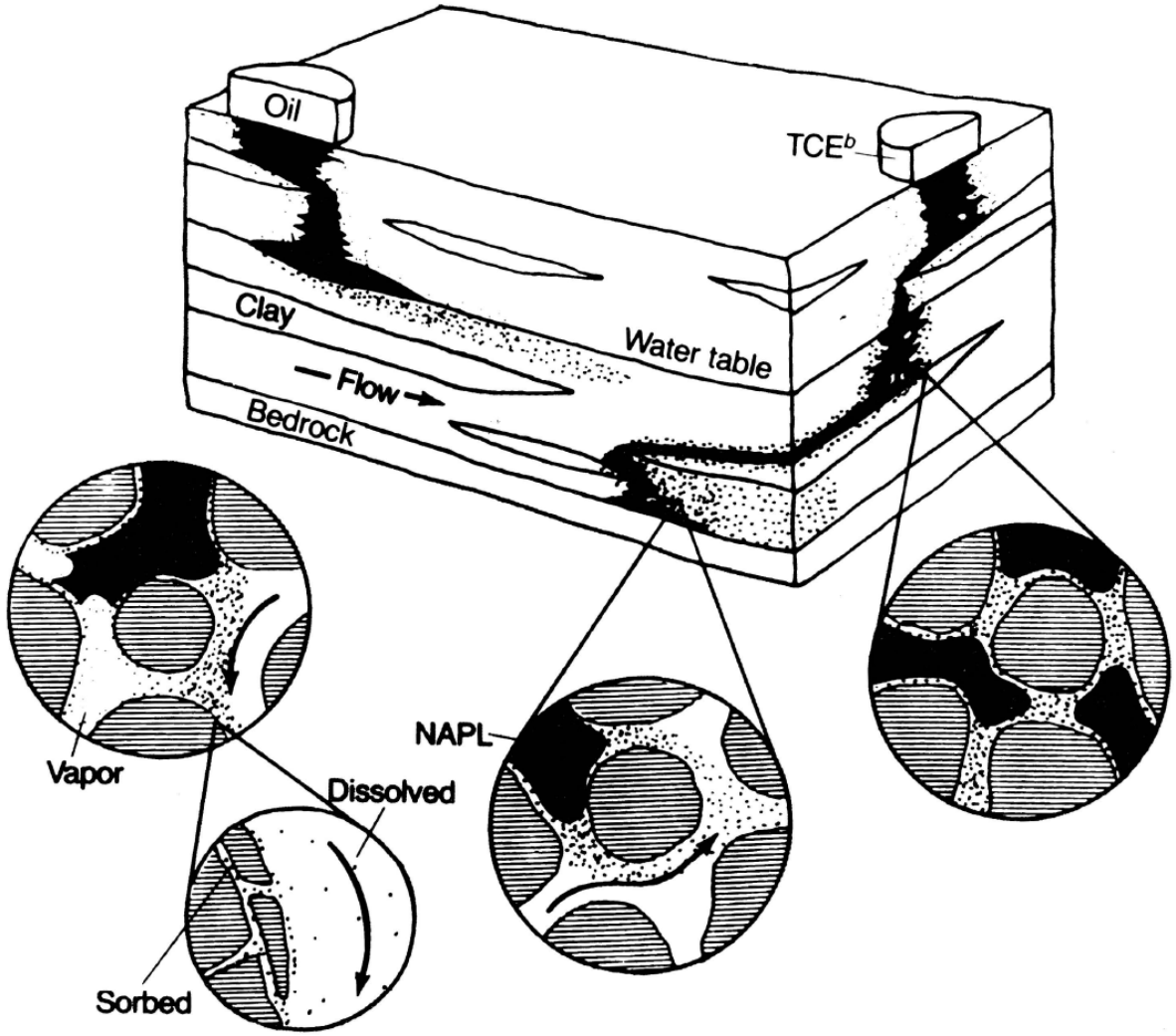


Figure 2.1 Schematic illustration of a DNAPL and a LNAPL in a porous medium, showing geologic and pore scales. A low-permeability clay layer deflects the DNAPL. DNAPL dissolution causes a plume (from Mackay and Cherry, 1989).

Additional DNAPL Information (cont)

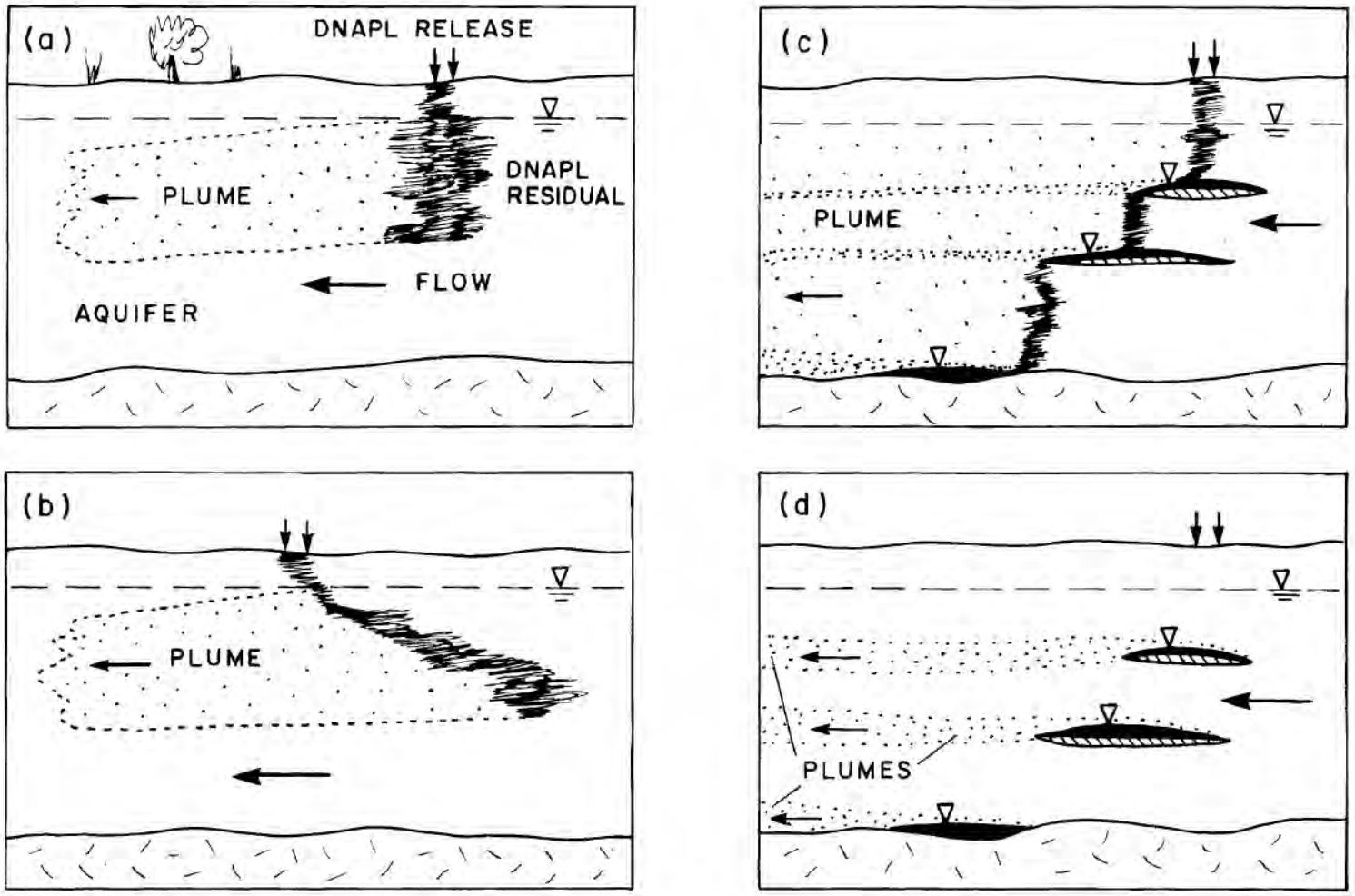
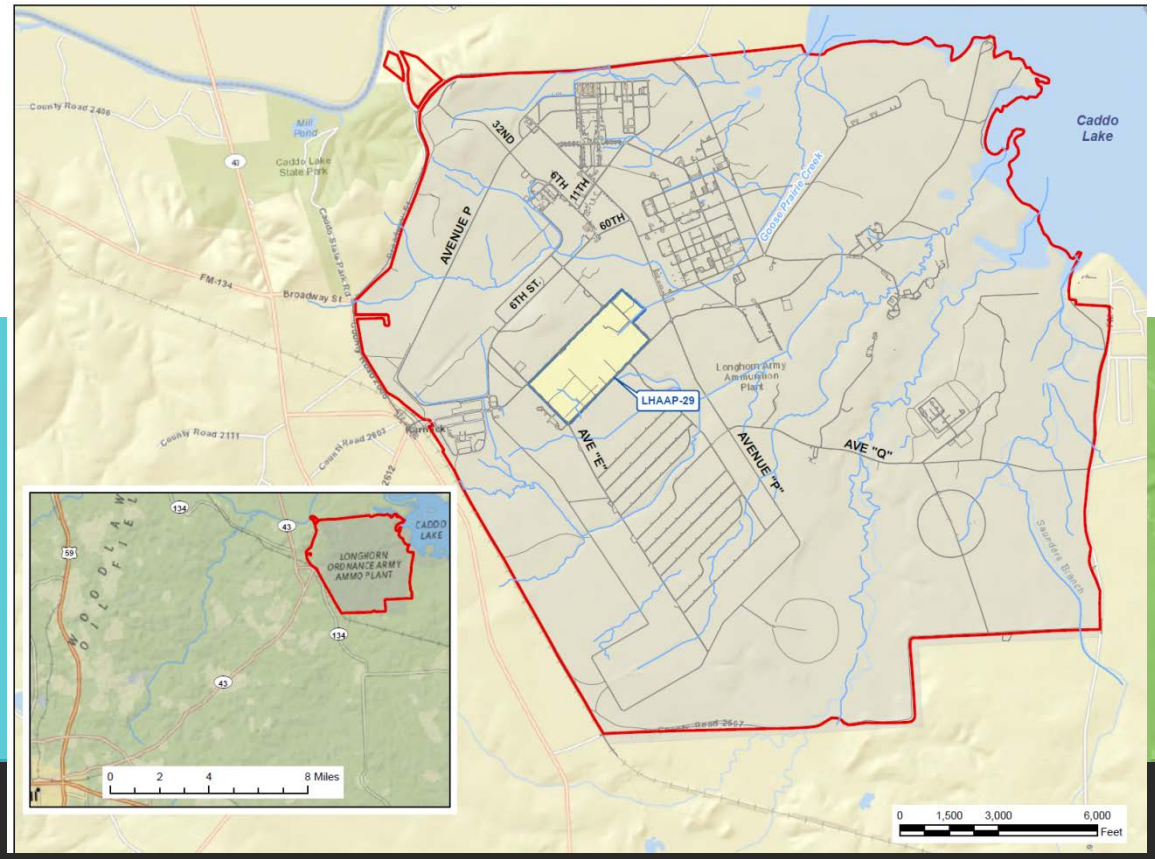


Figure 2.5 Conceptual scenarios for a DNAPL in the groundwater zone in granular aquifers: a) partial penetration; b) partial penetration with offset; c) full penetration with offset; and d) same as part c, but at a later stage after DNAPL residual has disappeared due to dissolution in flowing groundwater. (Pankow and Cherry, 1996)

Status of Environmental Sites (cont)

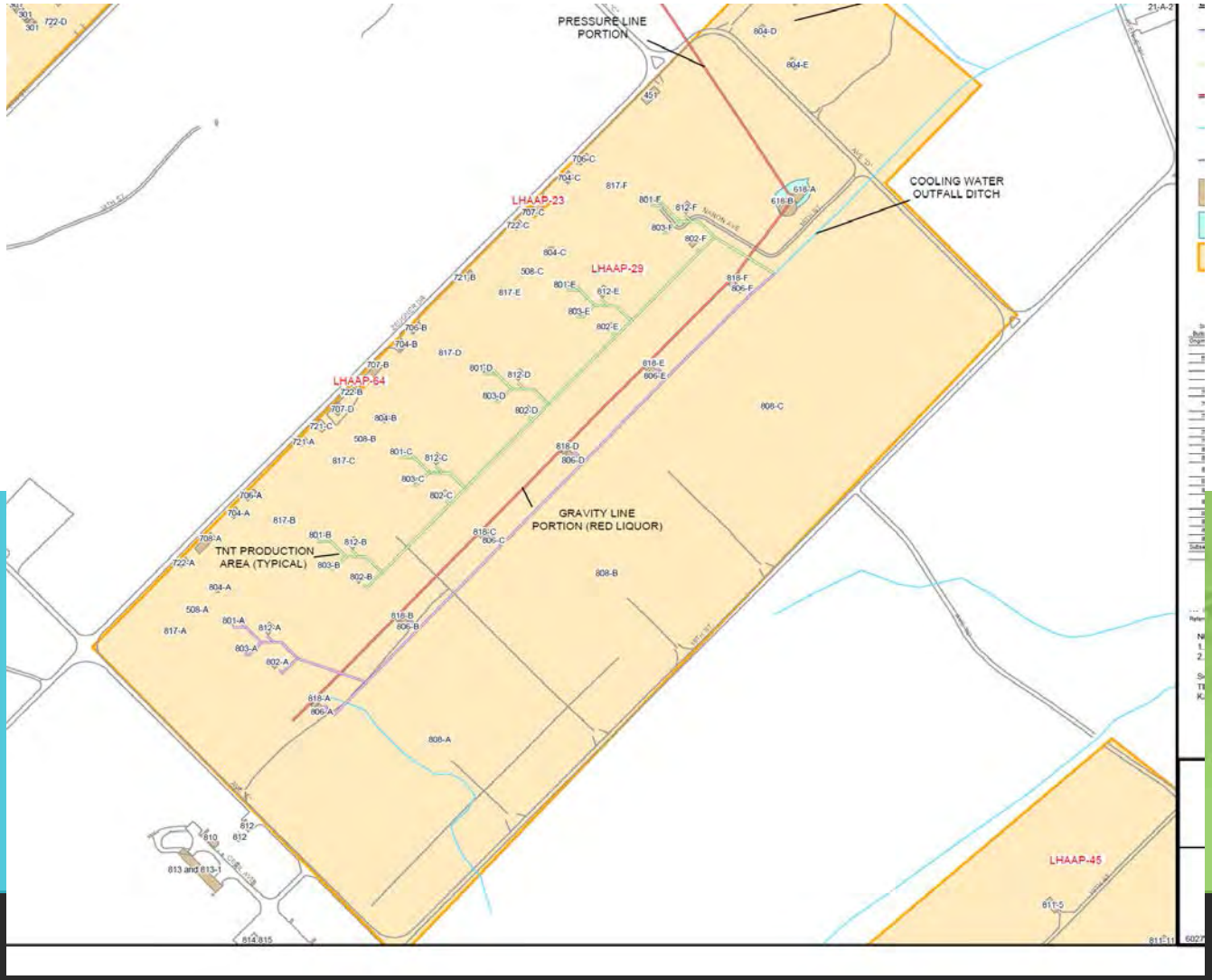
– LHAAP-29 Former TNT Production Area

- 85-acre site that historically manufactured TNT for use during World War II. Subsequently this area was used for “soak out” or solvent bath of out-of-specification rocket motors from the 1950’s through the 1970’s
- Contaminants of Concern: Perchlorate, VOCs (TCE, MC), Explosives



Status of Environmental Sites (cont)

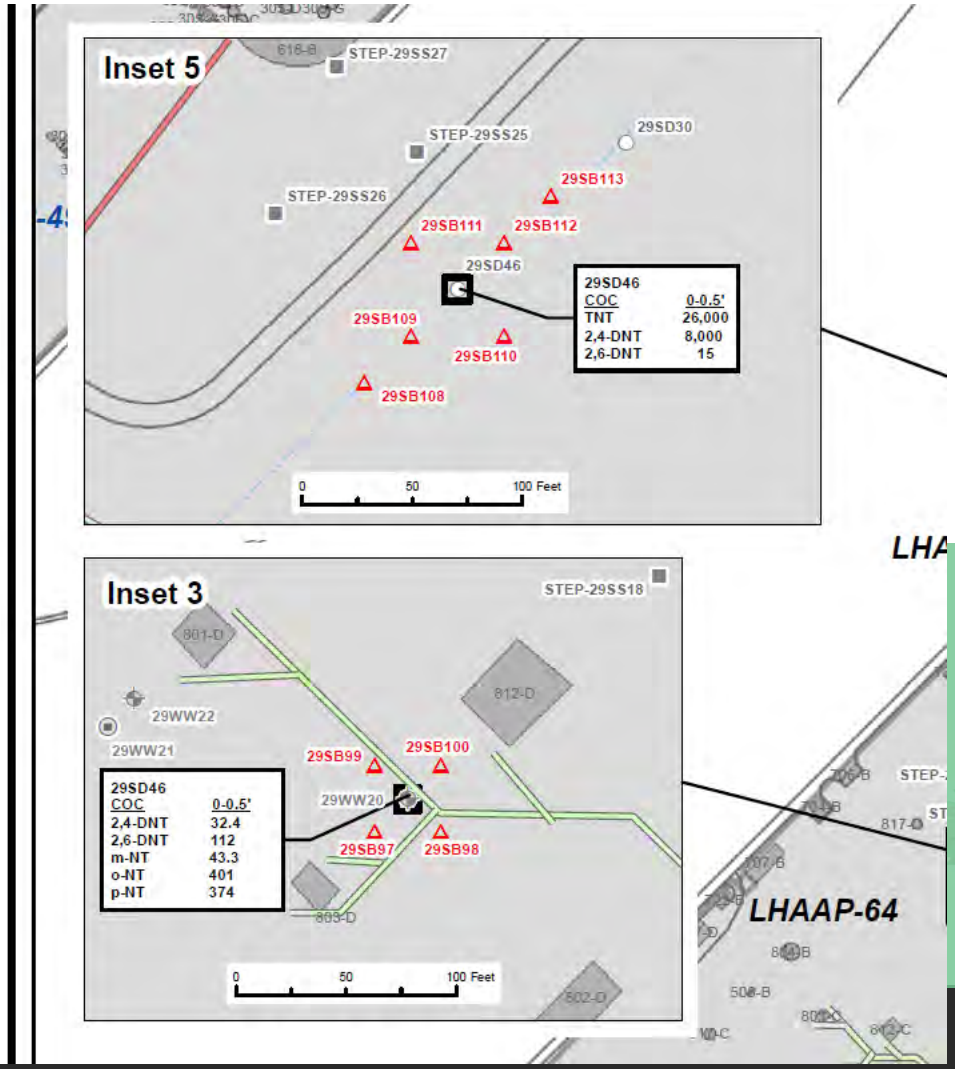
– LHAAP-29 Former TNT Production Area

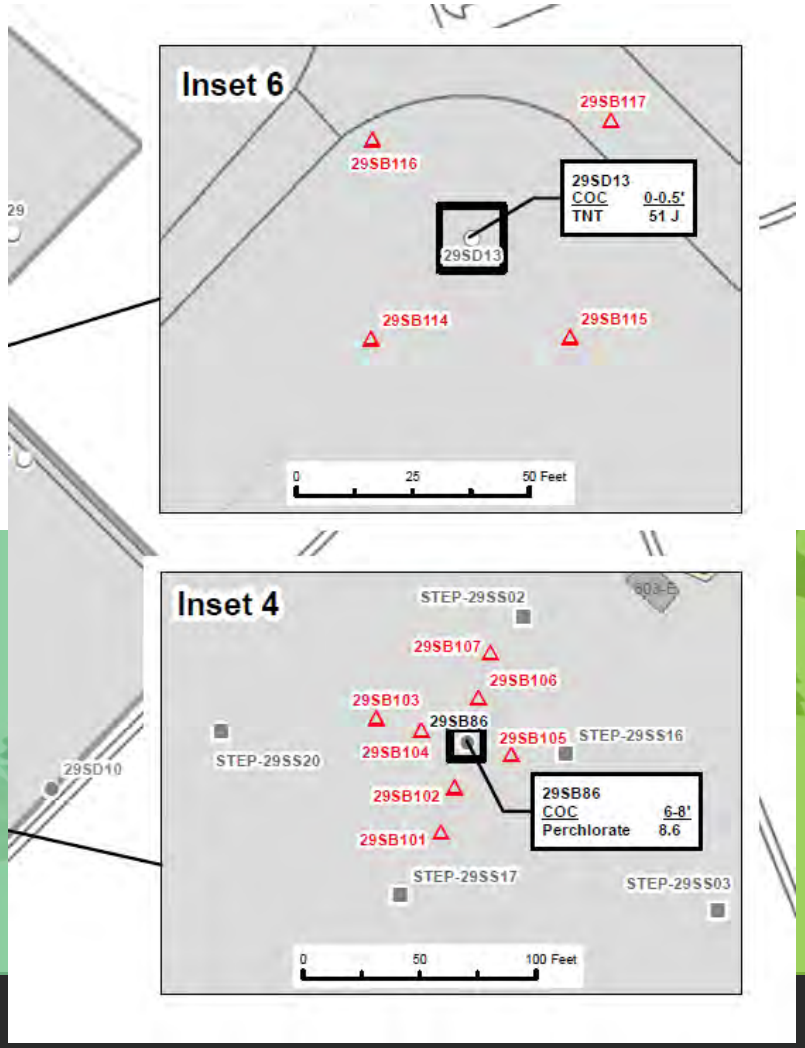


AECOM

Status of Environmental Sites (cont)

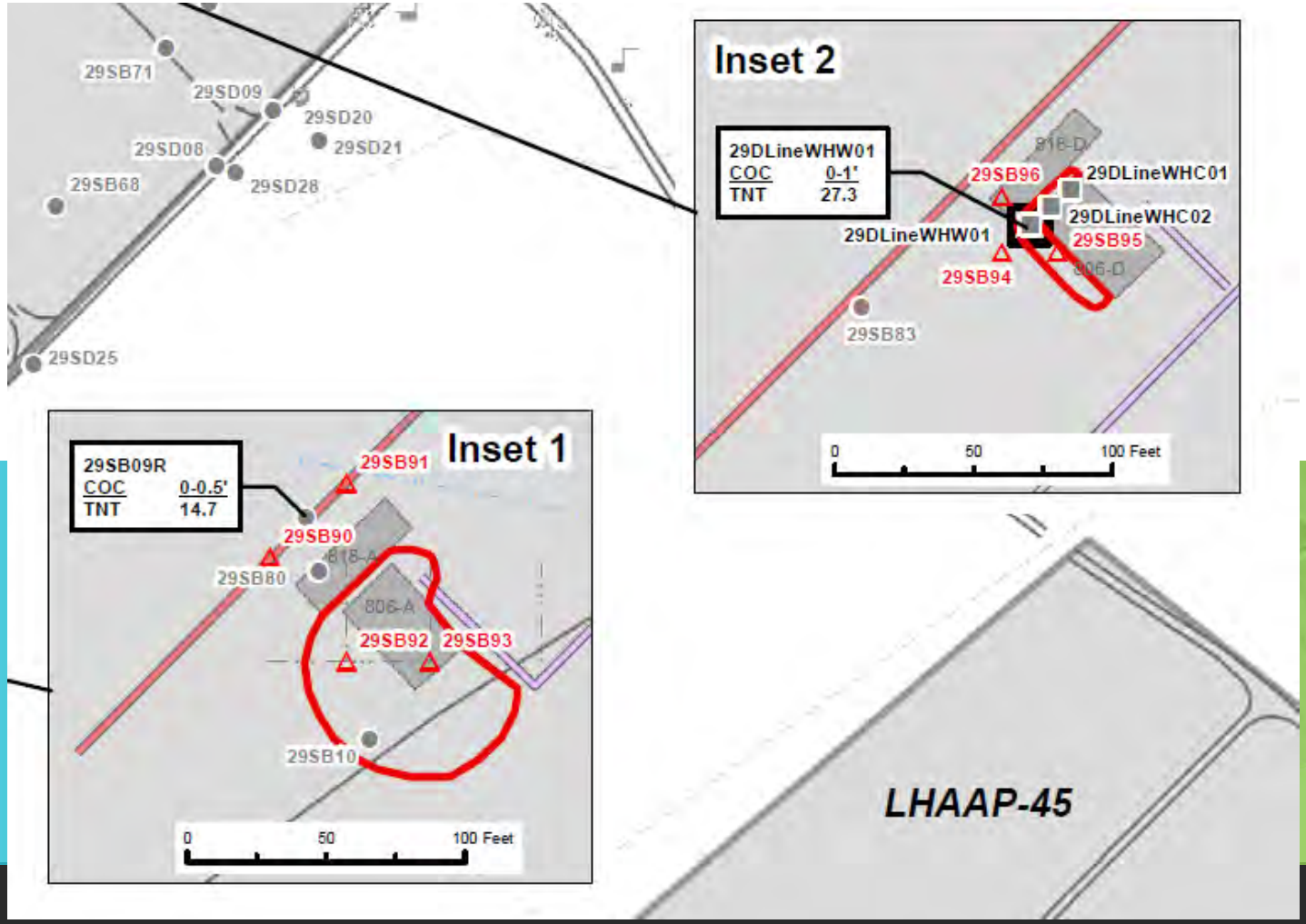
– LHAAP-29 Former TNT Production Area- Planned Soil Sampling





Status of Environmental Sites (cont)

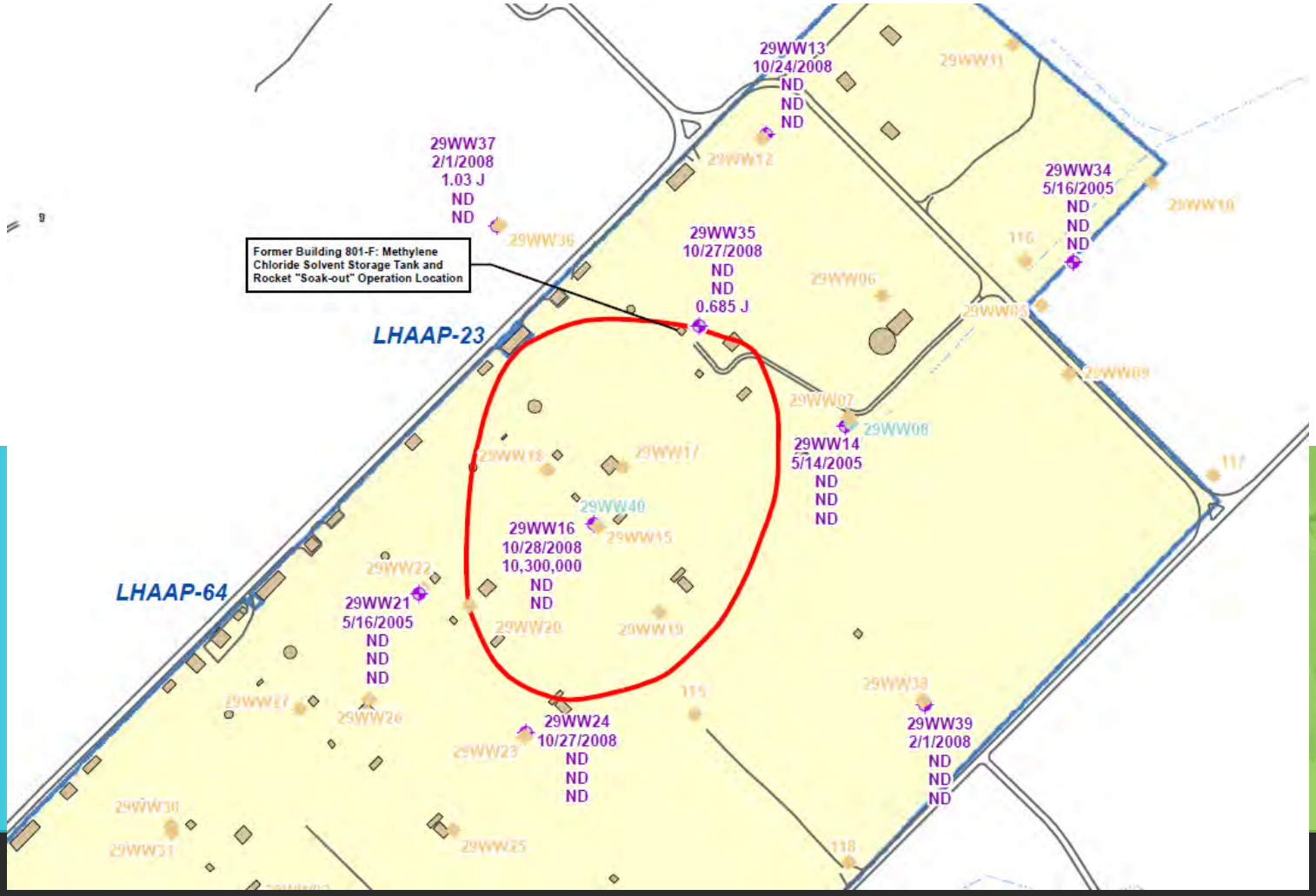
– LHAAP-29 Former TNT Production Area- Planned Soil Sampling (cont)



AECOM

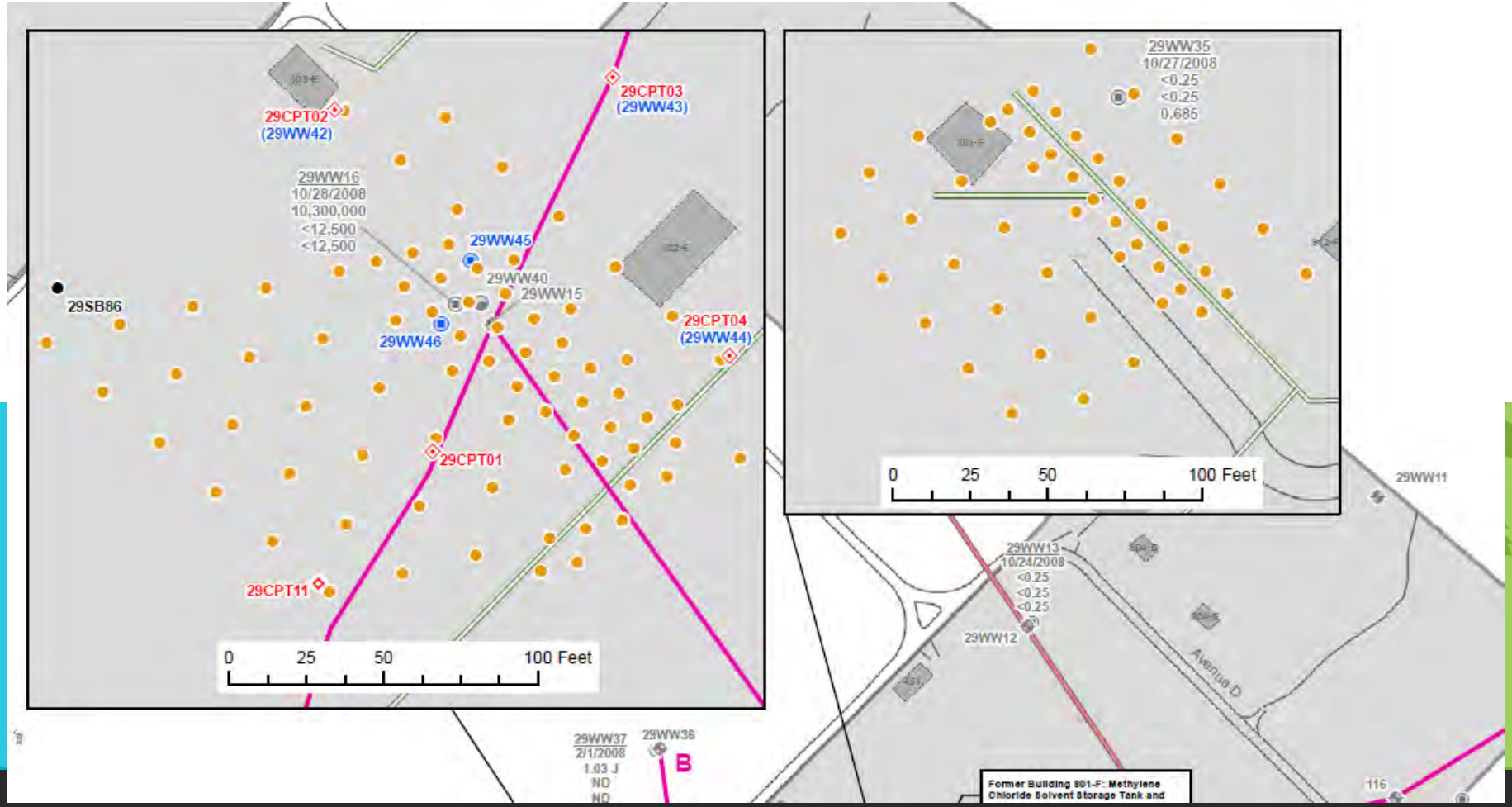
Status of Environmental Sites (cont)

– LHAAP-29 Former TNT Production Area- Methylene Chloride in Intermediate GW



Status of Environmental Sites (cont)

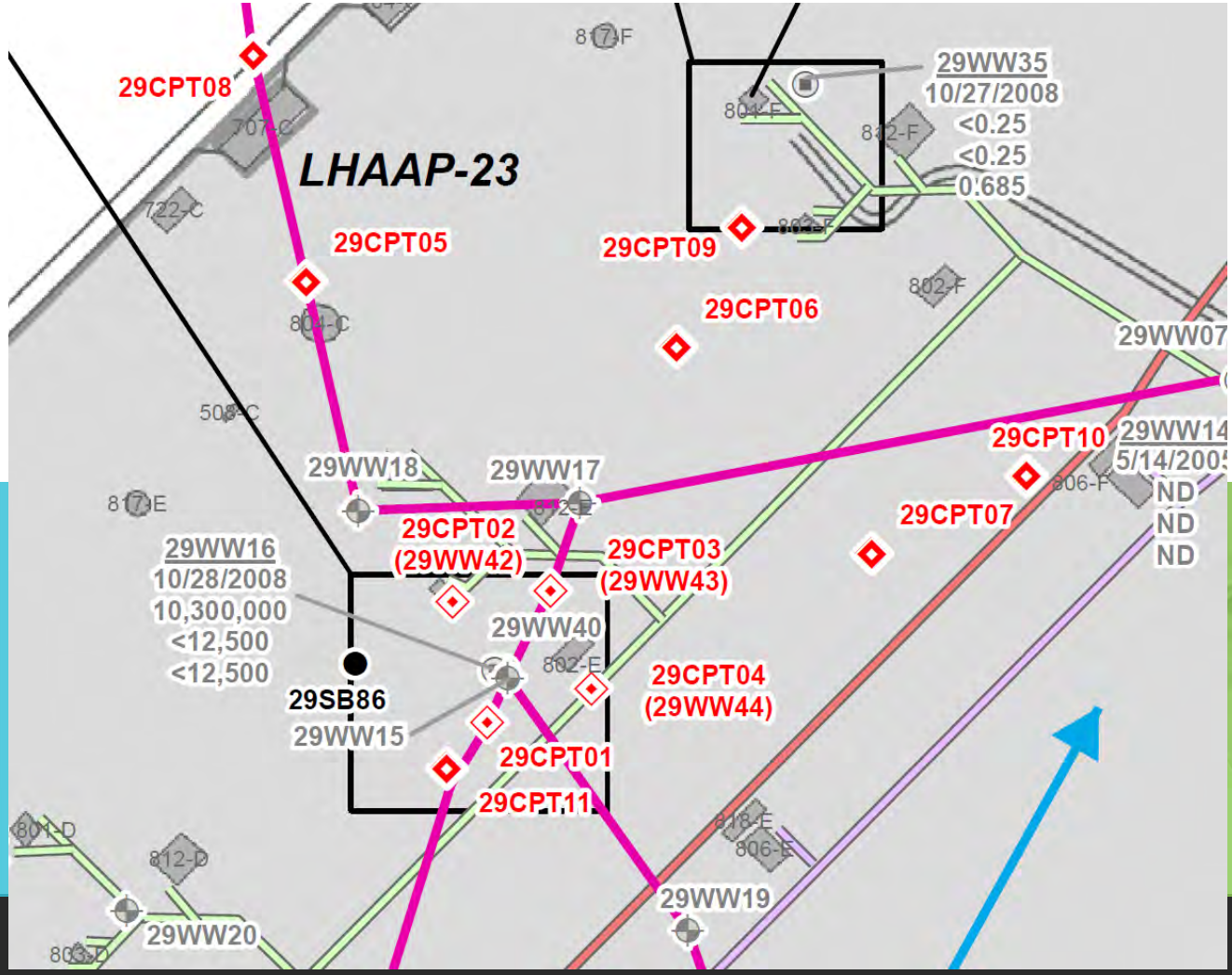
– LHAAP-29 Former TNT Production Area- Planned Soil Gas/Soil Sampling



AECOM

Status of Environmental Sites (cont)

– LHAAP-29 Former TNT Production Area- Planned Cone Penetrometer Testing



Groundwater Treatment Plant - Treated Groundwater Volumes

The amount of groundwater treated is determined by measuring the number of gallons of treated water returned to LHAAP-18/24, released to the INF Pond, or discharged to Harrison Bayou.

Treated Water Data

(in gallons)

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

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

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

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

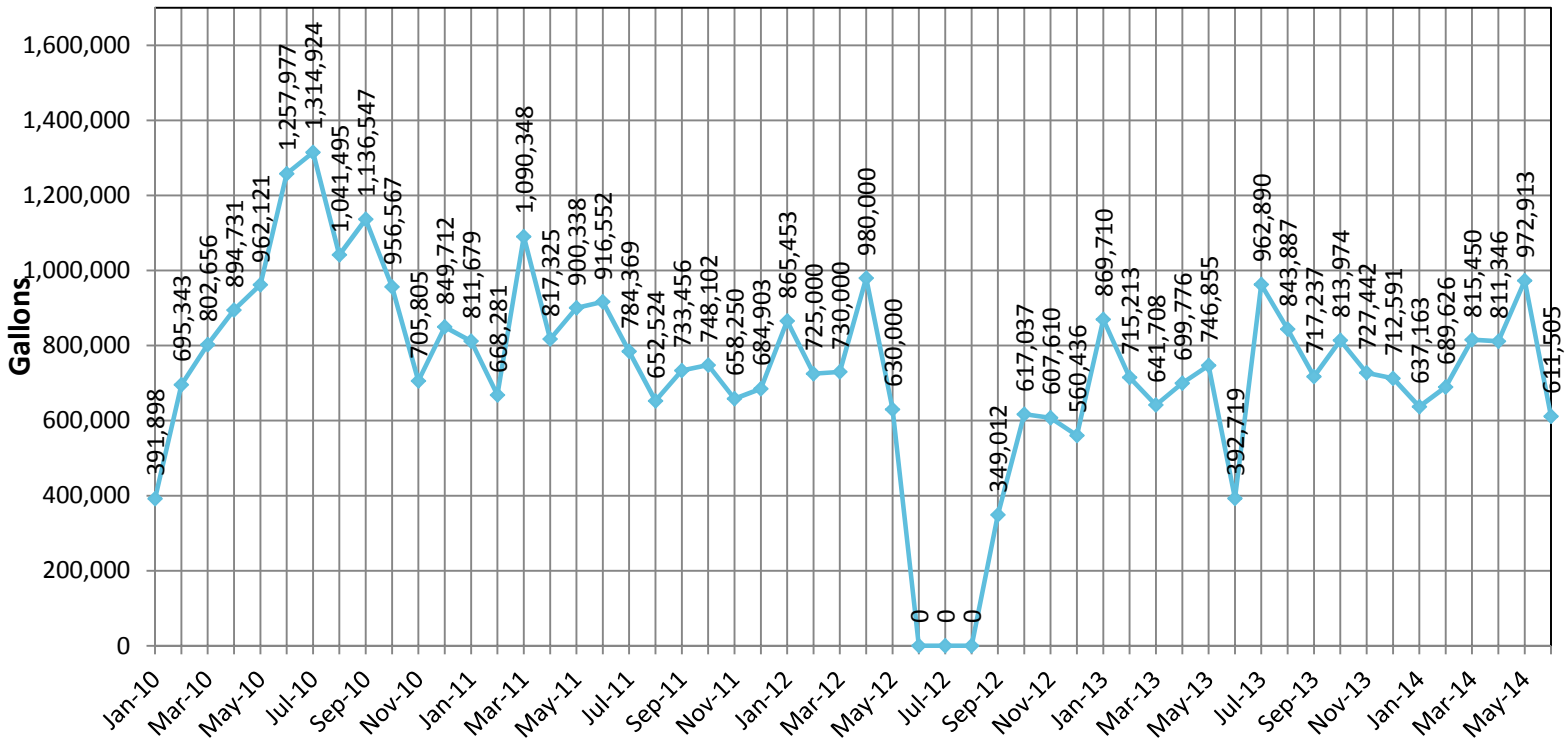
Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12
748,102	658,250	684,903	865,453	725,000*	730,000*	980,000*	630,000*	0	0	0	349,012

Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13
617,037	607,610	560,436	869,710	751,213	641,708	699,776	746,885	392,719	962,890	843,887	717,237

Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14
813,974	727,442	712,591	552,657	738,701	844,095	811,346	972,913	611,505

*Indicates Estimate

Figure ES-3
Water Treated Monthly from January 2010 through June 2014

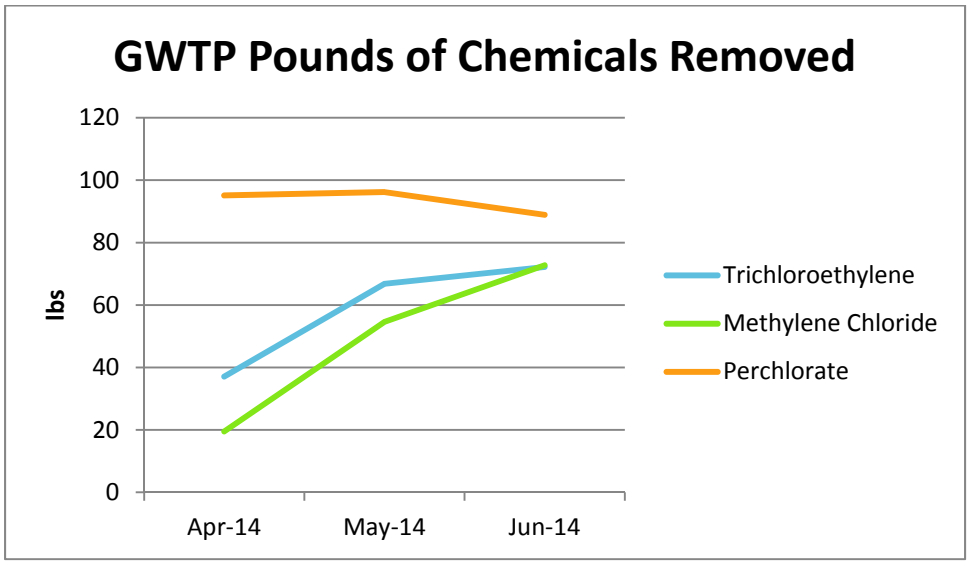


The pounds of chemicals removed for the 2nd Quarter of 2014 can be found below and are calculated by the following formula:

(GWTP Influent Contaminant Concentration [µg/L] x Volume [gallons] x 3.785 [liters per gallon])
(453,600,000 µg per pound)

Pounds of Chemicals Removed From LHAAP-18/24, 2nd Quarter 2014

	Trichloroethylene	Methylene Chloride	Perchlorate
Apr-14	37.1	19.48	95.1
May-14	66.8	54.59	96.2
Jun-14	72.2	72.76	88.9



Harrison Bayou and Goose Prairie Creek – Perchlorate Data

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

Historic Surface Water Sample Data
(in micrograms per liter)

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

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

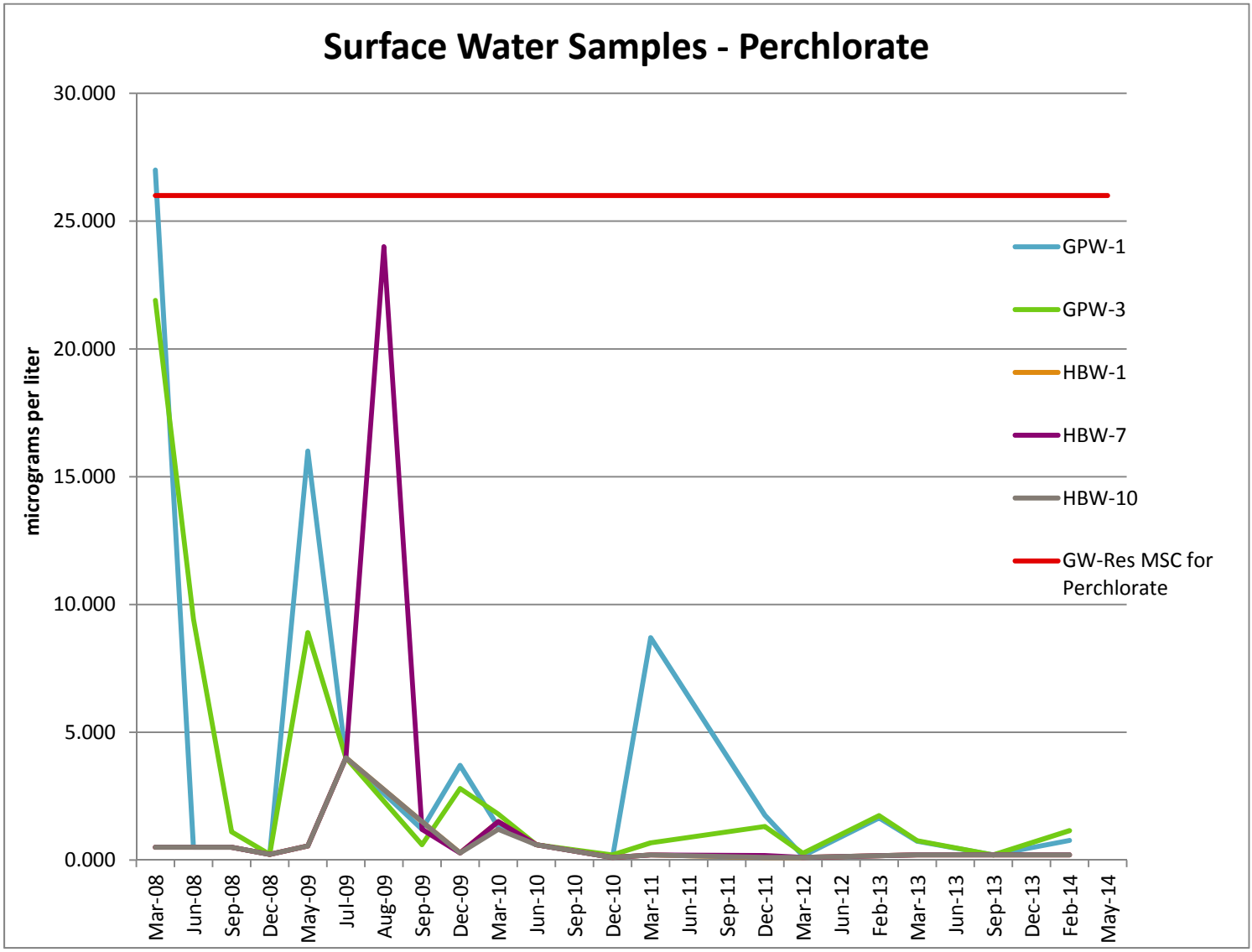
Quarter	1st	2nd	3rd	4th	2nd	3rd	3rd	3rd	4th	1st	2nd
Creek Sample ID	**Mar 2008**	**Jun 2008**	**Sep 2008**	**Dec 2008**	**May 2009**	**Jul 2009**	**Aug 2009**	**Sep 2009**	**Dec 2009**	**Mar 2010**	**Jun 2010**
GPW-1	27	<0.5U	<0.5U	<0.22U	16	<4U	NS	<1.2U	3.7	1.3J	<0.6U
GPW-3	21.9	9.42	1.1	<0.22U	8.9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

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

Quarter	2nd	3rd	4th	1st	2nd
Creek Sample ID	**Jun 2013**	**Sept 2013**	**Dec 2013**	**Feb 2014**	**May 2014**
GPW-1	dry	<0.2 U	dry	0.766	dry
GPW-3	dry	<0.2 U	dry	1.15	dry
HBW-1	<0.2U	<0.2 U	dry	<0.2U	dry
HBW-7	<0.2U	<0.2 U	dry	0.201J	dry
HBW-10	<0.2U	<0.2 U	dry	<0.2U	dry

Notes:

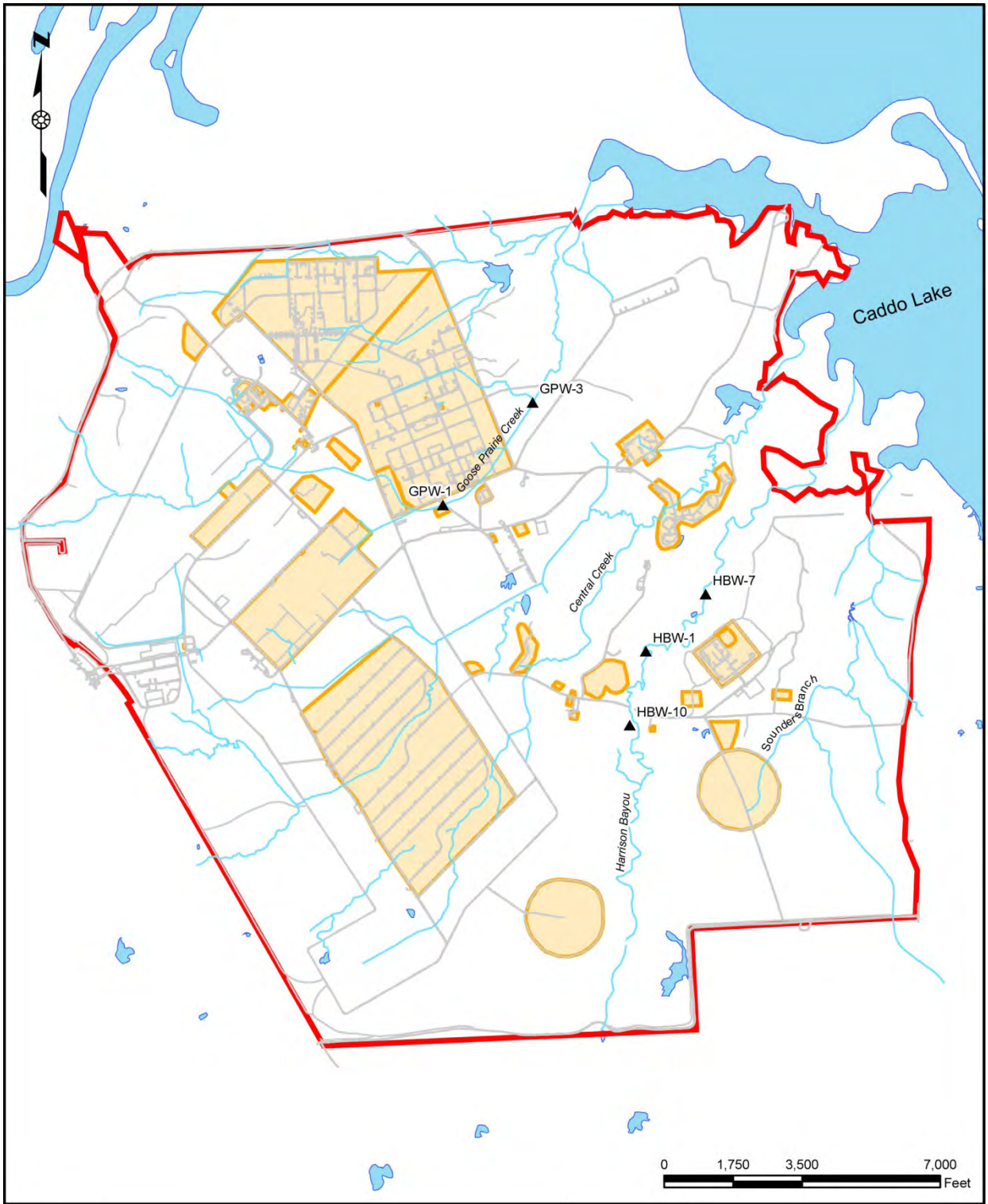
J	Estimated
U	Non-detect
NC	Not Collected
NS	Not Sampled
dry	Sampling location was dry
-	No historical data available



Notes:

Perchlorate Screening Criteria - TCEQ GW_{Res} (micrograms per liter) 26

Longhorn Army Ammuntion Plant Map with creek sampling locations.



Legend

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

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

SURFACE WATER SAMPLING LOCATION

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

LHAAP Perimeter Well Monitoring – Perchlorate Data

Groundwater samples are currently collected quarterly from six wells on the LHAAP perimeter.

Historic Perimeter Well Sample Data
(in micrograms per liter)

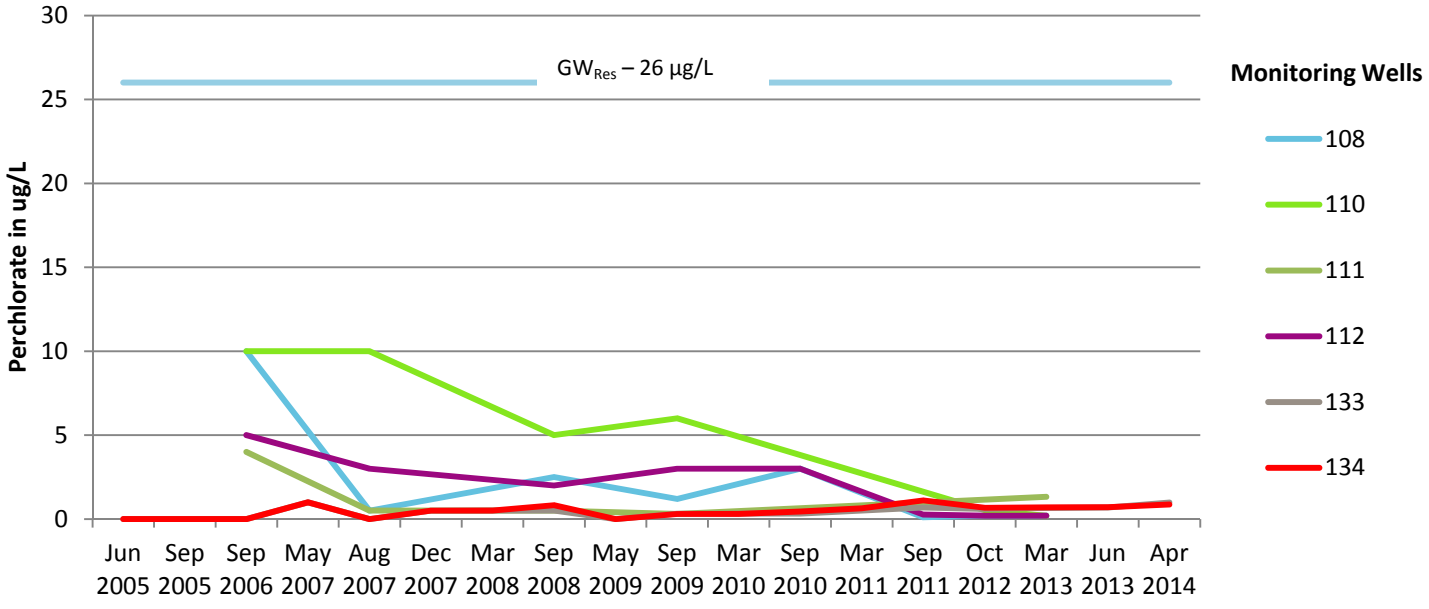
Well ID	June 2005	Sep 2005	Sep 2006	May 2007	Aug 2007	Dec 2007	Mar 2008	Sep 2008	May 2009	Sep 2009	Mar 2010
108	Dry	Dry	10 U	Dry	0.5 U	Dry	Dry	2.5 U	Dry	1.2 U	Dry
110	Dry	Dry	10 U	Dry	10 U	Dry	Dry	5.0 U	Dry	6 U	Dry
111	Dry	Dry	4 U	Dry	0.5 U	Dry	Dry	0.5 U	Dry	0.3 U	Dry
112	Dry	Dry	5 U	Dry	3 U	Dry	Dry	2.0 U	Dry	3 U	Dry
133	0.541	0.597	1.08	1 U	1.09	0.5 U	0.5 U	0.5 U	0.47 J	0.32	Dry
134	0.881	0.725	0.708 J	1 U	0.949 J	0.5 U	0.5 U	0.829 U	0.04 J	0.3 U	0.3 U

Well ID	Sep 2010	Mar 2011	Sep 2011	Oct 2012	Mar 2013	June 2013	Apr 2014
108	3 U	Dry	0.1 U	0.2 U	0.2 U	Dry	Dry
110	Dry	Dry	Dry	0.535	0.2 U	Dry	Dry
111	Dry	Dry	Dry	Dry	1.32	Dry	Dry
112	3 U	Dry	0.26	0.2 U	0.2 U	Dry	Dry
133	0.32	Dry	0.68	0.598	0.655	0.685	0.988
134	0.45	0.636	1.11	0.671	0.698	0.706	0.863

Notes:

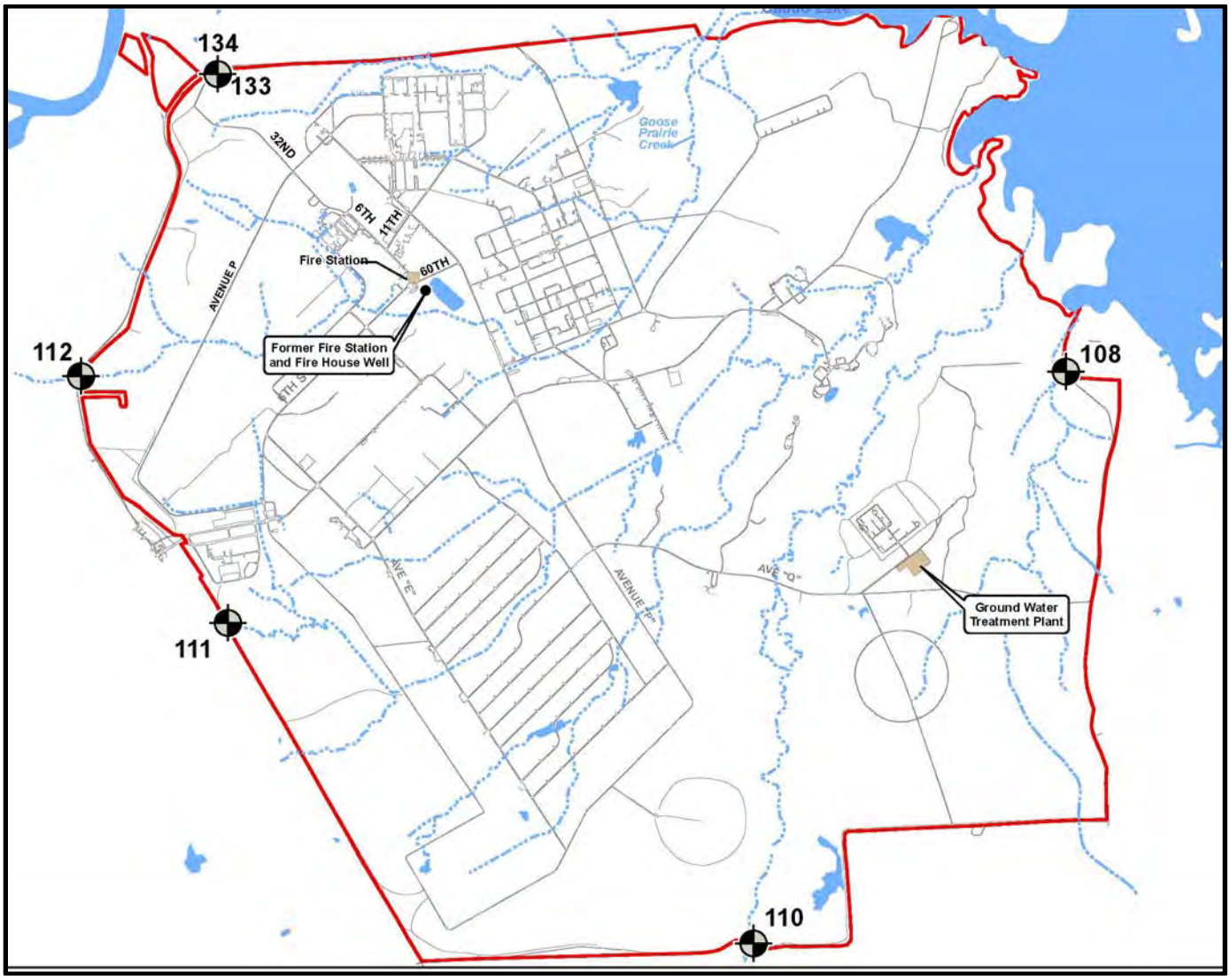
J	Estimated
U	Non-Detect
Dry	Well Dry

Perimeter Wells - Perchlorate



Note: Perchlorate Screening Criteria - TCEQ GW_{Res} (micrograms per liter) 26

Longhorn Army Ammuntion Plant Map with Perimeter Well Locations



AECOM

Subject:	**Final Minutes, Quarterly Restoration Advisory Board (RAB) Meeting, Longhorn Army Ammunition Plant (LHAAP)**
Location of Meeting:	**Karnack Community Center, Karnack, Texas**
Date of Meeting:	**November 20, 2014, 6:00 – 7:00 PM**

Meeting Participants:

LHAAP/BRAC:	Rose M. Zeiler
USACE:	Aaron Williams, Rick Smith
USAEC:	Robin Paul
AECOM:	Dave Wacker, Gretchen McDonnell
TCEQ:	April Palmie
USEPA Region 6:	Rich Mayer, Steve Tzhone, Janetta Coats, Kent Becher (USGS liaison)
USFWS:	Paul Bruckwicki, Jason Roesner
RAB:	**Present:** Paul Fortune, Carol Fortune, Judy Vandeventer, Judith Johnson, Tom Walker, Nigel Shivers, John Pollard, Jr., Lee Guice **Absent:** Ken Burkhalter, Robert Cargill, Charles Dixon, Ted Kurz, James Lambright, Pickens Winters, Richard LeTourneau, Terry Britt
Public:	Hilary & Jim Saunders, William Echols, Marla & Bruce Mestad, George Rice, CLI-TAG, Lee Eisenberg

An agenda handout for the RAB meeting, fact sheets on the Groundwater Treatment Plant performance, Harrison Bayou and Goose Prairie Creek and Perimeter Well data, LHAAP-46 Remedial Action Operations, and LHAAP-67 Remedial Action Operations in addition to a hard copy of the AECOM slide presentation were provided for the meeting.

Welcome and Introduction

Mr. Fortune called the meeting to order and introduced guests in attendance: Bruce and Marla Mestad, and Jim and Hilary Saunders.

Open Items – Dr. Rose Zeiler

RAB Administrative Issues

Minutes
The motion for approval of the August 2014 RAB meeting minutes was tabled until the next meeting to provide more time for RAB members to review.

Website Update
Dr. Zeiler encouraged the group to visit the "Longhorn Army Ammunition Plant, Environmental Restoration Program" website at longhornaap.com, and asked for feedback from meeting attendees. Ms. Coats asked how residents would be aware the website exists. Mr. Wacker advised that the website had been announced by public notice in Shreveport, Louisiana and Marshall, Texas newspapers, and the website link was sent to everyone on the LHAAP interested parties roster. Additionally, the website address has been provided and website described during the last few RAB meetings. Dr. Zeiler noted that the site contains interactive maps with site information and a calendar showing meetings and planned field work. The full administrative record is also accessible through the website. Minutes from each RAB meeting will be posted to the website after finalization. Mr. Wacker further described how to use the interactive site map feature to access information about each site.

Mr. Echols asked whether the LHAAP site map presented by Mr. Wacker depicted the property transferred to USFWS. Dr. Zeiler and Mr. Wacker stated there are differences between the LHAAP site map and land transferred to USFWS. Mr. Echols stated that it would be of interest to see the map showing the property that has been transferred to USFWS. Dr. Zeiler indicated Army would work on placing a map showing the transferred property on the website.

Remedial Action Underway Sites – Fact Sheets
Two of the sites being remediated using monitored natural attenuation (MNA) are far enough along where site fact sheets have been updated to provide current site status. Hard copies of the fact sheets were made available for the meeting. For these two sites, LHAAP-46 and LHAAP-67, a groundwater monitoring well network has been installed and four quarters of groundwater monitoring has been conducted. The fact sheets provide a site background, historical site use, an explanation of MNA and land use control boundaries. Remedial Action Operations reports describing the first year of operations at these two sites will be coming out in the next few months. Three other MNA sites (LHAAP-37, 50 and 58) will likely have fact sheets presented at the next RAB meeting.

Defense Environmental Restoration Program (DERP) Update – AECOM (Dave Wacker)

Preliminary Findings for LHAAP-18/24
Mr. Wacker began the DERP Update discussion, informing the group that the majority of field work has been completed at sites LHAAP-18/24 and LHAAP-29 since the last RAB meeting. He explained that LHAAP-18/24, also known as Burning Grounds Number 3 and the Unlined Evaporation Pond (where the Groundwater Treatment Plant is located), is comprised of

approximately 34.5 acres, with the primary contaminants of concern (COCs) being: perchlorate, VOCs (TCE and MC) and metals. The interim remedy in place involves extraction and treatment of COC-impacted groundwater.

Two primary contamination source areas (areas with Dense Non-Aqueous Phase Liquid, or DNAPL) have been identified within groundwater at LHAAP-18/24: the Air Curtain Destructor area and the Unlined Evaporation Pond area. A prime objective of the Summer 2014 field work was to further delineate the extent of contaminant source material in groundwater in these two areas, providing an increased level of confidence in the size of the DNAPL source material areas requiring remediation for both locations.

In the Unlined Evaporation Pond area, this most recent investigation used a grid pattern sampling technique to identify the area of DNAPL source material as somewhat larger than previously estimated. Footprints of the pre-investigation estimated footprint and the post-investigation delineated footprint were presented by Mr. Wacker for comparison.

In the Air Curtain Destructor area, pre-investigation footprint of contamination source material in groundwater was estimated at 300 feet x 200 feet in area. Summer 2014 investigation indicated the source material area is actually significantly smaller, at approximately 70 feet x 70 feet in horizontal dimension, with a shallow depth range of approximately 30 feet to 50 feet below ground surface.

Treatability Studies for LHAAP-18/24 and LHAAP-29

Mr. Wacker explained that treatability studies are used to do small-scale evaluations of the effectiveness of potential different remedies at LHAAP-18/24 and LHAAP-29. Thermal treatability testing, in-situ microcosm testing, bench-scale microcosm testing, emulsified zero valent iron microcosm testing and zero-valent iron microcosm testing are being utilized. "Microcosm" testing uses material (soil and groundwater) collected from the contaminated area to set up a laboratory experiment where remedy effectiveness can be observed. Ms. McDonnell provided explanation and a summary of the preliminary results of treatability study work conducted at LHAAP-18/24.

Ms. McDonnell explained that one of the technologies to remediate subsurface contaminants is thermal treatment; essentially heating up the subsurface materials to break the chemical bonds within the contaminant molecules, thereby breaking down the contaminant. Treatability testing related to thermal treatment consisted of testing both groundwater and soil to estimate the amount of energy it might take to heat the subsurface to a temperature where contaminant bonds could be broken. While the testing done for LHAAP-18/24 indicated thermal treatment could be used, the critical part of the data relates to the estimate of energy required to complete thermal treatment. This information will assist in developing implementation details and cost estimates for remediation by this method, for comparison against other potential remedial methods.

In-Situ microcosm testing is done with devices called "bio-trap" passive samplers. The bio-traps are three-piece assemblies lowered into the screened interval of existing monitoring wells, and allowed to reside in the well for a period of time. For Longhorn sites, biotraps were

left in place for 60 days to collect information on how much the naturally-occurring microbes are doing to breakdown the contaminant. Each segment of the assembly examines conditions that are slightly different. The first segment delivers additional food to naturally-occurring microbes in the form of emulsified vegetable oil and collects information on how well the contaminant is degraded by the microbes in that segment. A second segment contains a material that releases oxygen into the groundwater and collects information on how well the contaminant is degraded under those conditions; the third segment simply collects information on natural microbial action without any additional food or oxygen sources. When retrieved after 60 days, the materials from these samplers are collected and analyzed in a laboratory. This type of study provides information on whether natural populations of microbes in the contaminated area are sufficient to break down the contaminants and how the microbes respond to different food source and oxygen level conditions. Preliminary results of this study indicate LHAAP-18/24 has favorable conditions for bioremediation.

Bench-scale microcosm testing is conducted in a laboratory, but uses soils and groundwater collected from the site to create experiments that determine the optimal mix of microbes, food sources and other amendments needed to apply to the site to do the best job of degrading the contamination.

Zero-valent iron and emulsified zero-valent iron are clean-up technologies which rely on the electron transfer between iron metal shavings/particles and the contaminant molecules to destroy the contaminant. Electron transfer from the iron metal puts excess energy into the contaminant molecules, breaking the chemical bonds within molecules, thereby breaking down the contaminant. Zero-valent iron remediation often consists of a "wall" of iron filings installed in the subsurface that, when contaminated groundwater passes through it, breaks down the contaminant molecules through electron transfer. Emulsified zero-valent iron consists of very small particles of iron suspended in an emulsion that can be injected to spread throughout the subsurface. The LHAAP-18/24 testing indicated zero-valent iron was effective in breaking down contaminants of interest, but that emulsified zero-valent iron was not.

Mr. Wacker stated that all the treatability study information will be included in reports prepared for each site.

Mr. Walker asked how fast the bacteria work to degrade the contamination. Mr. Wacker explained that Army has done similar microcosm testing work prior to implementing in-situ bioremediation at LHAAP-58, injecting both the "food" amendment and bacterial inoculation to work to degrade the contaminants. In that treatability testing, the concentrations of contaminants used were completely degraded within 60-90 days, but those results are not directly applicable to the pace of remediation in the field due to various factors, including the potential presence of residual DNAPL source that will continue to release contaminants for some time. Dr. Zeiler feels it will be a fairly long time to achieve clean-up on the sites with DNAPL, on the order of decades.

Mr. Walker asked whether there is natural occurring zero-valent iron at the site that could be acting to degrade the contaminants. Ms. McDonnell stated that there are iron oxides and iron oxyhydroxides in the subsurface soils at the site, but that the valence "charge" (energy

available for breaking contaminant molecule bonds) on those iron-containing materials is different than that provided by zero-valent iron metal.

Preliminary Findings for LHAAP-29

Mr. Wacker summarized that the primary issue at LHAAP-29 is intermediate zone groundwater impacted by VOCs. The estimated pre-investigation LHAAP-29 groundwater source (DNAPL) area footprint and the post-investigation delineated footprint were presented for comparison. The extensive investigation work done this summer revealed the actual extent of the groundwater DNAPL source area requiring remediation is much smaller than previously estimated, with a size of approximately 150 feet x 100 feet. Treatability tests have been performed for LHAAP-29 (thermal treatment and aquifer pumping test) with additional treatability testing (bio-trap) in progress.

Of note, during these activities, the subsurface was found to be comprised of a highly consolidated fine-grained material which was difficult to drill, and was impossible to investigate utilizing the planned CPT method. This material also was found to have very limited sustained groundwater production (~0.5 gallon per minute) during aquifer testing.

Monitored Natural Attenuation (MNA) Sites (LHAAP-46, 50, 58 and 67)

Groundwater monitoring is underway at these sites. Land Use Controls with agency concurrence are in place for LHAAP-46 and 67. Mr. Wacker showed maps of both sites depicting the LUC area (groundwater use restriction) and the plume footprints. Development of LUC boundaries and obtaining agency concurrence is underway for the three remaining MNA sites.

GWTP Update

Mr. Wacker advised that treated water from LHAAP-18/24 and LHAAP-16 sites continues to be returned to LHAAP-18/24 through the sprinkler system, or to Harrison Bayou when sufficient flow is present. (The INF Pond is present as a holding pond for treated water should neither of those options be available.) Due to the current lack of flow in the bayou, water is being discharged back to the ground surface of LHAAP-18/24 via the sprinkler system; this has been the case for approximately the last six months. The GWTP handout now includes a table to show how treated water is being discharged (returned to the site by sprinkler system, discharged to Harrison Bayou, or discharged to INF Pond).

Mr. Wacker stated that another round of LHAAP-18/24 compliance sampling of the well field will be conducted in December 2014.

Air emission monitoring for the GWTP has recently been reduced from monthly to quarterly events. Air monitoring had been conducted on a weekly basis for a year without any result approaching any limit/standard. Monitoring was subsequently reduced to monthly after that first year, and was just recently further reduced to quarterly based on no indication of air emissions issues over a long period of intensive observation and data collection.

GWTP O&M is ongoing. Pumps in three ICTs were recently replaced.

Surface Water and Perimeter Well Sampling
Although there has been some rainfall over the last quarter, it has been insufficient to produce flowing water for sampling at the surface water sampling locations. Hard copy handouts showing surface water and perimeter well sampling results were available during the meeting.

Other Environmental Restoration Issues – Rose Zeiler

Site LHAAP-37 Bioplug Demonstration
Mr. Wacker briefed that the final sampling round for the bioplug technology demonstration was conducted in October 2014, and the study was coming to an end. Dr. Zeiler explained that the technology consisted of automated feeding of oxygen and nutrients for aerobic bacterial degradation within a treatment area, but it did not perform well enough to consider extending the study or use of the technology. The system is in the process of being dismantled and removed.

Mr. Walker asked whether the type of bacteria needed for biodegradation are already present in LHAAP soils. Dr. Zeiler stated that Dehalococcoides is the typical bacteria used for anaerobic degradation. Mr. Wacker advised that Dehalococcoides has not typically been present for the sites where AECOM has looked for it, but Dr. Zeiler stated that this likely varies from site to site. As an example, LHAAP-67 has apparent contaminant degradation occurring without any augmentation of the bacterial population, suggesting that Dehalococcoides populations are naturally-occurring.

Because the Bio-Plug Technology demonstration was an aerobic system, the aquifer must return to anaerobic conditions before monitoring for the MNA remedy can be initiated. AECOM will conduct the monitoring to determine when the aquifer has returned to anaerobic baseline conditions.

Dispute Status Update
Mr. Wacker presented the list of sites where forward progress has stopped due to the dispute between EPA and Army. Mr. Fortune asked for an update on the dispute from each side of the dispute, Army and EPA.

EPA Update by Mr. Mayer. The EPA Administrator provided her decision on October 31, 2014, and Mr. Mayer had distributed to the RAB the 34-page Administrator's decision letter to the RAB members by email. In summary, the dispute involved LHAAP-16, LHAAP-17 and the two munitions sites, and related to three groundwater contaminants: manganese, nickel and perchlorate. There were three issues.

1. Should groundwater be remediated to residential standards or industrial standards? Army felt industrial drinking water standards were appropriate, while EPA maintained residential drinking water standards applied.
2. Use and duration of land use controls at sites with contamination.
3. Stipulated penalty assessed against Army.

The EPA Administrator's decision agreed with the earlier Regional EPA Administrator's decision which had been appealed by Army, and provided Army with 21 days to provide revised RODs meeting the requirements of the decision.

Mr. Fortune asked Dr. Zeiler what Army's response would be, as the deadline for response is tomorrow.

Army Update by Dr. Zeiler. Dr. Zeiler stated Army is reviewing the EPA Administrator's decision, but she did not have information on Army's planned response.

On the topic of groundwater remediation to residential or industrial standards, Dr. Zeiler stated that it appeared that EPA shifted from accepting RODs using the Texas Risk Reduction Rules (RRR) industrial standards under which Longhorn is grandfathered to requiring that Longhorn use the Texas Risk Reduction Program (TRRP) clean-up standards because the TRRP residential was closer to EPA's Health Advisory Level (HAL). However, the EPA HAL is not a promulgated standard and cannot be used as a basis for selection of clean-up goals. (No perchlorate MCL exists because peer review of the EPA's proposed 15 µg/L MCL indicated the risk calculations/scientific basis did not support the MCL value.) Dr. Zeiler stated that implementing the EPA Administrator's decision uses the EPA HAL (not a promulgated standard and not subjected to proper scrutiny) as a basis to justify use of the TRRP residential remediation goals, and results in moving LHAAP out of one Texas environmental program into another, with significant potential schedule impacts.

Mr. Tzhone stated that the issue with use of the industrial vs. residential remediation goals is that there is currently no Federal MCL, and that TCEQ has two standards (residential or industrial) that could be applied. Mr. Tzhone gave an example of the groundwater issue, using an analogy of a highway without a federal speed limit but two Texas speed limits. Mr. Tzhone stated that EPA will require all sites involving contaminants without MCLs to meet residential groundwater standards, regardless of what has been used as a remediation goal in the past and regardless of the land use of the site being examined.

Mr. Fortune asked that, if the EPA thinks this is the final decision, does Army acknowledge and agree. He further stated that there was a statement made by Tom Lederle during his last RAB visit that there may be another level of appeal for Army beyond the EPA Administrator. Dr. Zeiler stated that, under the FFA, the EPA Administrator's decision is the final decision. Mr. Tzhone agreed and stated that anything else is outside of the FFA process.

Mr. Echols stated he would like to see all of LHAAP turned over the USFWS as soon as possible, and this dispute impacts what "as soon as possible" means. He said that he understands there are two Texas remediation standards, industrial and residential, that relate to how clean the water has to be to say remediation is complete. Dr. Zeiler clarified that the State of Texas has two environmental programs, and that LHAAP is grandfathered into the older program, the Texas Risk Reduction Rule. Using Mr. Tzhone's speed limit analogy, Mr. Echols stated that sometimes the speed limit should be 55 and sometimes it should be 90. He feels the State of Texas is driving the use of residential groundwater standards. Ms. Palmie responded that State of Texas is not driving the remediation standards set forth in the EPA

Administrator's decision. Mr. Echols continued, asking why Army is being forced to remediate to a residential drinking water standard when the land will never be used for residential purposes?

Mr. Tzhone responded that transfer of land to USFWS is not contingent upon completion of the clean-up, so land could be transferred to USFWS before remediation is complete. He stated the decision whether to transfer land or any contaminated properties before completion of full remediation was a matter between USFWS and Army, but he felt the decision on groundwater clean-up levels was not a factor in whether land is or has been transferred to USFWS.

Mr. Echols asked again why EPA wants residential standards applied when the land will never be used as residential. Mr. Tzhone answered that EPA has a policy to restore groundwater to its highest beneficial use. The classification of groundwater here at LHAAP via the Texas classification process is Class II or "potential drinking water", so it must be remediated to that beneficial use, which requires achievement of the residential standards. Dr. Zeiler asked Mr. Tzhone why EPA changed course in October 2011, when they had previously signed five RODs indicating satisfaction with Risk Reduction Rule industrial groundwater remediation standards. Mr. Tzhone stated that the issue was likely recognized at a particular point in time, and that discovery drove the change in policy.

Mr. Fortune introduced Mr. George Rice as a technical resource funded by EPA through Caddo Lake Institute to keep the public informed on the LHAAP remediation, and asked for Mr. Rice's opinion on the EPA Administrator's decision. Mr. Rice stated that he did not have an opinion on the decision, but asked if, when the EPA finalizes development of the perchlorate MCL, will the question of what standard to follow be settled? Dr. Zeiler stated that, yes, Army follows the law, which includes MCLs (because MCLs are promulgated legal standards). She elaborated to say that Army is currently following the law with respect to perchlorate, State of Texas law, which is the law that all the FFA parties agreed to and under which Army has been conducting work since 2000. Army must follow State of Texas law regarding perchlorate because there is no Federal MCL (MCL of 15 µg/L proposed by EPA was withdrawn due to lack of scientific basis).

Mr. Rice then asked, if Army cleans up sites to state standards, but EPA develops a MCL that is lower, would Army have to go back and do more remediation? Both Dr. Zeiler and Mr. Tzhone responded that Army would likely be required to do more remediation. Dr. Zeiler stated protectiveness of the remedies are evaluated every 5 years during the CERCLA 5-year review process and a new MCL being issued could result in a determination that the remedy is no longer deemed adequately protective. At the point a determination is made that the remedy is no longer considered adequately protective, additional remediation work would have to be undertaken to reestablish a protective remedy. Mr. Mayer stated that state standards are typically the same as the MCL. Ms. Palmie added that Texas will not typically have a separate state standard if a MCL has been developed, and seldom would have a clean-up more protective than a MCL.

Dr. Zeiler asked Mr. Tzhone if the EPA Administrator's decision to require that Longhorn use the TRRP groundwater cleanup standards rather than the RRR groundwater cleanup standards puts Army in the position of essentially starting over on the site work, requiring all data to be screened against TRRP standards? Mr. Tzhone stated that there is an obligation to meet the residential groundwater standards regardless of what work was done historically. Dr. Zeiler noted that the EPA Administrator's decision effectively moves Longhorn from regulation under the RRR where a refuge is viewed as industrial to regulation under the TRRP where a refuge is considered equivalent to residential. As well, she advised the use of TRRP standards at this time would require rescreening of all historical data against the lower residential standards. Additionally, there will be changes to the risk evaluation work, as the existing risk work used an industrial land use scenario (suitable for future land use as a wildlife refuge per the RRR that has applied to Longhorn since the start of the environmental remediation work). Mr. Tzhone stated that, yes, data for all constituents without a MCL would need to be rescreened against TRRP residential standards. Dr. Zeiler noted that, although MCLs apply only to groundwater, some of the EPA Region VI comments on this subject refer to screening data against all residential TRRP standards, not just those standards for groundwater. She asked whether the EPA Administrator's decision regarding applicability of TRRP residential standards was intended to apply to soils as well as groundwater? Mr. Tzhone stated that the EPA Administrator's decision states that TRRP residential groundwater regulations will be used as the clean-up levels, so it is a groundwater issue at this time. Dr. Zeiler stated that, by switching the Texas program LHAAP is regulated under (from RRR to TRRP) rescreening of data may result in groundwater plumes that were not at issue previously. Dr. Zeiler summarized that the impact of the EPA Administrator's decision will be a significant schedule reset for the Longhorn remediation program.

Mr. Echols restated his question asking why a piece of land owned by the Federal government, that will continue to be owned by the Federal government, and will never be used for residential development is being held to residential groundwater remediation standards. Mr. Tzhone stated that there is a separate objective for remediation of groundwater (to restore it to highest beneficial use) that drives this decision. Mr. Echols asked if this policy is being applied across the board to all states. Mr. Tzhone stated that this is a national policy and the intent is for the policy to be applied across the board to all states. Dr. Zeiler noted that application of this policy is being driven by EPA Health Advisory Levels (HALs) that are not laws, and have not been subjected to either public scrutiny or evaluation by the scientific community. As such, this is a precedent setting case.

Mr. Echols stated that 6 years ago the community was in a major fight over whether Longhorn would be turned over to USFWS as a refuge or developed into an industrial park. He then asked, if the community had allowed the land to be used as an industrial park, would Army have been able to transfer this land? Mr. Tzhone stated Army would have been able to transfer the land in that scenario but, because the land transfer is not directly related to the groundwater clean-up standards, he feels there is nothing prohibiting Army from transferring the land to USFWS now.

Mr. Eisenberg said that, with water resources being scarce, it's probably only a matter of time before there is a need to use this water. Dr. Zeiler stated that the shallow water at Longhorn

would not be a desirable resource, and that the fine-grained aquifer materials result in water production rates so low as to be unfeasible for development. Mr. Tzhone advised that future land use is a separate issue and does not drive groundwater remediation goals; the only thing driving groundwater remediation goals is restoration of the water to highest beneficial use, of which the groundwater is designated "potential drinking water" via the Texas groundwater classification process. Dr. Zeiler said the problem with this approach is that the groundwater clean-up goals EPA wants to use are not driven by a promulgated standard that has been subjected to public review and scientific scrutiny, but driven by an unpromulgated HAL that was developed internally by EPA without outside validation.

Mr. Echols summarized that, regardless of whether industrial and residential standard is applied, it is going to be a very long time before the groundwater at Longhorn is completely remediated.

Mr. Mayer commented that EPA is working on development of a perchlorate standard, and has been working on it for many years. Although the first proposed perchlorate MCL of 15 µg/L was withdrawn due to lack of scientific basis, a new proposed perchlorate standard is anticipated next year. Ms. Palmie stated that work has not completely stopped at Longhorn in the absence of the perchlorate standard. Although Army and EPA have a dispute, it is at a high level in those organizations; the "local" Longhorn Army, EPA and TCEQ team members have continued to work together on everything that can possibly be moved forward.

Dr. Zeiler asked Ms. Palmie if other Federal perchlorate sites in Texas currently regulated under the RRR will now have to follow the new requirements set forth by precedent in the EPA Administrator's decision on Longhorn. Ms. Palmie stated that application of this policy to other Federal perchlorate sites in Texas will have to be evaluated as the Longhorn situation continues to develop.

Mr. Fortune advised the attendees that Mr. Rice will be available for a question and answer session after the RAB meeting is adjourned.

Upcoming Field Work, Meetings and Documents

Quarterly sampling at the MNA sites is ongoing and compliance sampling at LHAAP-18/24. Compliance reporting is underway on a number of sites. Mr. Wacker noted that LHAAP-29 and LHAAP-18/24 are the most contaminated sites and the fact that we are getting closer to having Feasibility Studies to move them forward is a positive thing.

Schedule

The next RAB meeting is scheduled for February 19th from 6:00PM to 7:30PM at the Karnack Community Center.

Adjourn

November Meeting Attachments and Handouts:

- *Meeting Agenda*
- *AECOM PowerPoint Presentation*

- *GWTP Treated Groundwater Volumes Handout*
- *Surface Water Sampling Results Handout*
- *LHAAP Perimeter Well Sampling Results Handout*
- *LHAAP-46 Remedial Action Operation Fact Sheet*
- *LHAAP-67 Remedial Action Operation Fact Sheet*

Acronyms

AECOM	AECOM Technical Services, Inc.
BRAC	Base Realignment and Closure
CERCLA	Comprehensive, Environmental Response, Compensation, and Liability Act
CLI	Caddo Lake Institute
COC	Contaminant of Concern
CPT	Cone Penetrometer Testing
DERP	Defense Environment Response Program
DNAPL	Dense Non-Aqueous Phase Liquid
FFA	Federal Facility Agreement
GWTP	Groundwater Treatment Plant
HAL	Health Advisory Level
ICT	interceptor-collector trench
INF	Intermediate-Range Nuclear Forces
ISB	In-Situ Bioremediation
LHAAP	Longhorn Army Ammunition Plant
LNAPL	Light Non-Aqueous Phase Liquid
MNA	Monitored Natural Attenuation
MC	Methylene Chloride
MCL	Maximum Contaminant Level
O & M	Operation and Maintenance
RAB	Restoration Advisory Board
ROD	Record of Decision
RRR	(Texas) Risk Reduction Rule
TAG	Technical Assistance Grant
TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
TRRP	Texas Risk Reduction Program
USACE	United States Army Corps of Engineers
USAEC	United States Army Environmental Center
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
µg/L	micrograms per liter
VOC	volatile organic compound

LONGHORN ARMY AMMUNITION PLANT
RESTORATION ADVISORY BOARD
Karnack, Texas
(479) 635-0110

AGENDA

DATE: Thursday, November 20, 2014
TIME: 6:00 – 7:30 PM
PLACE: Karnack Community Center, Karnack, Texas

06:00 Welcome and Introduction

06:05 Open Items {RMZ}
- RAB Administrative Issues
- Minutes
- Website
- Remedial Action Underway Sites – Fact Sheets

06:15 Defense Environmental Restoration Program (DERP) Update {AECOM}
- Preliminary Findings LHAAP 18/24, LHAAP 29
- MNA Site Updates (LHAAP-46, 50, 67)
- Groundwater Treatment Plant (GWTP) Update
- Surface Water and Perimeter Well Sampling

07:15 Other Environmental Restoration Issues {RMZ}
- Bioplug Demonstration at LHAAP-37
- Dispute Status Update

07:20 Next RAB Meeting Schedule and Closing Remarks

07:30 Adjourn {RMZ}

Longhorn Army Ammunition Plant Restoration Advisory Board Meeting November 20, 2014

AECOM Environment

Agenda

DATE:	Thursday, November 20, 2014
TIME:	6:00 – 7:30 PM
PLACE:	Karnack Community Center, Karnack, Texas

06:00 Welcome and Introduction

06:05 Open Items {RMZ}
- RAB Administrative Issues
- Minutes
- Website
- Remedial Action Underway Sites – Fact Sheets

06:15 Defense Environmental Restoration Program (DERP) Update {AECOM}
- Preliminary Findings LHAAP 18/24, LHAAP 29
- MNA Site Updates (LHAAP-46, 50, 67)
- Groundwater Treatment Plant (GWTP) Update
- Surface Water and Perimeter Well Sampling

07:15 Other Environmental Restoration Issues {RMZ}
- Bioplug Demonstration at LHAAP-37
- Dispute Status Update

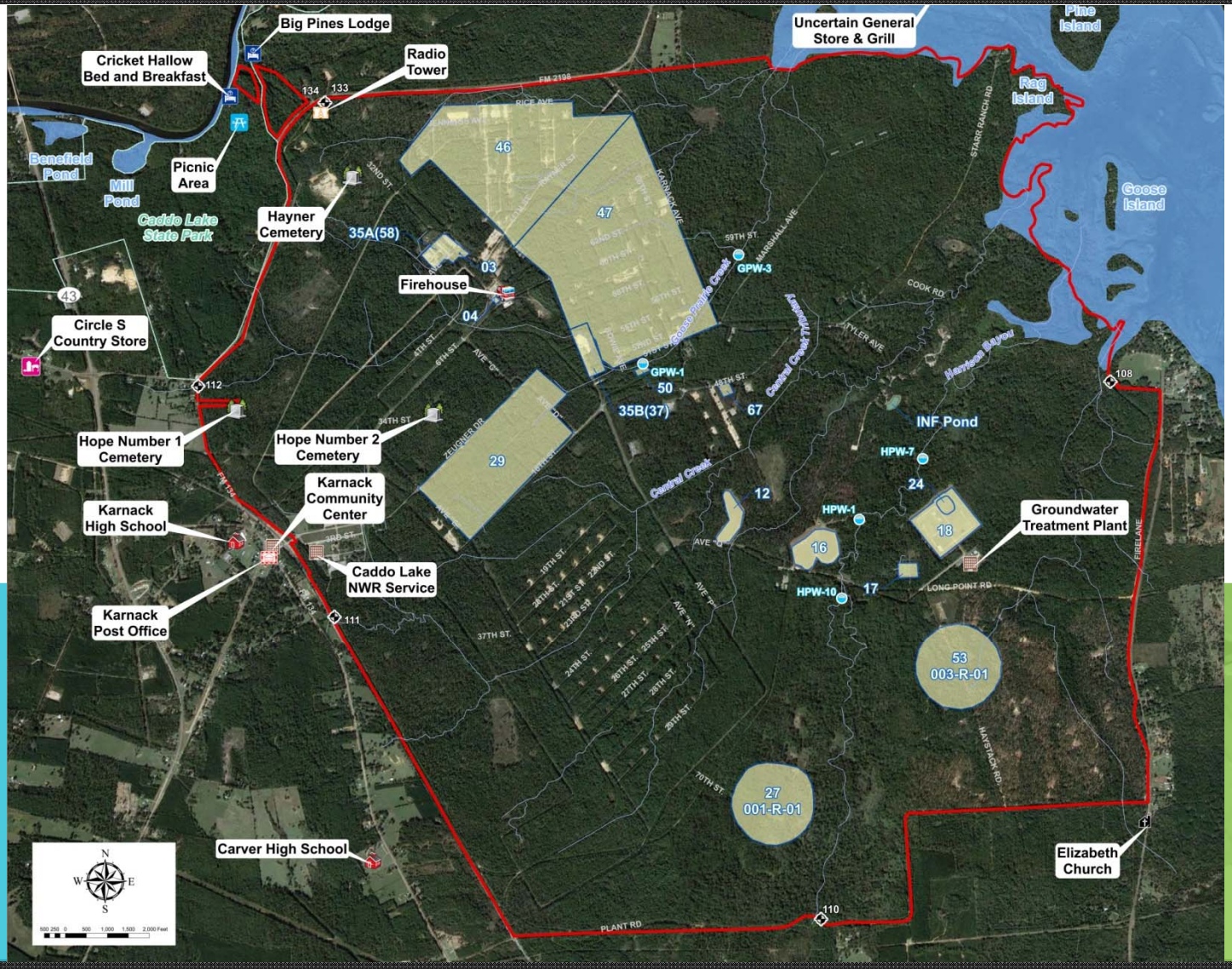
07:20 Next RAB Meeting Schedule and Closing Remarks

07:30 Adjourn {RMZ}

RAB Administrative Issues

- Minutes from May and August RAB Meetings
- Website Update
- "Remedial Action Underway" Fact Sheets
  - LHAAP-37 Chemical Laboratory Waste Pad
  - LHAAP-46 Plant 2 Area
  - LHAAP-50 Former Sump Water Tank
  - LHAAP-58 Maintenance Complex
  - LHAAP-67 Aboveground Storage Tank Farm

Longhorn Map



Longhorn Active Site List

LHAAP-03	Building 722 Paint Shop
LHAAP-04	Pilot Wastewater Treatment Plant
LHAAP-12	Landfill 12
LHAAP-16	Landfill 16
LHAAP-17	Burning Ground No.2/Flashing Area
LHAAP-18	Burning Ground No.3
LHAAP-24	Unlined Evaporation Pond
LHAAP-29	Former TNT Production Area
LHAAP-37	Chemical Laboratory Waste Pad
LHAAP-46	Plant Area 2
LHAAP-47	Plant Area 3
LHAAP-50	Former Sump Water Tank
LHAAP-58	Maintenance Complex
LHAAP-67	Aboveground Storage Tank Farm
LHAAP-001-R-01	South Test Area/Bomb Test Area
LHAAP-003-R-01	Ground Signal Test Area

Status of Environmental Sites

– Additional work activities completed since the last RAB meeting were for sites LHAAP-18/24 and LHAAP-29

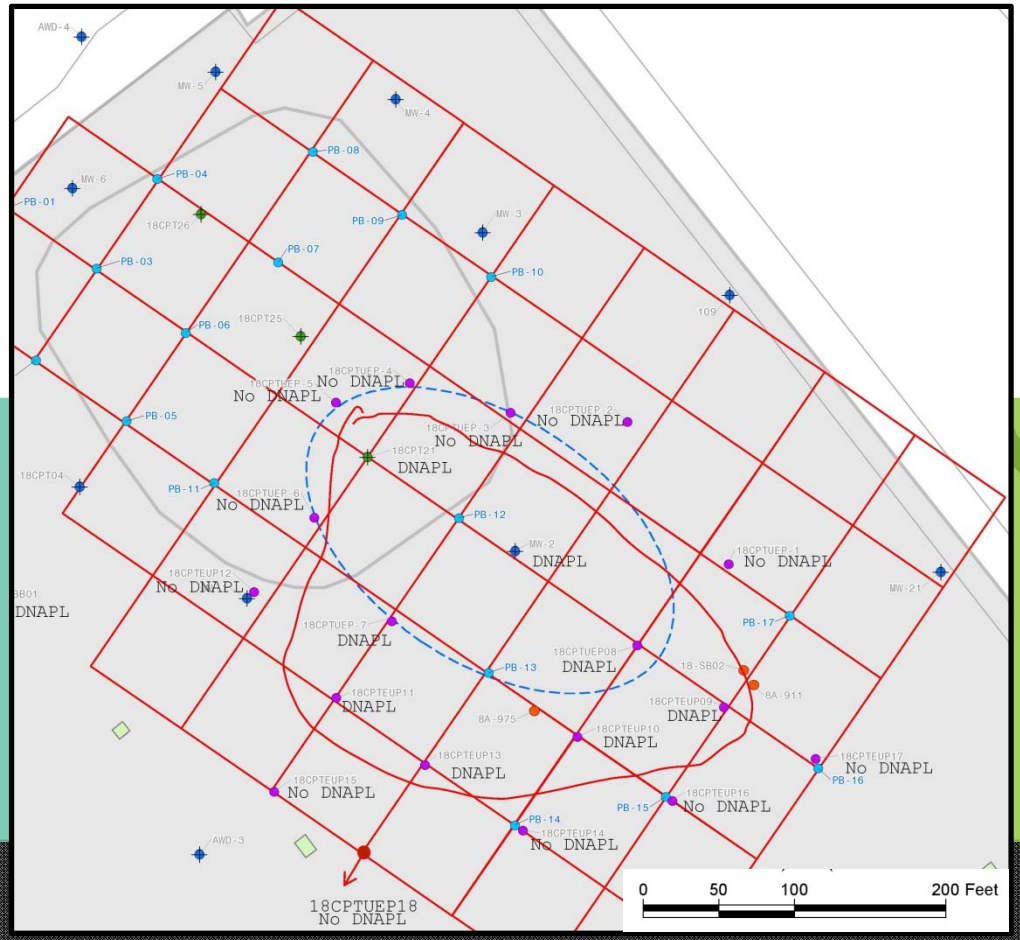
– LHAAP-18/24 – Burning Grounds #3 and Unlined Evaporation Pond
  - Interim remedy: Continuous extraction and treatment of groundwater from collection trenches surrounding and within the site (green in image below)
  - Contaminants of Concern: Perchlorate, VOCs (TCE, MC), Metals

AECOM

Status of Environmental Sites (cont)

LHAAP-18/24 – Burning Grounds #3 and Unlined Evaporation Pond

- Investigation of Dense Non-Aqueous Phase Liquid and Soil Source Material at Unlined Evaporation Pond
- DNAPL area extends farther south and east than previously estimated
- Work activities appear to have delineated extent of DNAPL

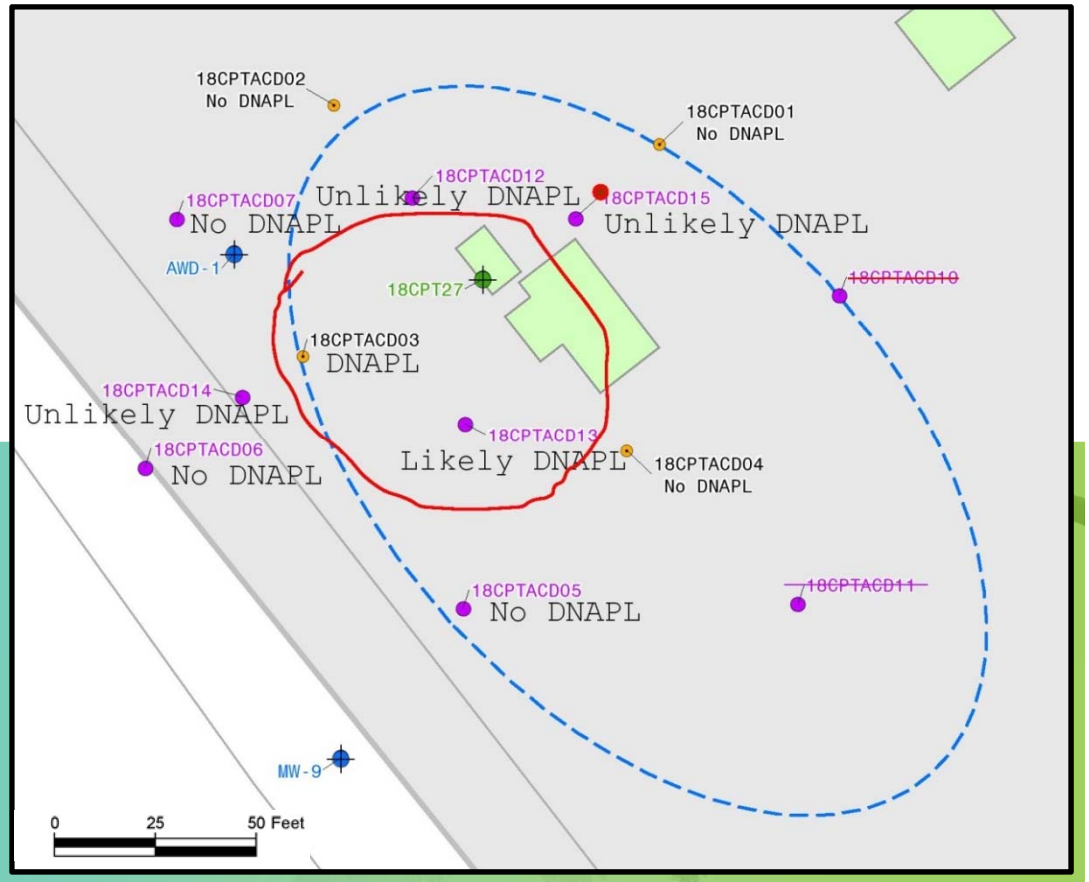


AECOM

Status of Environmental Sites (cont)

LHAAP-18/24 – Burning Grounds #3 and Air Curtain Destructor

- Investigation of Dense Non-Aqueous Phase Liquid and Soil Source Material at Air Curtain Destructor
- DNAPL area smaller than previously estimated
- Work activities appear to have delineated extent of DNAPL



AECOM

Treatability Studies Overview

Treatability testing is often conducted to:

1) Determine whether a potential remediation treatment technology should be successful in treating a specific contamination problem; and,

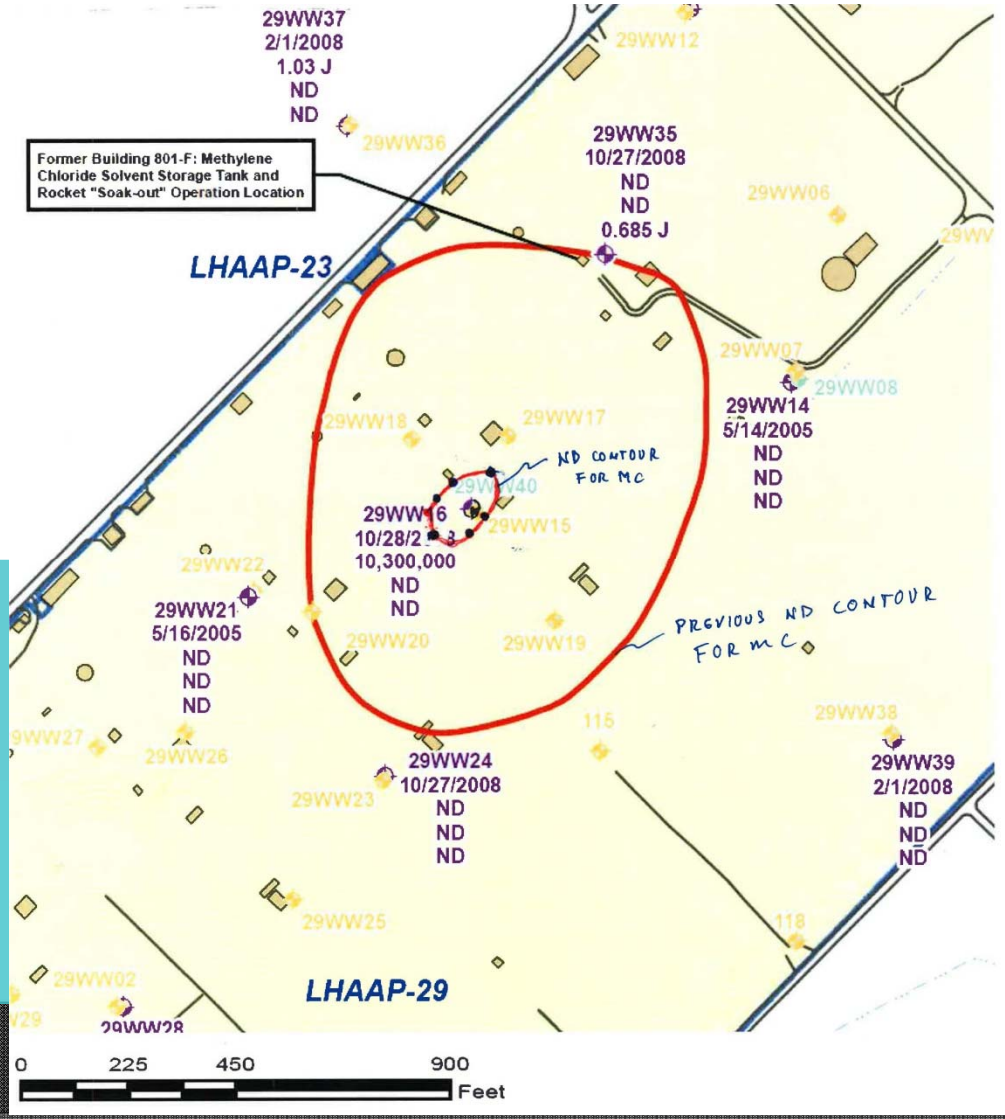
2) Evaluate site-specific characteristics that will impact the estimated cost to implement the remedy

LHAAP-18/24 Treatability Studies

- Thermal Treatability Testing – Determines the amount of electric current needed to heat soil or groundwater to break the bonds of contaminant molecules, allowing evaluation of whether thermal or electrokinetic remediation is suitable and cost effective
- In-Situ Microcosm Testing – evaluates the occurrence and extent of biodegradation in a groundwater plume; testing conducted in the field utilizing Bio-Trap® passive samplers that are submitted for laboratory analysis
- Bench-Scale Microcosm Testing – determines whether bacteria that can degrade the target contaminant are present at the site and demonstrates whether the natural biodegradation processes can be enhanced to remediate contamination; testing is conducted in the laboratory using soil and groundwater collected from the site
- Emulsified Zero Valent Iron Microcosm Testing – determines the optimum ZVI-to-soil ratio to degrade contaminants

Status of Environmental Sites (cont)

– LHAAP-29 Former TNT Production Area- Methylene Chloride in Intermediate GW



AECOM

LHAAP-29 Treatability Studies

- Thermal Treatability Testing – Determines the amount of electric current needed to heat soil or groundwater to break the bonds of contaminant molecules, allowing evaluation of whether thermal or electrokinetic remediation is suitable and cost effective

- In-Situ Microcosm Testing – evaluates the occurrence and extent of biodegradation in a groundwater plume; testing conducted in the field utilizing Bio-Trap® passive samplers that are submitted for laboratory analysis
- Aquifer Pumping Test – provides information on groundwater flow characteristics required to estimate costs for remedies that include a groundwater extraction or hydraulic control component

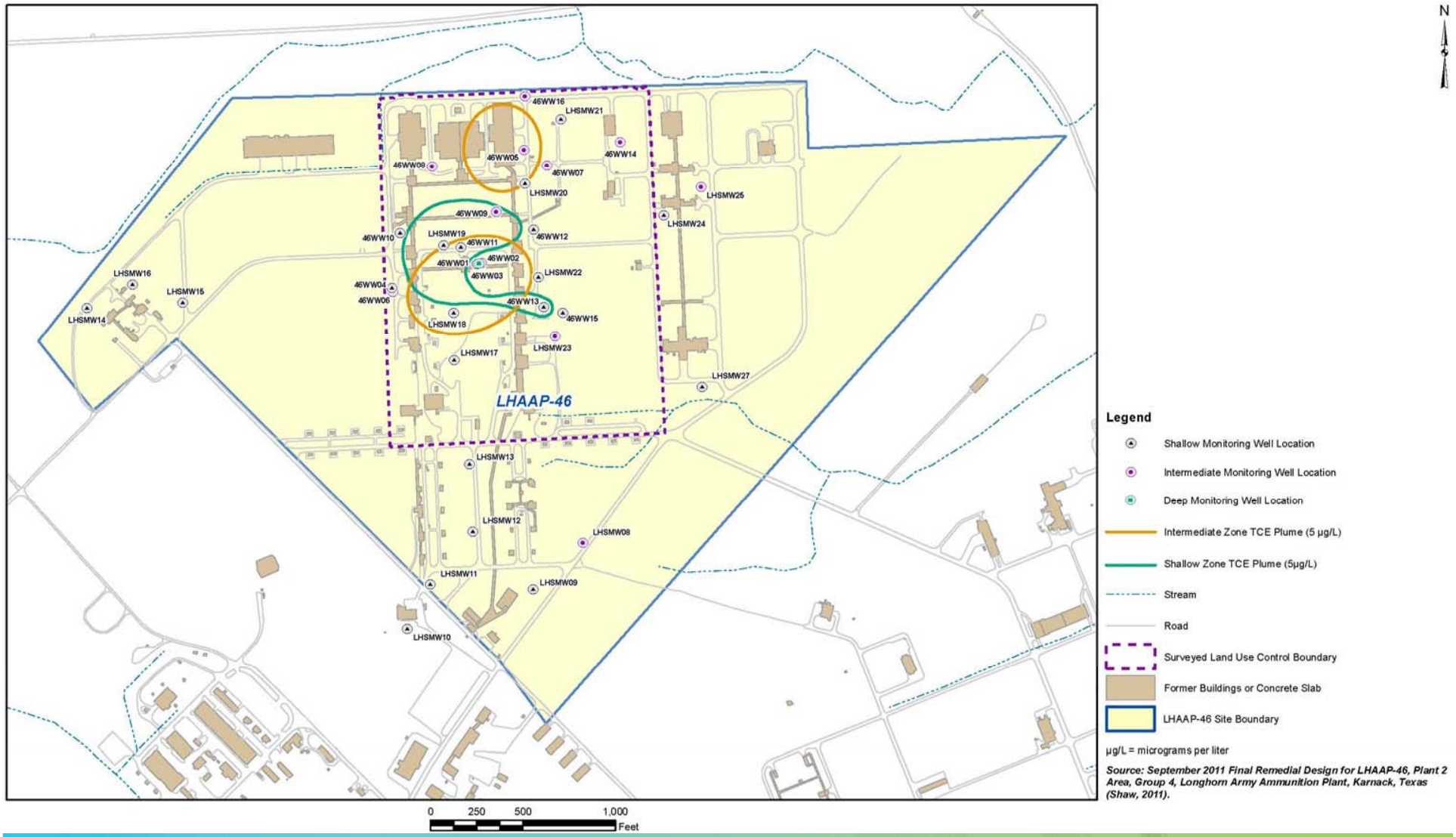
Status of Environmental Sites (cont)

- Monitored Natural Attenuation Sites
  - LHAAP-46 – Plant Area 2
  - LHAAP-35B (37) – Chemical Laboratory
  - LHAAP-50 – Former Sump Water Tank
  - LHAAP-58 – Shops Area
  - LHAAP-67 – Aboveground Storage Tank Farm

- 1st Annual Reports for these sites are being developed
  - Data from first four quarters of groundwater monitoring
  - Trend analysis

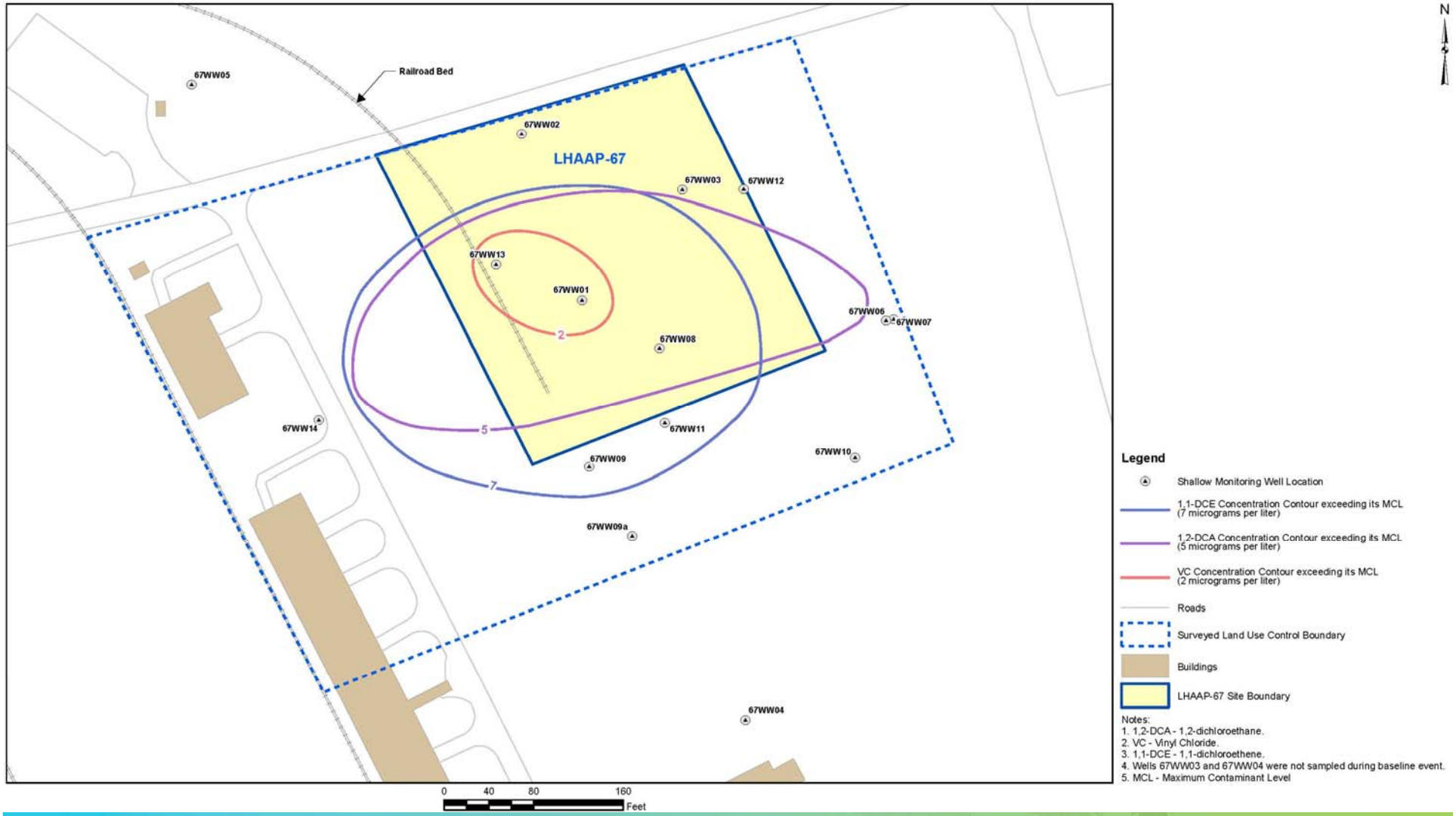
- Land Use Control boundary surveys for groundwater use restriction complete for LHAAP-46 and LHAAP-67

LHAAP-46 Land Use Control Boundary



AECOM

LHAAP-67 Land Use Control Boundary



AECOM

Status of Environmental Sites (cont)

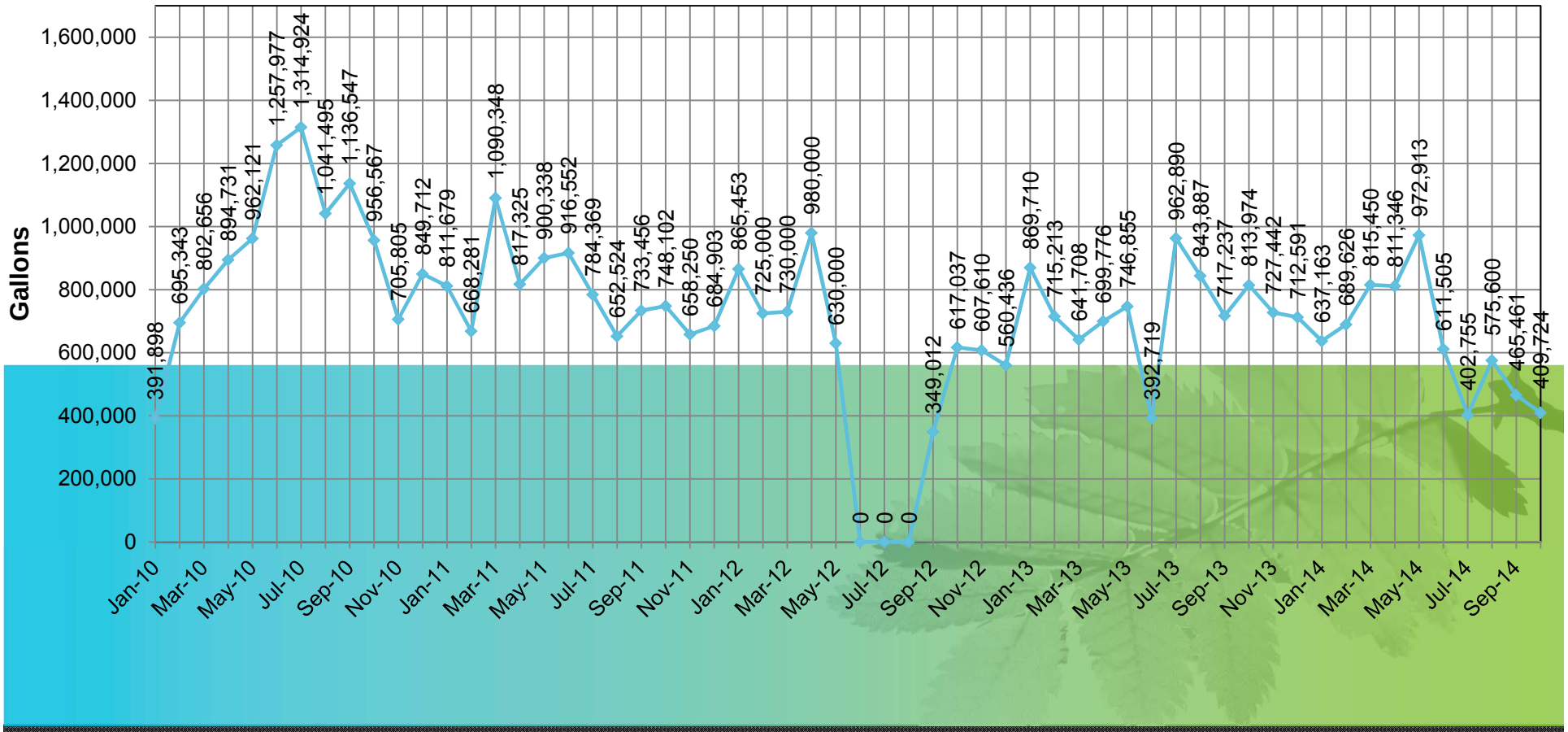
- LHAAP-03 - Record of Decision, Remedial Design/Remedial Action Work Plan On-hold Due to Dispute
- LHAAP-04 - Record of Decision, Remedial Design/Remedial Action Work Plan On-hold Due to Dispute
- LHAAP-16 - Record of Decision, Remedial Design/Remedial Action Work Plan On-hold Due to Dispute
- LHAAP-17 - Record of Decision, Remedial Design/Remedial Action Work Plan On-hold Due to Dispute
- LHAAP-47 - Record of Decision, Remedial Design/Remedial Action Work Plan On-hold Due to Dispute
- LHAAP-001-R-01 - Record of Decision, Remedial Design/Remedial Action Work Plan On-hold Due to Dispute
- LHAAP-003-R-01 - Record of Decision, Remedial Design/Remedial Action Work Plan On-hold Due to Dispute

Groundwater Treatment Plant Operations and Management

- The Groundwater Treatment Plant continues to operate to contain the plume at LHAAP-18/24 and LHAAP-16.
- Water continues to be returned to LHAAP-18/24 or into Harrison Bayou, depending on the amount of water in the bayou.
- Compliance monitoring continues per existing sampling plan.
- Air monitoring frequency reduced after over a year of weekly data without any excursions.
- Maintenance and repairs of wells, pumps, tanks, and ancillary equipment is on-going.

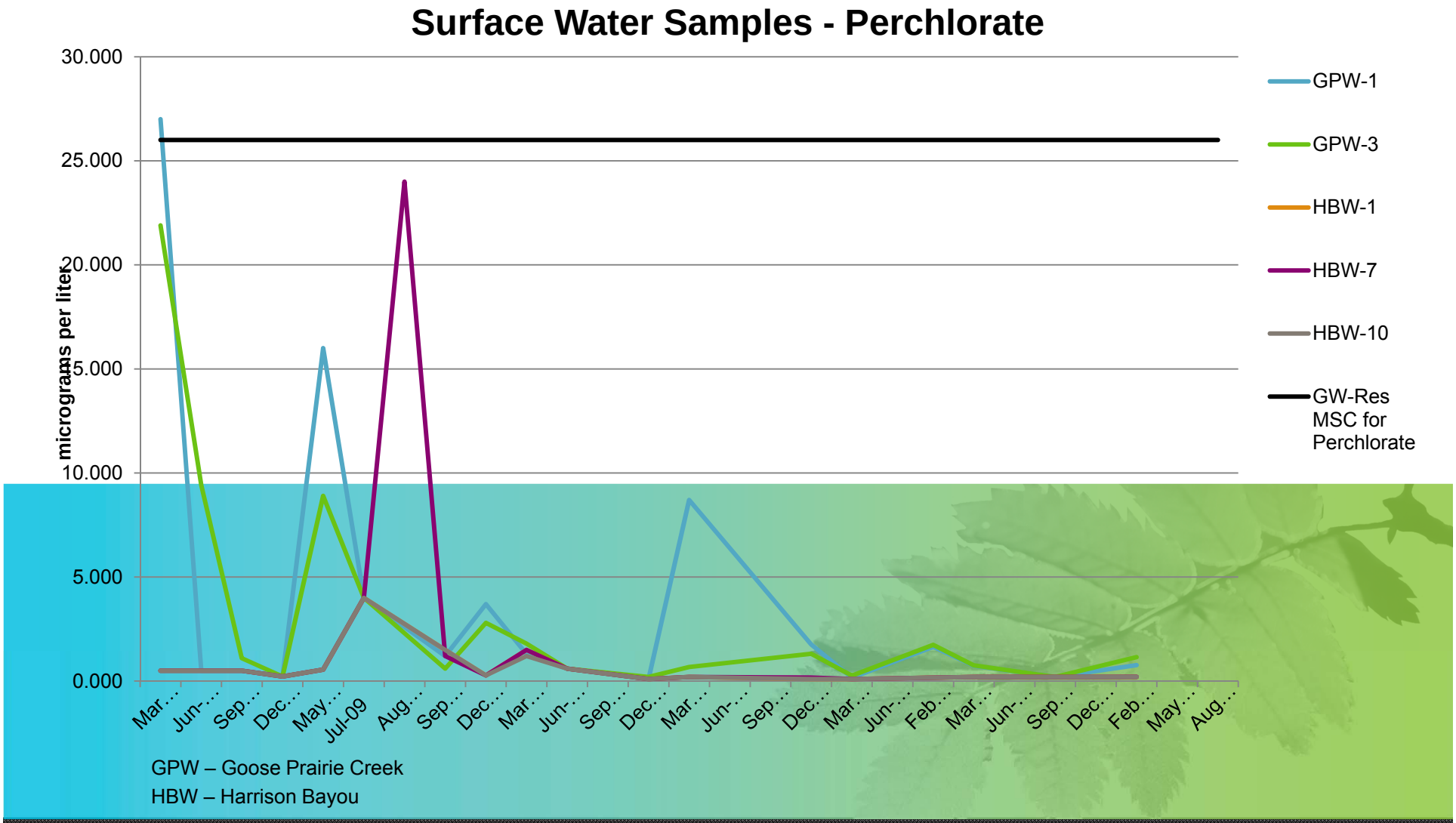
GWTP O&M (cont)

Figure ES-3
Water Treated Monthly from January 2010 through October 2014



AECOM

Surface Water Sample Results



GPW – Goose Prairie Creek
HBW – Harrison Bayou

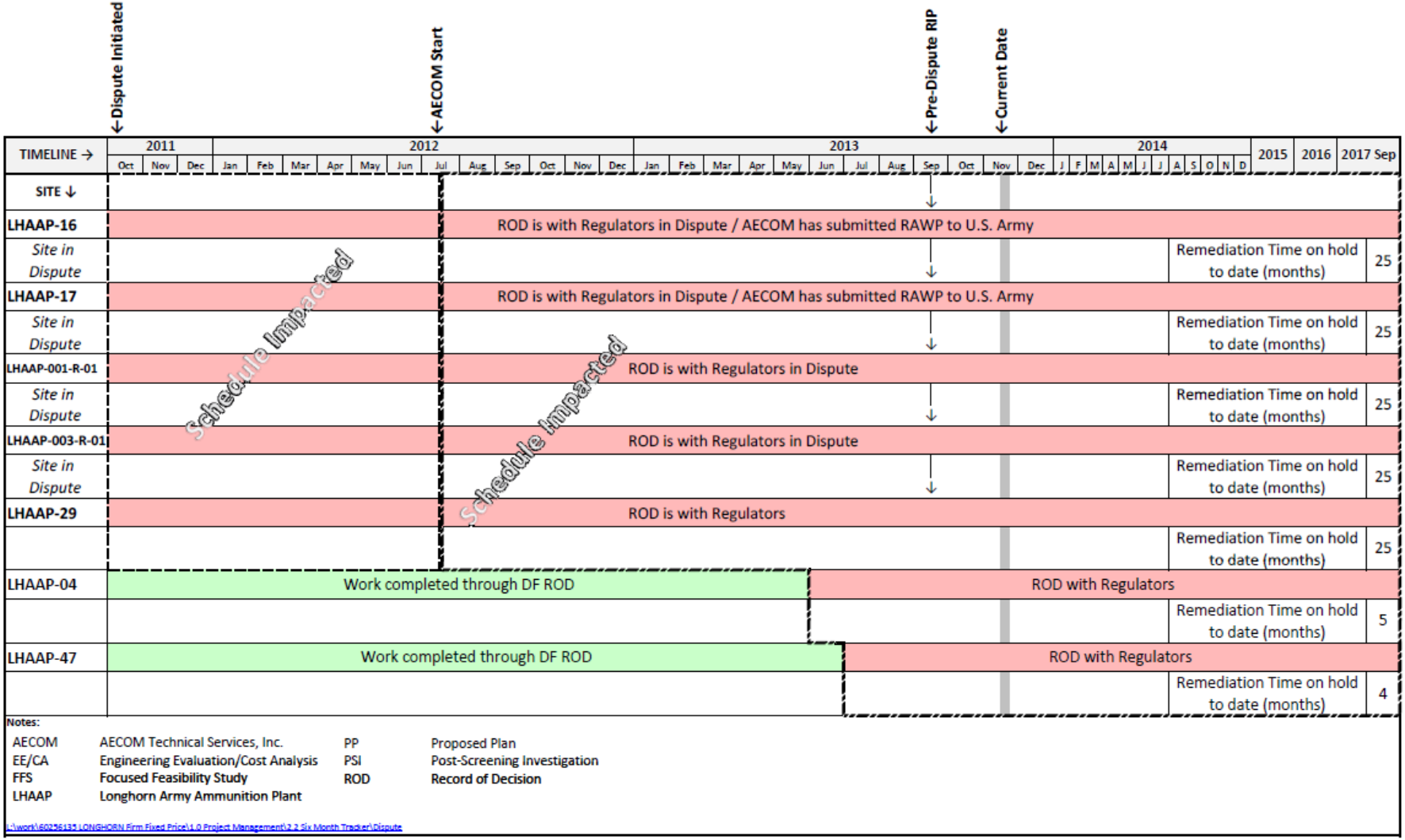
AECOM

LHAAP-37 Bioplug Demonstration Update

- Final demonstration sampling conducted October 2014.
- Data indicated the bioplug method was not particularly effective in reducing contaminant concentrations.
- System will be dismantled and removed.
- Groundwater monitoring for the remedy specified in the ROD (monitored natural attenuation) will begin when the aquifer has returned to pre-demonstration conditions.

Dispute Status

Sites at which Work has Ceased Pending Resolution of the Dispute



Notes:

AECOM	AECOM Technical Services, Inc.	PP	Proposed Plan
EE/CA	Engineering Evaluation/Cost Analysis	PSI	Post-Screening Investigation
FFS	Focused Feasibility Study	ROD	Record of Decision
LHAAP	Longhorn Army Ammunition Plant		

L:\work\60256135 LONGHORN Firm Fixed Price\1.0 Project Management\2.2 Six Month Tracker\Dispute

Upcoming Fieldwork, Meetings, and Documents

1. Continue sampling for groundwater monitoring networks at LHAAP-46, 50, 58, 67, in addition to semi-annual compliance sampling for LHAAP-18/24.
2. Final Completion Reports in progress for LHAAP-37, 46, 50, 58, 67.
3. First annual Remedial Action Operation reports being developed for LHAAP-46 and LHAAP-67, followed by 50 and 58.
4. LHAAP-18/24 and LHAAP-29 – Reports for current activities leading to an FS for each site planned for spring 2015.
5. Sites where work has ceased pending dispute resolution:
    1. LHAAP-03
    2. LHAAP-04
    3. LHAAP-47
    4. LHAAP-16
    5. LHAAP-17
    6. LHAAP-29
    7. LHAAP-001-R-01
    8. LHAAP-003-R-01

Groundwater Treatment Plant - Treated Groundwater Volumes

The amount of groundwater treated is determined by measuring the number of gallons of treated water returned to LHAAP-18/24, released to the INF Pond, or discharged to Harrison Bayou.

Treated Water Data

(in gallons)

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

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

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

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

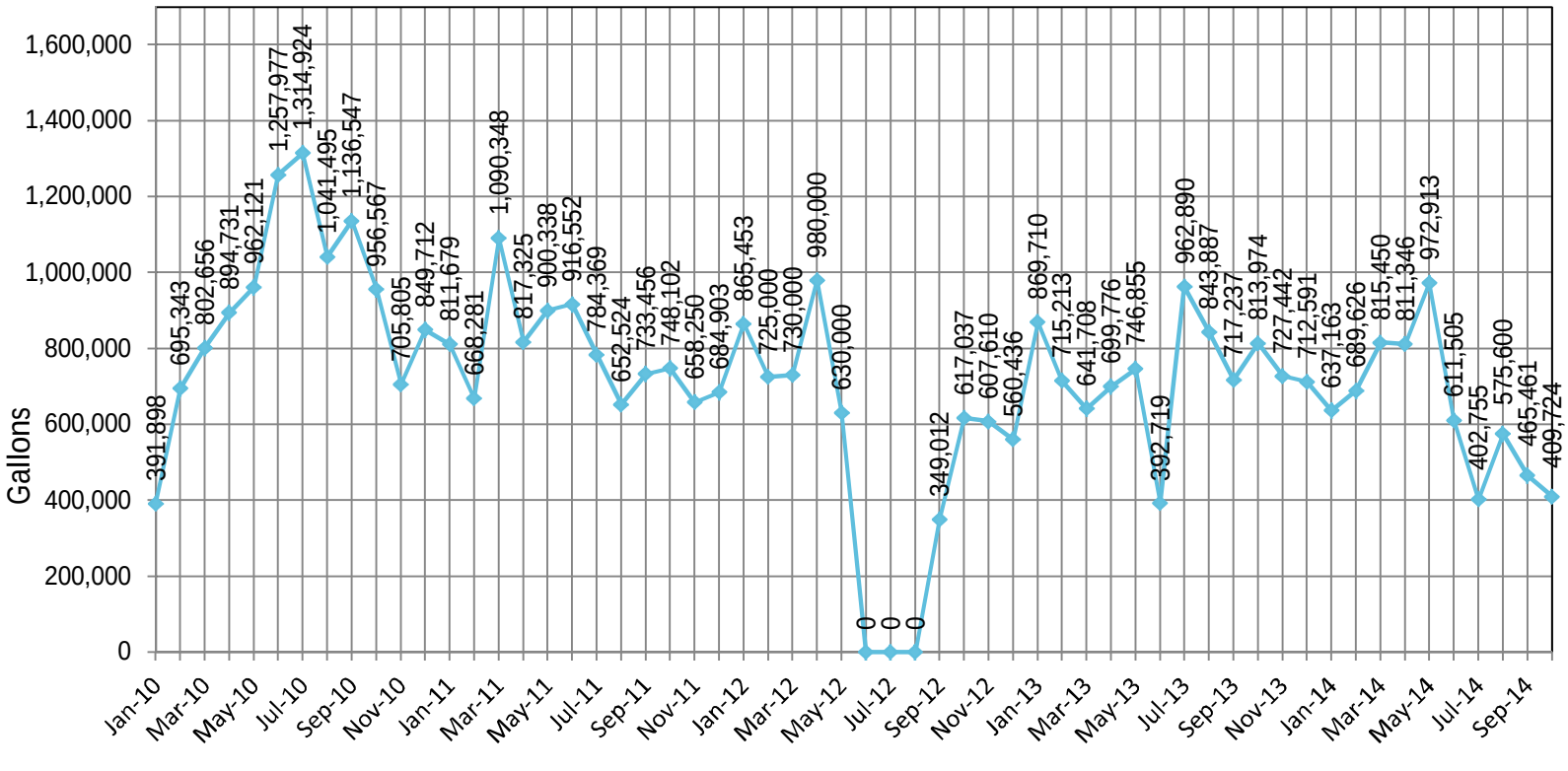
Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12
748,102	658,250	684,903	865,453	725,000*	730,000*	980,000*	630,000*	0	0	0	349,012

Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13
617,037	607,610	560,436	869,710	751,213	641,708	699,776	746,885	392,719	962,890	843,887	717,237

Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14
813,974	727,442	712,591	552,657	738,701	844,095	811,346	972,913	611,505	402,755	575,600	465,461

*Indicates Estimate

Figure ES-3
Water Treated Monthly from January 2010 through October 2014

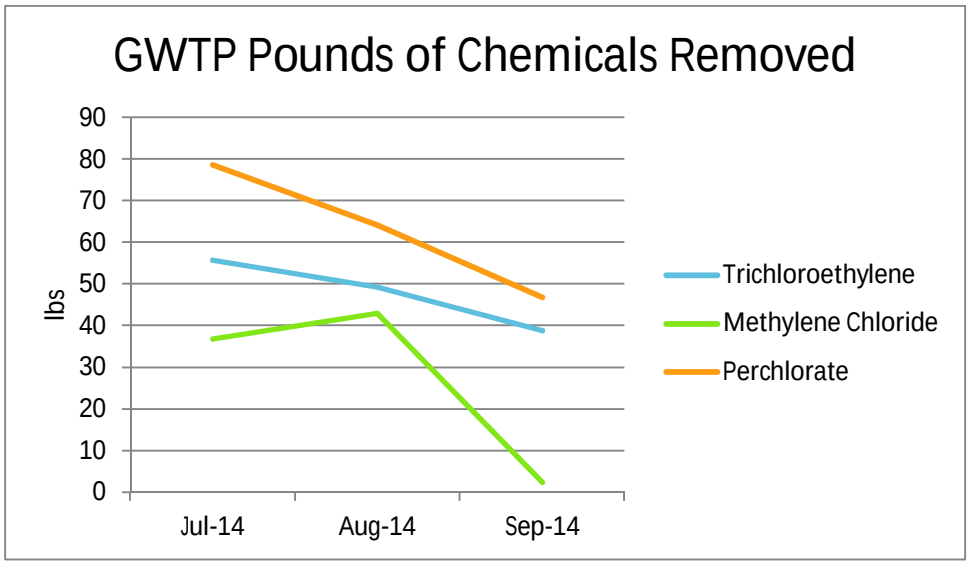


The pounds of chemicals removed for the 3rd Quarter of 2014 can be found below and are calculated by the following formula:

(GWTP Influent Contaminant Concentration [µg/L] x Volume [gallons] x 3.785 [liters per gallon])
(453,600,000 µg per pound)

Pounds of Chemicals Removed From LHAAP-18/24, 3rd Quarter 2014

	Trichloroethylene	Methylene Chloride	Perchlorate
Jul-14	55.7	36.88	78.6
Aug-14	49.3	43.04	64.2
Sep-14	38.9	2.39	46.9



Harrison Bayou and Goose Prairie Creek – Perchlorate Data

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

Historic Surface Water Sample Data
(in micrograms per liter)

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

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

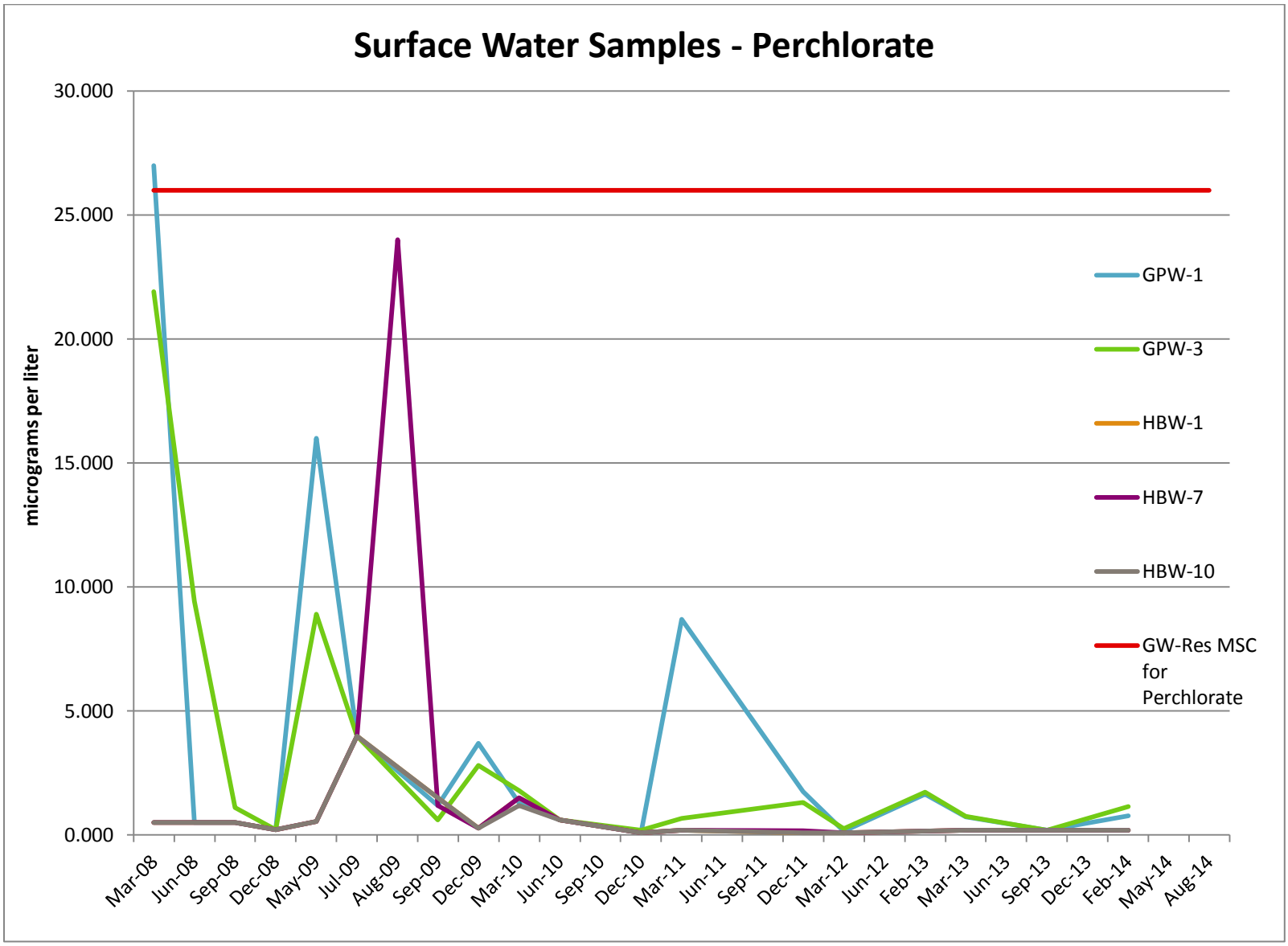
Quarter	1st	2nd	3rd	4th	2nd	3rd	3rd	3rd	4th	1st	2nd
Creek Sample ID	**Mar 2008**	**Jun 2008**	**Sep 2008**	**Dec 2008**	**May 2009**	**Jul 2009**	**Aug 2009**	**Sep 2009**	**Dec 2009**	**Mar 2010**	**Jun 2010**
GPW-1	27	<0.5U	<0.5U	<0.22U	16	<4U	NS	<1.2U	3.7	1.3J	<0.6U
GPW-3	21.9	9.42	1.1	<0.22U	8.9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

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

Quarter	2nd	3rd	4th	1st	2nd	3rd
Creek Sample ID	**Jun 2013**	**Sept 2013**	**Dec 2013**	**Feb 2014**	**May 2014**	**Aug 2014**
GPW-1	dry	<0.2 U	dry	0.766	dry	dry
GPW-3	dry	<0.2 U	dry	1.15	dry	dry
HBW-1	<0.2U	<0.2 U	dry	<0.2U	dry	dry
HBW-7	<0.2U	<0.2 U	dry	0.201J	dry	dry
HBW-10	<0.2U	<0.2 U	dry	<0.2U	dry	dry

Notes:

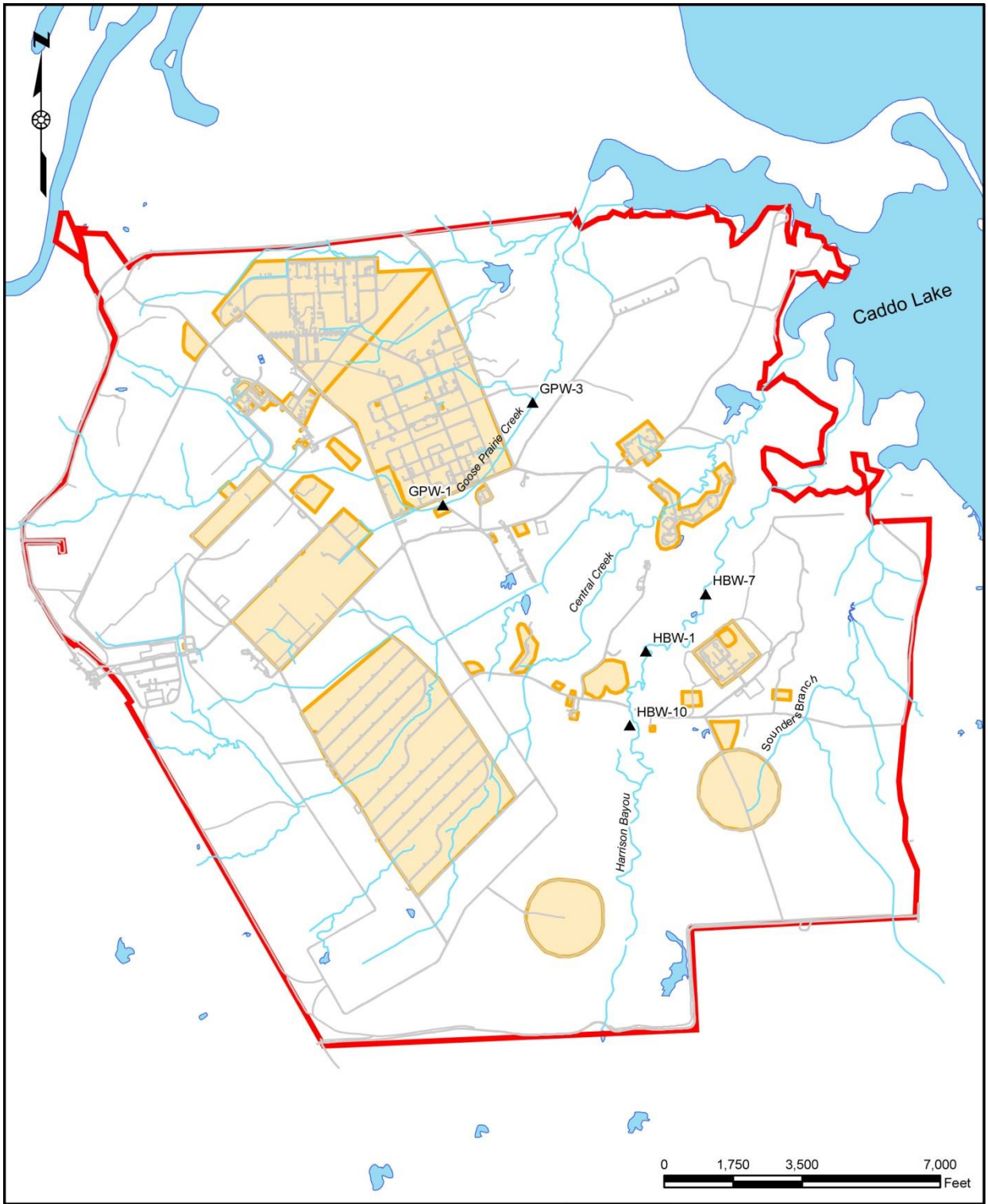
J	Estimated
U	Non-detect
NC	Not Collected
NS	Not Sampled
dry	Sampling location was dry
-	No historical data available



Notes:

Perchlorate Screening Criteria - TCEQ GW_{Res} (micrograms per liter) 26

Longhorn Army Ammuntion Plant Map with creek sampling locations.



Legend

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

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

SURFACE WATER SAMPLING LOCATION

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

LHAAP Perimeter Well Monitoring – Perchlorate Data

Groundwater samples are currently collected quarterly from six wells on the LHAAP perimeter.

Historic Perimeter Well Sample Data
(in micrograms per liter)

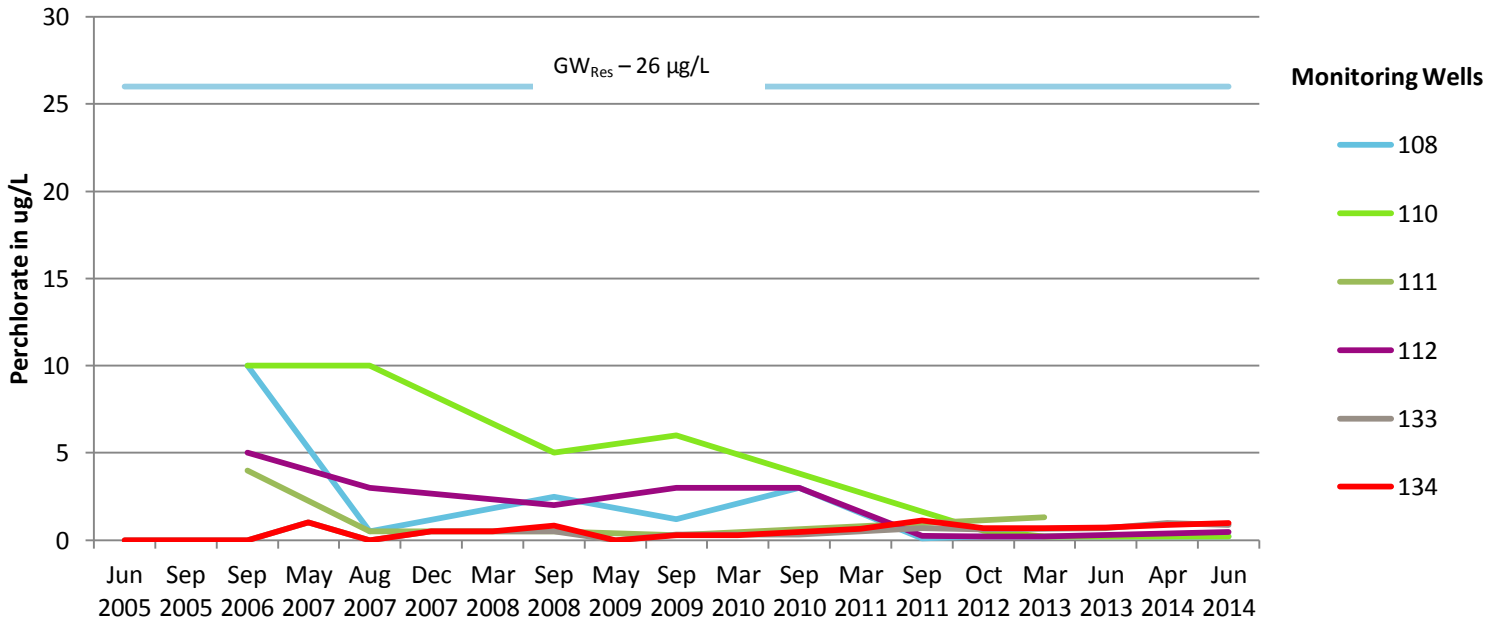
Well ID	June 2005	Sep 2005	Sep 2006	May 2007	Aug 2007	Dec 2007	Mar 2008	Sep 2008	May 2009	Sep 2009	Mar 2010
108	Dry	Dry	10 U	Dry	0.5 U	Dry	Dry	2.5 U	Dry	1.2 U	Dry
110	Dry	Dry	10 U	Dry	10 U	Dry	Dry	5.0 U	Dry	6 U	Dry
111	Dry	Dry	4 U	Dry	0.5 U	Dry	Dry	0.5 U	Dry	0.3 U	Dry
112	Dry	Dry	5 U	Dry	3 U	Dry	Dry	2.0 U	Dry	3 U	Dry
133	0.541	0.597	1.08	1 U	1.09	0.5 U	0.5 U	0.5 U	0.47 J	0.32	Dry
134	0.881	0.725	0.708 J	1 U	0.949 J	0.5 U	0.5 U	0.829 U	0.04 J	0.3 U	0.3 U

Well ID	Sep 2010	Mar 2011	Sep 2011	Oct 2012	Mar 2013	June 2013	Apr 2014	Jun 2014
108	3 U	Dry	0.1 U	0.2 U	0.2 U	Dry	Dry	0.2 U
110	Dry	Dry	Dry	0.535	0.2 U	Dry	Dry	0.2 U
111	Dry	Dry	Dry	Dry	1.32	Dry	Dry	Dry
112	3 U	Dry	0.26	0.2 U	0.2 U	Dry	Dry	0.458
133	0.32	Dry	0.68	0.598	0.655	0.685	0.988	0.887
134	0.45	0.636	1.11	0.671	0.698	0.706	0.863	0.989

Notes:

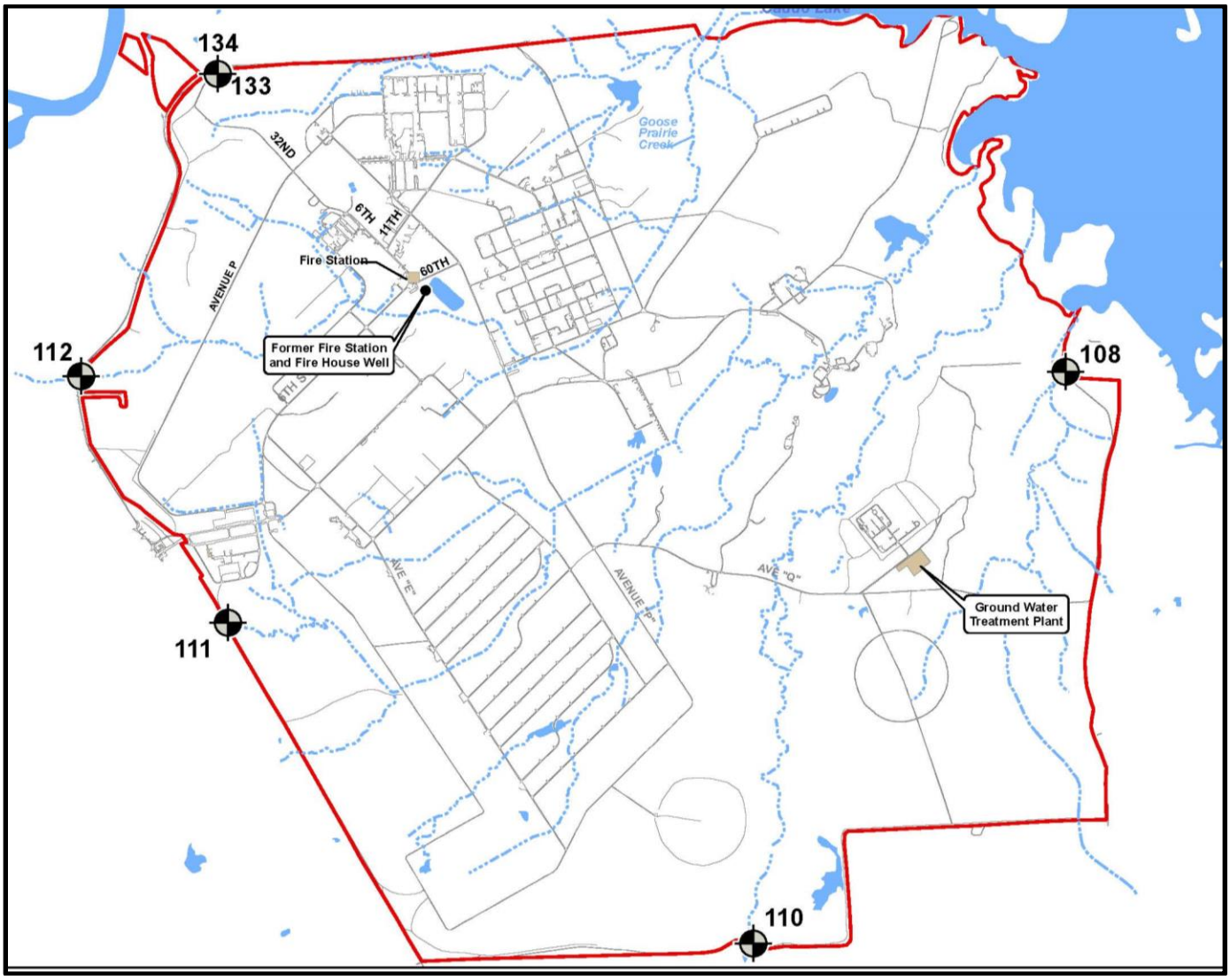
J	Estimated
U	Non-Detect
Dry	Well Dry

Perimeter Wells - Perchlorate



Note: Perchlorate Screening Criteria - TCEQ GW_{Res} (micrograms per liter) 26

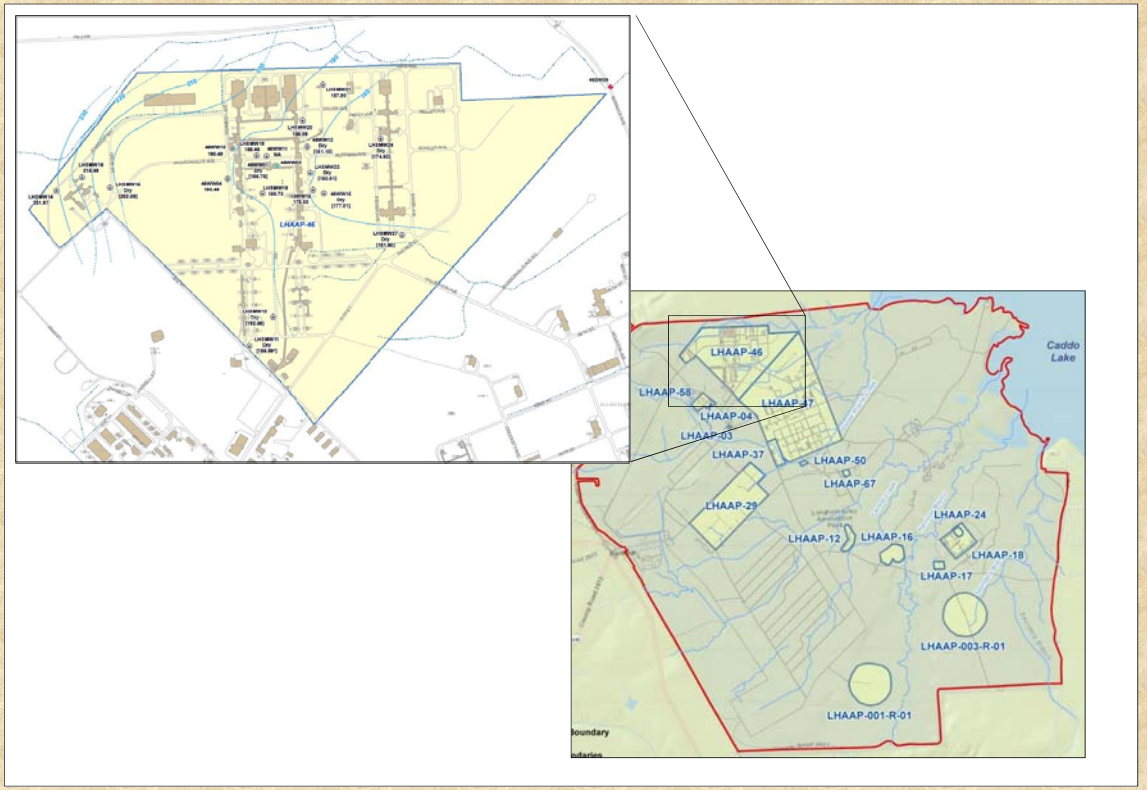
Longhorn Army Ammuntion Plant Map with Perimeter Well Locations



LHAAP-46, Plant 2 Area – Remedial Action Operations

Site History

LHAAP-46, (Plant 2 Area), is located in the north-central portion of LHAAP and covers approximately 190 acres. Facilities for producing JP-2 propellant fuel at LHAAP-46 began in 1944, but construction was halted in 1945 with the end of World War II. Plant 2 was used to produce pyrotechnic devices from February 1952 to 1956 and was reactivated to produce pyrotechnic and illumination devices in 1964 until approximately 1997.



Site Characteristics

The surface features at LHAAP-46 are a mixture of asphalt-paved roads, parking areas, building foundation remnants, old buildings, and overgrown wooded and grassy vegetation-covered areas. The topography in this area is relatively flat with the surface drainage flowing east into tributaries of Goose Prairie Creek, which eventually flows into Caddo Lake. The lake is a source of drinking water for several neighboring communities in Louisiana. Shallow zone groundwater is approximately 11 to 23 feet below ground surface (bgs) and flows to the east. Intermediate zone groundwater is approximately 23 to 30 feet bgs and flows to the Northeast.

Risk Assessment

A baseline human health risk assessment (BHHRA) and ecological risk assessment were conducted for LHAAP-46 to determine current and future effects of contaminants on human health and the environment. Based on the BHHRA the soil does not pose a cancer risk or noncancer hazard to the hypothetical future maintenance worker. However, the groundwater at LHAAP-46 poses an unacceptable non-cancer hazard to a hypothetical future maintenance worker under an industrial scenario with the exposure route of drinking the water or using the water for hand washing and showering. The ecological risk assessment concluded no action is needed at LHAAP-46 for the protection of ecological receptors.

Chemicals of Concern

Between 1992 and 2008 numerous investigations were conducted in a phased approach to determine the nature and extent of contamination at LHAAP-46. Media investigated included soil and groundwater. Additional data gathered since the risk assessment (2003) did not change its outcome. Chemicals of Concern (COCs) for LHAAP-46 identified in the Feasibility Study are the trichloroethene (TCE) in the shallow and intermediate groundwater zones. All daughter products of TCE are also considered COCs, which include dichlorothene and vinyl chloride.

LHAAP-46, Plant 2 Area – Remedial Action Operations (cont.)

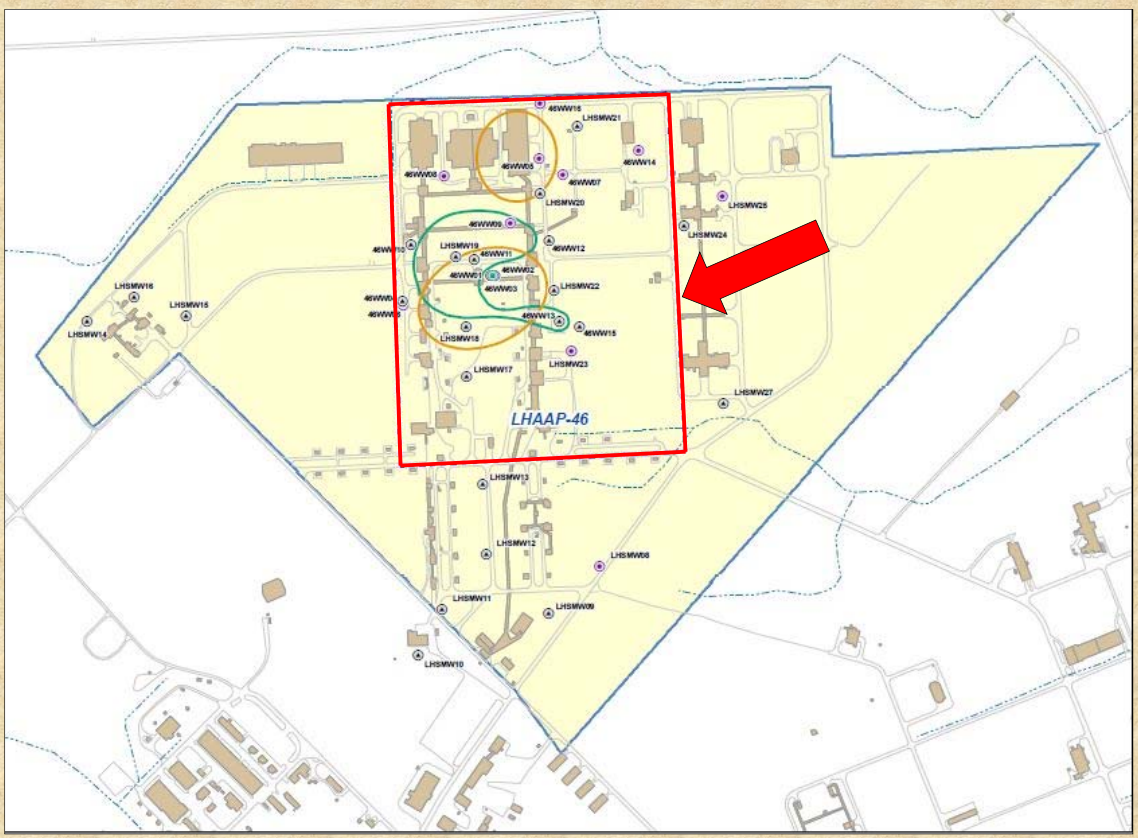
Remedial Action Objectives

The Remedial Action Objectives (RAOs) for LHAAP-46 which address contamination associated with the media at the site and take into account the future uses of LHAAP surface water, land, and groundwater are:

- Protect human health for the hypothetical future maintenance worker by preventing exposure to groundwater contaminated by VOCs (TCE and its daughter products).
- Return groundwater to its potential beneficial use as a drinking water, wherever practicable, within a reasonable time period given particular site circumstances.

Land Use Control Boundary

One element of the remedial action at LHAAP-46 is establishment of a land use control (LUC) area where withdrawal or use of groundwater is restricted to only environmental monitoring until groundwater at the site meets clean-up standards. Army, with TCEQ and EPA concurrence, has established a LUC area to restrict groundwater use at LHAAP-46, conducted a civil survey of that boundary was completed in October 2014, and the LUC notification will be recorded with the Harrison County Courthouse in November 2014.



LHAAP-46 Land Use Control Area and COC Plume Footprints

Monitored Natural Attenuation (MNA)

MNA at the LHAAP-46 site is implemented to monitor COCs and ensure protection of human health and the environment. Performance monitoring to evaluate remedy effectiveness includes groundwater and surface water monitoring. The groundwater monitoring program is designed to evaluate and monitor natural attenuation of COCs in shallow zone groundwater. The surface water monitoring program is designed to monitor potential migration of contaminated groundwater to surface water.

Quarterly groundwater samples were last collected from LHAAP-46 in November 2014, and will be collected again in February 2015.

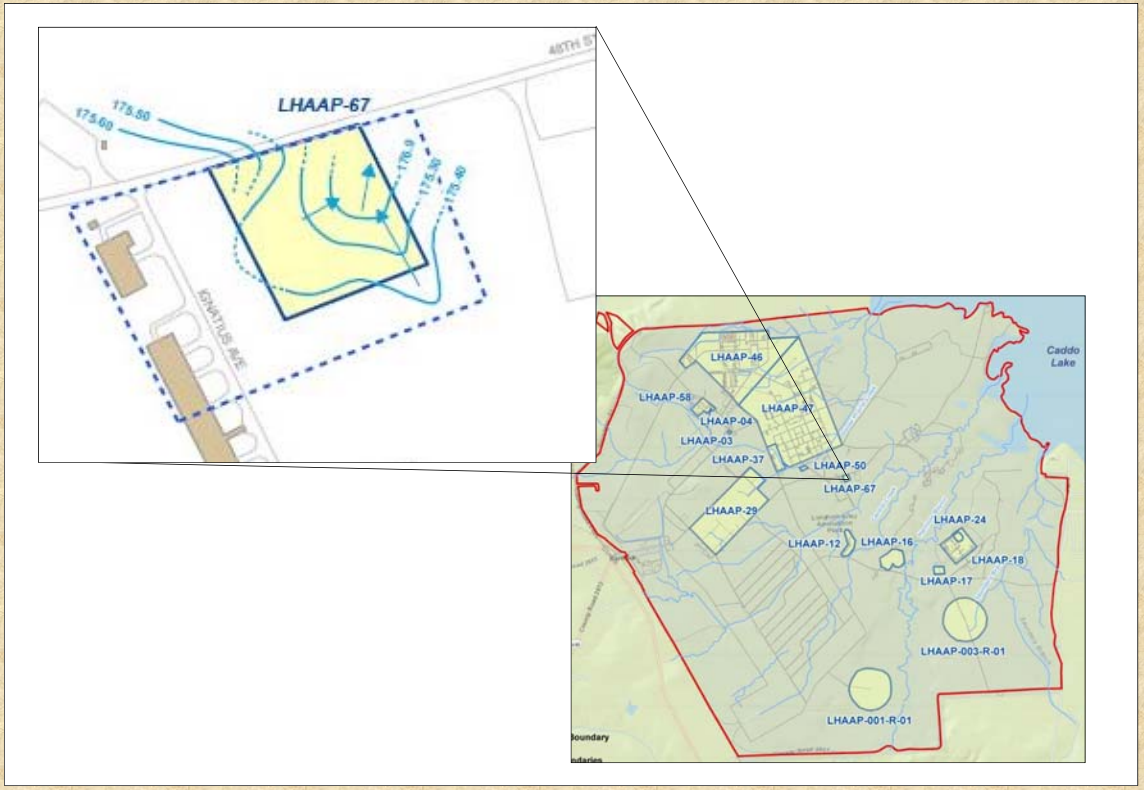
LHAAP-67, Former Aboveground Storage Tank Farm Remedial Action Operations

Site History

When operational, LHAAP-67 consisted of seven aboveground storage tanks of unknown size. The tanks were surrounded with earthen dikes designed to contain potential spills. Site personnel indicated that the tanks were used for solvent storage. The tanks have been removed and the only structure remaining at the site is a railroad bed.

Site Characteristics

LHAAP-67, a former aboveground storage tank farm is located in the central portion of LHAAP and covers approximately 1.91 acres. The site is relatively flat. The nearest significant surface water body is Central Creek located ~870 feet southeast of the site.



LHAAP-67 Site Location

Risk Assessment

A baseline human health risk assessment (BHHRA) and ecological risk assessment were conducted for and LHAAP-67 to determine current and future effects of contaminants on human health and the environment. Based on the BHHRA the soil does not pose a cancer risk or noncancer hazard to the hypothetical future maintenance worker. However, the groundwater at LHAAP-67 pose an unacceptable cancer risk and non-cancer hazard to a hypothetical future maintenance worker under an industrial scenario with the exposure route of drinking the water or using the water for hand washing and showering. The ecological risk assessment concluded no action is needed at LHAAP-67 for the protection of ecological receptors.

Chemicals of Concern

Between 1998 and 2006 numerous investigations were conducted in a phased approach to determine the nature and extent of contamination at LHAAP-67. Media investigated included soil and groundwater. Additional data gathered since the risk assessment (2003) did not change its outcome. Chemicals of concern (COCs) for LHAAP-67 identified in the Feasibility Study are 1,1-dichloroethene (DCE), 1,2 dichloroethane(DCA), 1,1,1-trichloroethane(TCA), 1,1,2-TCA and trichloroethene(TCE) in the shallow groundwater zone.

LHAAP-67, Former Aboveground Storage Tank Farm (cont.)
Remedial Action Operations

Remedial Action Objectives

The Remedial Action at the LHAAP-67 site must protect human health and meet applicable or relevant and appropriate requirements (ARARs). There are no ecological risks at the LHAAP-67 site (USACE, 2010). The RAOs for the LHAAP-67 site, consistent with the reasonably anticipated future use as a national wildlife refuge, are:

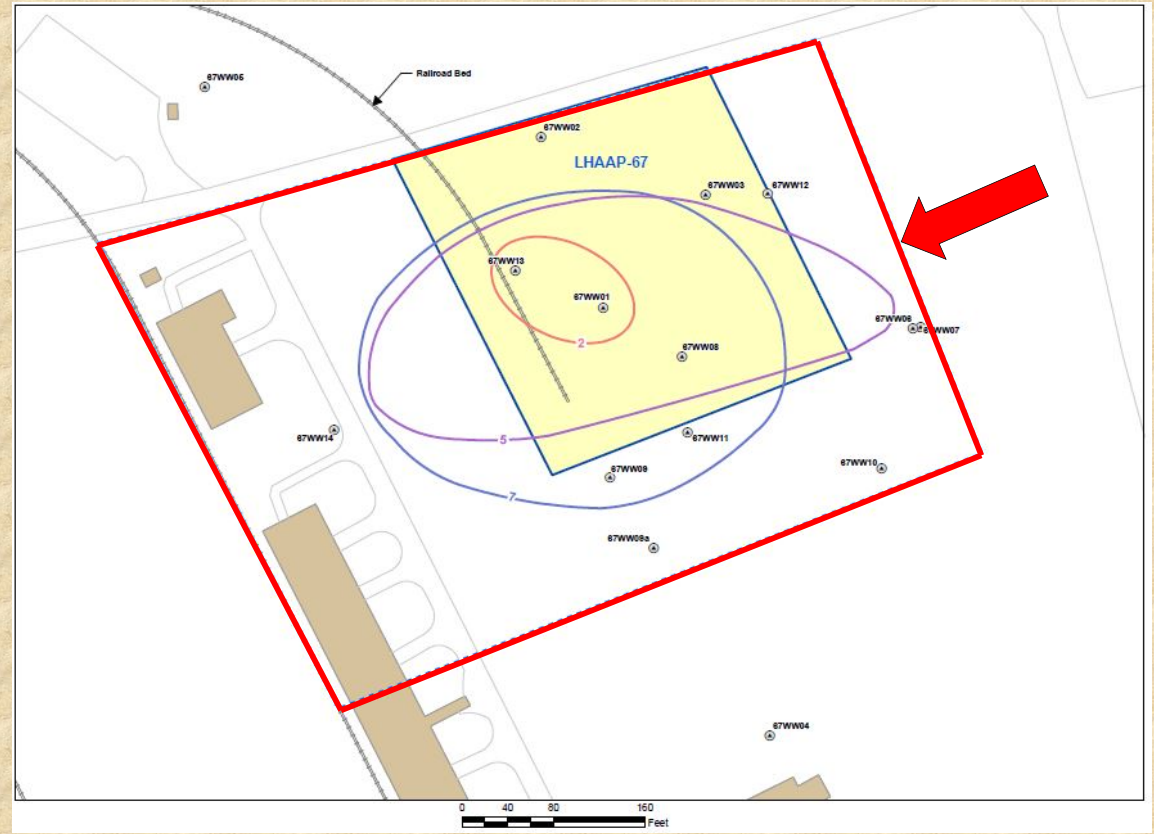
- Ensure protection of human health by preventing exposure to the contaminated groundwater;
- Ensure protection of human health and the environment by preventing contaminated groundwater from migrating into nearby surface water; and,
- Ensure return of groundwater to its potential beneficial use as drinking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

Land Use Control Boundary

One element of the remedial action at LHAAP-67 is establishment of a land use control (LUC) area where withdrawal or use of groundwater is restricted to only environmental monitoring until groundwater at the site meets clean-up standards. Army, with TCEQ and EPA concurrence, has established a LUC area to restrict groundwater use at LHAAP-67 conducted a civil survey of that boundary was completed in October 2014, and the LUC notification will be recorded with the Harrison County Courthouse in November 2014.

Monitored Natural Attenuation

MNA at the LHAAP-67 site is implemented to monitor COCs and ensure protection of human health and the environment. Performance monitoring to evaluate remedy effectiveness includes groundwater monitoring, designed to evaluate and monitor natural attenuation of COCs in shallow zone groundwater.



LHAAP-67 Land Use Control Area and Plume Footprints

Quarterly groundwater samples were last collected from LHAAP-67 in November 2014, and will be collected again in February 2015.

Subject:	**Final Minutes, Monthly Managers' Meeting, Longhorn Army Ammunition Plant (LHAAP)**
Location of Meeting:	**LHAAP Army Trailer and Teleconference – 866-203-6896, passcode 8603914725**
Date of Meeting:	**December 11, 2014 – 10:00 AM**

Attendees:

Army BRAC:	Rose Zeiler
EPA:	Rich Mayer, Steve Tzhone, Janetta Coats, Kent Becher (USGS Liaison)
TCEQ:	April Palmie
USACE:	Aaron Williams, Rick Smith
AECOM:	Dave Wacker, Mark Heaston, Gretchen McDonnell, Josh Miller
AEC:	
USFWS:	Paul Bruckwicki

Welcome **AECOM**

Action Items

AECOM

- Review as-builts of the LHAAP-29 area available from USFWS attempt to find conduit to explain locations of contamination identified. **Complete.**
- Examine the level of effort required to develop a comprehensive geospatial database of all information for LHAAP (lab data, boring logs, well construction reports, etc.) that will make review easier. **Pending.**
- Develop revised 1,4-dioxane sampling memo and sampling plan for next event. **Pending.**
- Provide results from groundwater split sampling event with EPA sampling, to include 1,4-dioxane results. **Pending.**
- Provide the current 2007 GWTP sampling plan, including any modifications, to the participants. **Pending.**
- Develop with Army the path forward for submitting proposed changes to GWTP sampling requirements. (Contingent on evaluation of the current 2007 GWTP sampling plan and subsequent modifications identified.) **Pending.**
- Add the number (first, second, third) of quarterly round to the master groundwater sampling schedule and resubmit to MMM group. **Complete. Revised schedule will be transmitted to group today.**
- Add to document and issue tracker a note that LHAAP website will be updated at least quarterly, after each RAB meeting. **Complete.** This note will be restored on the next tracker.
- Provide LHAAP-58 update on EISB. **Complete.**
- Send RAB surface water/perimeter well results handouts to Dale Vodak, TCEQ. **Complete.**
- Check for methylene chloride in the August split sample for well 134. **Complete.** Sample was non-detect. Data will be transmitted via data validation report.
- Initiate "hit counter" for LHAAP Army website. **Complete.**

Army

- Forward "data dump" to AECOM for evaluation for potential update/merge with current data. **Complete.**

EPA

- Provide results from 1,4-dioxane sampling. **Complete.** Provided on November 14, 2014. Effluent sample at GWTP had 36ppb perc 25ppb 1,4-dioxane
- Provide decision on continued disagree comments for LHAAP-67 RACR. **Complete.**

TCEQ

AEC

- Review proposals for comprehensive geospatial database of all information for LHAAP (lab data, boring logs, well construction reports, etc.) that will make review easier.

USFWS

Defense Environmental Restoration Program (DERP) PBR Update **AECOM**

- Upcoming document submissions to regulators (see Document and Issue Tracking table)

Item 1 (GWTP Quarterly Report) – 2nd Quarter 2014 report went to agencies on 12/09/14. 3rd quarter will go to Army today or tomorrow.

Item 2 (LHAAP-18/24 Revised FS) –A schedule extension will be requested by Army.

Item 3 (LHAAP-37 RACR) – The Draft RACR was submitted for agency comment on 11/18/14. TCEQ comments have been received. Comment response due from agencies 12/18/14. The proposed LUC boundary shown in this document has been revised from that previously anticipated to avoid overlap with the known extent of the LHAAP-47 plume to simplify future institutional controls management.

Item 4 (LHAAP-37 LUC) – Initial LUC boundaries transmitted for agency concurrence have been revised to avoid overlap with the known extent of the LHAAP-47 plume to simplify future institutional controls management.

Item 5 (LHAAP-46 RACR) – The Draft RACR was submitted for agency comment on 11/18/14. TCEQ comments have been received. Comment response due from agencies 12/18/14, with comment response due 30 days after that.

Item 6 (LHAAP-46 LUC) – Army has signed the recordation documents, which have been transmitted to Harrison County for filing. A copy of the recorded documents will be transmitted to Army for use in update of the Land Use Control Management Plan.

Item 7 (LHAAP-50 RACR) – Agencies will likely see this near the end of January. An additional appendix is being added to provide more robust information on the surface water sampling rationale for GPW-1 and GPW-1A, which is designed to monitor the effectiveness of the excavation remedy for perchlorate-impacted surface soils.

Item 8 (LHAAP-50 LUC) - Proposed LUC boundaries support package was transmitted for agency concurrence in November. TCEQ requested additional supporting documentation (additional well data and screened intervals of the wells). Review of the LUC boundary will be conducted upon agency receipt of the RACR to provide that information.

Item 9 (LHAAP-58 RACR) – Redline draft RACR and agency RTC tables were transmitted to the agencies earlier today.

Item 10 (LHAAP-58 LUC) – Note that the proposed LUC boundary shown in the redline draft RACR has been changed to minimize overlap with land already transferred to USFWS. USFWS has provided a preliminary approval, with final concurrence pending.

Item 11 (LHAAP-67 RACR) – Both agencies have commented on the draft RACR. TCEQ comments have been resolved. EPA comments were responded to, with failure to achieve concurrence on some comments. EPA's latest comment response has been received and is under review.

Item 12 (LHAAP-67 LUC) – Army has signed the recordation documents, which have been transmitted to Harrison County for filing. A copy of the recorded documents will be transmitted to Army for use in update of the Land Use Control Management Plan.

Item 13 (LHAAP-46 RAO Report) – Projected for submittal to agencies in early February.

Item 14 (LHAAP-67 RAO Report) – Projected for submittal to agencies in early February.

Item 15 (LHAAP-50 RAO Report) – Projected for submittal after LHAAP-46 and LHAAP-67 RAO Reports.

Item 16 (LHAAP-58 RAO Report) – Projected for submittal after LHAAP-46 and LHAAP-67 RAO Reports.

Item 17 (Monthly Managers' Meeting) – Next MMM scheduled for 10AM, Tuesday, January 20th by teleconference.

Item 18 (LHAAP-29 Amended RI/FS) – Bio-Traps were installed on November 21st and will reside in the wells for 60 days before collection of samples from them. Another 6 weeks is required for the laboratory analysis to be conducted and data received.

Ms. McDonnell reviewed that EPA split sampling data from August indicated TCE had been detected in their sample from 29WW16, the well at the heart of the intermediate zone methylene chloride plume. AECOM's sample analysis also indicated at over 5,000 ug/L, but the result was J-qualified due to dilutions necessary to accommodate the very high levels of methylene chloride in that sample. Examining data for the surrounding grab groundwater samples taken during 2014 plume delineation indicates TCE in the low thousands of µg/L and those results were not J-qualified. Based on this information, Ms. McDonnell feels the TCE is there and is not an artifact. A more thorough evaluation is in order and Mr. Vandenberg is examining the data and will ensure any impacts of this finding are captured in the Feasibility Study Addendum. Mr. Mayer noted the historical presence of TCE in the shallow zone well at this location; however the well is dry at this time. Mr. Mayer indicated the hot spots for VOCs were located to the southwest of 29WW16, which would appear to correlate with the preliminary plume information gathered this summer.

Item 19 (LHAAP-17 PDI WP, LHAAP-16 RD WP, LHAAP-03 RD/RAWP, LHAAP-04 RD, LHAAP-47 RD) – Placeholder for sites on hold due to dispute. Mr. Tzhone advised that Army's response to the EPA Administrator's decision was to elevate the dispute to Office of Management

and Budget. With respect to the path forward for sites involved in the dispute, EPA's position is that the EPA Administrator's decision has been rendered and requires submittal of RODs revised in accordance with the decision. Therefore, EPA technical management and staff will not provide concurrence to move forward with remedy implementation prior to RODs because any such action would be outside the scope of the FFA. However, to facilitate moving forward EPA political management may do so. Mr. Tzhone's discussions with EPA Section and Branch chiefs suggested that Mr. Lederle provide a letter to the EPA Division Director (Carl Edlund), citing Katherine Hammack's correspondence proposing moving forward with the activities that are not under the dispute, and expanding the detail on what undisputed activities Army wants to implement at LHAAP before the RODs are signed. Mr. Tzhone will provide the contact information to Dr. Zeiler.

Mr. Bruckwicki asked if the FFA becomes null and void if the signatories ignore the FFA and work through a different process. Mr. Tzhone stated that EPA's position is that EPA is bound by the FFA and will work in accordance with the FFA, and does not view the FFA as null and void. However, the Army step to take the dispute to Office of Budget and Management is also outside of the FFA process. Dr. Zeiler stated that Army's position is that FFA is still valid. Mr. Tzhone stated that the dispute issues transcend the Longhorn FFA and that is a complicating factor.

Item 20 (RAB/Website) – Next RAB scheduled for Thursday, February 19th at 6PM. Website updates discussed under action items earlier in the meeting. A permanent note will be added to the document and issue tracker to state the website will be updated at least quarterly. Mr. Wacker stated that RAO fact sheets for LHAAP-37, 50 and 58 will be prepared for this meeting. Dr. Zeiler asked that AECOM evaluate whether there is LHAAP-29 information that we can be comfortable presenting. Dr. Zeiler requested that photographs be taken at the next RAB, and that those photos are posted to the LHAAP website.

Item 21 (GWTP O&M) – Mr. Robert Ford has been hired to fill the GWTP technician position vacated by Ray Wagner. Several other AECOM staff (McDonnell, Hilton, Salameh and several others) have been on-site at LHAAP to support Mr. Beesinger since Mr. Wagner's departure. The AECOM regional health and safety manager also recently was at LHAAP to conduct a safety audit. LHAAP-18/24 monitoring well sampling is scheduled for December.

Item 22 (Admin Record Update) – AR Update for the 3rd quarter is being prepared and is scheduled for submittal to Army by the end of the month.

Item 23 (CRP/CIP) – RAO fact sheets for LHAAP-37, LHAAP-50 and LHAAP-58 are planned for preparation for the next RAB meeting. Dr. Zeiler reminded the group that the next CRP/CIP calendar date is October 2015 when the biennial review questionnaires will be sent out.

Item 24 (1,4-Dioxane Sampling) – Discussed earlier in meeting under AECOM Action Items.

Defense Environmental Restoration Program (DERP) PBR Update (continued) AECOM

- Upcoming field work – LHAAP-18/24 compliance sampling is underway this month. LHAAP-29 bio-traps will reside in wells 29WW43 and 29WW44 until mid-January 2015.
- Monthly data – the data validation report supporting this meeting will be transmitted to the group shortly. The packet contains atypical sampling information including LHAAP-29 RI/FS Addendum Work Plan activities including soil gas, soil and grab groundwater samples. Descriptions of these sample locations were individually crafted since they are not

locations where sampling is performed periodically, but review of the LHAAP-29 RI/FS Addendum Work Plan will assist in interpreting the information.

- Groundwater Treatment Plant – discussed earlier in meeting.

MMRP Update **Army**

- Update – no update

Other Environmental Restoration **Army**

- Site 37 Bioplug Update
  - Dr. Zeiler advised that the Bioplug decommissioning schedule has been provided by Aberdeen Testing Center (ATC) and indicates that "Step 3" activities should be currently taking place (December 1 – 15) with the contractor (ABS Technologies, LLC) on-site. Removal of media from bioplugs has been started to allow the driller a head start on abandonments. ABS will be back in the field on January 2nd to perform "Step 4" activities, including well closures. Mr. Fabian will be on-site to inspect the activities on January 21st.
  - A close-out report containing information on decommissioning activities and analytical data from the final sampling event will be provided upon completion of "Step 4" activities.
  - Mr. Bruckwicki asked if all the wells were being removed. Dr. Zeiler advised that all wells and bioplugs are being removed. Mr. Williams stated that the well network supporting the approved MNA remedy is more than adequate to monitor the approved remedy, so additional wells installed for bioplug monitoring are being abandoned. Further, all media from the aerobic bioplug system points are being removed to allow site groundwater to return to anaerobic groundwater conditions that will allow commencement of the approved MNA remedy. Mr. Bruckwicki related that information he had received from Tommy with ETTL (the drillers tasked with abandonment of bioplug wells and points) indicated that they were vacuuming out the media from the points and backfilling with sand, but it didn't sound like they were planning to remove the casings. Mr. Williams stated that abandonment with sand is consistent with the instruction Army had provided, but that it would not be an issue if the casings were abandoned in place. (Note: The decommissioning plan calls for removal of casings associated with wells and bioplugs; however, Texas Administrative Code provides that well casings may be abandoned in place if attempts to remove casing are unsuccessful.) Mr. Wacker stated that AECOM's primary concern with abandonment was potential impacts of abandonment grout on groundwater pH, resulting in the decision to abandon with sand and a surface plug.
  - ATC has stated aquifer conditions will be restored to pre-demonstration conditions by no later than October 2015. Army has asked AECOM to conduct monitoring events to determine when conditions have returned to baseline.
- Master Groundwater Sampling Schedule Review
  - Real-time tracking is being performed for field events and is reflected in the schedule.
  - Added in the site header rows is information on which quarterly sampling event each event represents.
  - The group discussed that the remedial design provides for a MNA evaluation report to be provided for each of these sites after the first eight quarters of sampling has been completed, in addition to the annual RAO reports.
- LHAAP-58 EISB Summary Review

- Mr. Heaston reviewed a spreadsheet summary provided to the group by email earlier in the meeting, indicating early signs of success with the remedy.
- Data was pulled from two example wells; one well in the heart of the EISB injection area and another on the periphery.
- Initial electron donor injection occurred in September 2013, baseline data collection in October 2013, bioaugmentation injections occurred in November 2013
- Key observations in field parameters are:
  - Following injection of electron donor, oxidation-reduction potential shifts downward from positive values to very negative values as expected/desired for anaerobic degradation
  - Initial assessment indicates May 2014 downward shift in pH is likely due to over-fermentation of the electron donor substrate resulting production of weak fatty acids; will be watched closely to verify this self-corrects as carbon substrate is consumed, generating carbon dioxide that is returned to the system to balance pH
- TOC data indicates distribution of electron donor throughout the plume area and consumption over time; baseline event showed relative low TOC values, with a spike in those values after electron donor injection, then subsequent decline in TOC value indicating consumption and dilution. Results indicate we were very effective in getting TOC into the system and distributing that away from the injection points. Monitoring network shows good residual TOC to drive further biological degradation.
- Contaminant data – While it's too early to make statements about the effectiveness of the remedy based on existing VOC data of note:
  - In 35AWW08 there has been a notable decrease in PCE concentration with an increase in TCE and cis-DCE indicating active dechlorination
- Dissolved gases summary
  - Because we are early in the dechlorination process, significant concentrations of ethane and ethane are not expected at this point
  - Presence of methane provides confirmation that the geochemical environment is reducing (methanogenesis is occurring)
  - Significant increases in carbon dioxide indicates increasing metabolic activity in the aquifer where the microbial population is taking in that injected substrate and
- Wet chemistry summary
  - As reducing conditions are enhanced through biological activity, ferrous iron is expected to increase as observed
  - Observed reduction in sulfate values similarly is expected as biological activity levels increase
  - Alkalinity has increased, as biological activity produces carbon dioxide that is then converted to carbonate/bicarbonate alkalinity in the system
- Dechlorinating bacteria populations
  - Expected increase in bacterial counts observed after bioaugmentation
  - Bacterial count dropped in January 2014, but significant rebound in May 2014 indicates proliferation of the injected bacteria

- Quarterly Reporting and Requirements
  - Quarterly Evaluation Reports – discussed earlier in the meeting.
  - Surface Water/Perimeter Well Quarterly Update – AECOM will provide a date for providing the update on this data, and plan to send this to the RAB members after review by FFA parties.

- Administrative Record Update – addressed earlier in the meeting.
- Website Update – discussed earlier in the meeting.

- Annual Reporting
  - LUC Management Plan Update (due September 2014) – Update will be completed with addition of LUC boundaries for LHAAP-46 and LHAAP-67 when available. The other MNA site LUCs will be captured in the next update.
  - CRP/CIP Revision (Biennial) and questionnaire October 2015

Programmatic Issues **RMZ/RM/AP**

- Status of Dispute – Mr. Tzhone stated that Army has communicated to EPA that they disagree with the EPA Administrator's decision and intend to elevate the dispute to the Office of Management and Budget.
- Interim Path Forward –See additional discussion under Item 19 of the Document and Issue Tracker review above.

USFWS Update **RMZ/PB**

- Environmental Restoration Issues with Transfer Schedule Impact – no update
- USFWS Comments on Documents – no issues

Schedule Next Managers' Meeting – 10AM, Tuesday, January 20th by teleconference.

New Action Items

AECOM

- AECOM will provide instructions for excluding the MMM group's hits from the counter (so only hits from the general public are counted) will be provided.
- Provide 1,4-dioxane split sampling results for GWTP effluent sample and analysis of whether this is an issue for surface application.
- On the Document and Issue Tracker, add the permanent comment under "Remarks": "Website updates will be completed at least quarterly (after RAB meetings).
- Plan to take photos at the next RAB meeting and secure releases for posting of those photos on the LHAAP website.
- Surface Water/Perimeter Well Quarterly Update – AECOM will provide a date for providing the surface water/perimeter well quarterly update on this data, and plan to send this to the RAB members after review by FFA parties.
- Per Mr. Tzhone's request, modify November 2014 MMM minutes to indicate the EPA Administrator's decision on the dispute requires submittal of revised RODs.

EPA

- Mr. Tzhone will provide the contact/address information for EPA Division Director Carl Edlund to Dr. Zeiler.

Adjourn

Attachments: LHAAP Data Validated October/November 2014
-GWTP Influent and Effluent
-LHAAP-29 RI/FS Addendum Work Plan Investigation Sampling
LHAAP-58 EISB Update Table

ACRONYM LIST

AEC	**United States Army Environmental Command**
AECOM	**AECOM Technology Services, Inc.**
AP	**April Palmie**
AR	**Administrative Record**
ATC	**Aberdeen Test Center**
BRAC	**Base Realignment and Closure**
cis-DCE	**cis-Dichloroethene**
CRP/CIP	**Community Relations Plan/Community Involvement Plan**
DERP	**Defense Environmental Restoration Program**
EISB	**Enhanced In-Situ Bioremediation**
EPA	**United States Environmental Protection Agency**
FFA	**Federal Facility Agreement**
FS	**Feasibility Study**
GWTP	**Ground Water Treatment Plant**
LHAAP	**Longhorn Army Ammunition Plant**
LUC	**Land Use Control**
MMM	**Monthly Managers' Meeting**
MMRP	**Military Munitions Response Program**
MNA	**Monitored Natural Attenuation**
O&M	**Operation and Maintenance**
PB	**Paul Bruckwicki**
PBR	**Performance-Based Remediation**
PCE	**Tetrachloroethylene**
PDI	**Pre-Design Investigation**
RAB	**Restoration Advisory Board**
RACR	**Remedial Action Completion Report**
RAO	**Remedial Action Operation**
RAWP	**Remedial Action Work Plan**
RD	**Remedial Design**
RI/FS	**Remedial Investigation / Feasibility Study**
RM	**Rich Mayer**
RMZ	**Rose M. Zeiler**
ROD	**Record of Decision**
RTC	**Response to Comments**
TCE	**Trichloroethene**
TCEQ	**Texas Commission on Environmental Quality**
TOC	**Total Organic Carbon**
USACE	**United States Army Corps of Engineers**
USFWS	**United States Fish and Wildlife Service**
USGS	**United States Geological Service**
VOC	**Volatile Organic Compounds**
WP	**Work Plan**

LHAAP Data Validated
October/November 2014

GWTP Influent and Effluent

Weekly, Biweekly, and Monthly - June through October 2014

Ammonia (350.1)
VOC (8260B)
Ortho-Phosphate (365.2)
Inorganic Anions (9056)
Total Organic Carbon (415.1)
Metals (6010C)
Metals (6020A)
Perchlorate (6850)
Hexavalent Chromium (7196A)

LHAAP-29

RIFS Addendum Work Plan Field Work - June through October 2014

VOC (8260B)
Perchlorate (6850)
Total Organic Carbon (LYDKHN)
Explosives (8270D)
Explosives (8330)

LHAAP GWTP Influent - Monthly Sampling
August - October 2014

Location ID: / Sample Date:	Units	LH18/24-SP140-7197-GRAB 8/4/2014	LH18/24-SP140-7205-GRAB 9/2/2014	LH18/24-SP140-7215-GRAB 10/6/2014
		GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly.	GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly.	GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly.
Perchlorate (6850)				
PERCHLORATE	ug/L	12400	11400	10700
Volatile Organic Compounds (8260B)				
1,1,1,2-TETRACHLOROETHANE	ug/L	<12.5 UJ	<25 U	<25 U
1,1,1-TRICHLOROETHANE	ug/L	<12.5 UJ	<25 U	<25 U
1,1,2,2-TETRACHLOROETHANE	ug/L	<10 UJ	<20 U	<20 U
1,1,2-TRICHLOROETHANE	ug/L	<12.5 UJ	<25 U	<25 U
1,1-DICHLOROETHANE	ug/L	<6.26 UJ	8.91 J	<12.5 U
1,1-DICHLOROETHENE	ug/L	<25 UJ	113	86.4 J
1,1-DICHLOROPROPENE	ug/L	<12.5 UJ	<25 U	<25 U
1,2,3-TRICHLOROBENZENE	ug/L	<7.5 UJ	<15 U	<15 U
1,2,3-TRICHLOROPROPANE	ug/L	<25 UJ	<50 U	<50 U
1,2,4-TRICHLOROBENZENE	ug/L	<10 UJ	<20 U	<20 U
1,2,4-TRIMETHYLBENZENE	ug/L	<12.5 UJ	<25 U	<25 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	<50 UJ	<100 U	<100 U
1,2-DIBROMOETHANE	ug/L	<12.5 UJ	<25 U	<25 U
1,2-DICHLOROBENZENE	ug/L	<6.26 UJ	<12.5 U	<12.5 U
1,2-DICHLOROETHANE	ug/L	<12.5 UJ	70	58
1,2-DICHLOROPROPANE	ug/L	<10 UJ	<20 U	<20 U
1,3,5-TRIMETHYLBENZENE	ug/L	<12.5 UJ	<25 U	<25 U
1,3-DICHLOROBENZENE	ug/L	<12.5 UJ	<25 U	<25 U
1,3-DICHLOROPROPANE	ug/L	<10 UJ	<20 U	<20 U
1,4-DICHLOROBENZENE	ug/L	<6.26 UJ	<12.5 U	<12.5 U
2,2-DICHLOROPROPANE	ug/L	<12.5 UJ	<25 U	<25 U
2-BUTANONE	ug/L	<125 UJ	<250 U	<250 U
2-CHLOROTOLUENE	ug/L	<6.26 UJ	<12.5 U	<12.5 U
2-HEXANONE	ug/L	<125 UJ	<250 U	<250 U
4-CHLOROTOLUENE	ug/L	<12.5 UJ	<25 U	<25 U
4-METHYL-2-PENTANONE	ug/L	<125 UJ	<250 U	<250 U
ACETONE	ug/L	<125 UJ	<250 U	<250 U
BENZENE	ug/L	<6.26 UJ	<12.5 U	<12.5 U
BROMOBENZENE	ug/L	<6.26 UJ	<12.5 U	<12.5 U
BROMOCHLOROMETHANE	ug/L	<10 UJ	<20 U	<20 U
BROMODICHLOROMETHANE	ug/L	<12.5 UJ	<25 U	<25 U
BROMOFORM	ug/L	<25 UJ	<50 U	<50 U
BROMOMETHANE	ug/L	<25 UJ	<50 UJ	<50 U
CARBON DISULFIDE	ug/L	<25 UJ	<50 U	<50 U
CARBON TETRACHLORIDE	ug/L	<12.5 UJ	<25 U	<25 U
CHLOROBENZENE	ug/L	<6.26 UJ	<12.5 U	<12.5 U
CHLOROETHANE	ug/L	<25 UJ	<50 U	<50 U
CHLOROFORM	ug/L	<6.26 UJ	20.1 J	20.2 J
CHLOROMETHANE	ug/L	<25 UJ	<50 U	<50 UJ

LHAAP GWTP Influent - Monthly Sampling
August - October 2014

Location ID: / Sample Date:	Units	LH18/24-SP140-7197-GRAB 8/4/2014	LH18/24-SP140-7205-GRAB 9/2/2014	LH18/24-SP140-7215-GRAB 10/6/2014
		GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly.	GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly.	GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly.
CIS-1,2-DICHLOROETHENE	ug/L	5560	5280	4490
CIS-1,3-DICHLOROPROPENE	ug/L	<12.5 UJ	<25 U	<25 U
DIBROMOCHLOROMETHANE	ug/L	<12.5 UJ	<25 U	<25 U
DIBROMOMETHANE	ug/L	<12.5 UJ	<25 U	<25 U
DICHLORODIFLUOROMETHANE	ug/L	<12.5 UJ	<25 UJ	<25 U
ETHYLBENZENE	ug/L	<12.5 UJ	<25 U	<25 U
HEXACHLOROBUTADIENE	ug/L	<12.5 UJ	<25 U	<25 U
ISOPROPYLBENZENE	ug/L	<12.5 UJ	<25 U	<25 U
M,P-XYLENE	ug/L	<25 UJ	<50 U	<50 U
METHYLENE CHLORIDE	ug/L	8310	581	2670
NAPHTHALENE	ug/L	<10 UJ	<20 U	<20 U
N-BUTYLBENZENE	ug/L	<12.5 UJ	<25 U	<25 U
N-PROPYLBENZENE	ug/L	<6.26 UJ	<12.5 U	<12.5 U
O-XYLENE	ug/L	<12.5 UJ	<25 U	<25 U
P-ISOPROPYLTOLUENE	ug/L	<12.5 UJ	<25 U	<25 U
SEC-BUTYLBENZENE	ug/L	<12.5 UJ	<25 U	<25 U
STYRENE	ug/L	<6.26 UJ	<12.5 U	<12.5 U
TERT-BUTYLBENZENE	ug/L	<12.5 UJ	<25 U	<25 U
TETRACHLOROETHENE	ug/L	<12.5 UJ	39.3 J	36.5 J
TOLUENE	ug/L	<12.5 UJ	<25 U	<25 U
TRANS-1,2-DICHLOROETHENE	ug/L	<12.5 UJ	20 J	<25 U
TRANS-1,3-DICHLOROPROPENE	ug/L	<25 UJ	<50 U	<50 U
TRICHLOROETHENE	ug/L	9510	<25 UJ	9020
TRICHLOROFLUOROMETHANE	ug/L	<12.5 UJ	<25 U	<25 U
VINYL CHLORIDE	ug/L	<12.5 UJ	62.6	40.6 J

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

LHAAP GWTP Effluent - Weekly Sampling
June - October 2014

Location ID: / Sample Date:	Units	Daily Maximum Conc.	LH18/24-SP650-6185-COMP 6/23/2014	LH18/24-SP650-6185-GRAB 6/23/2014	LH18/24-SP650-6197-GRAB 8/4/2014	LH18/24-SP650-6199-COMP 8/11/2014	LH18/24-SP650-6199-GRAB 8/11/2014	LH18/24-SP650-6200-GRAB 8/11/2014	LH18/24-SP650-6202-GRAB 8/18/2014	LH18/24-SP650-6203-COMP 8/25/2014	LH18/24-SP650-6203-GRAB 8/25/2014	LH18/24-SP650-6204-GRAB 8/25/2014	LH18/24-SP650-6205-GRAB 9/2/2014
			GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Quarterly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Quarterly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Monthly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Monthly.
Oil and Grease (1664A)													
OIL & GREASE	mg/L		7.2	6.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ammonia-N (350.1)													
AMMONIA AS N	mg/L		N/A	N/A	N/A	N/A	N/A	2.17	7.58	N/A	N/A	5.09	N/A
Ortho-Phosphate (365.2)													
ORTHO-PHOSPHATE	mg/L		N/A	N/A	N/A	N/A	N/A	0.526	1.18	N/A	N/A	0.815	N/A
Chemical Oxygen Demand (410.4)													
CHEMICAL OXYGEN DEMAND	mg/L		157	167	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Organic Carbon (415.1)													
TOTAL ORGANIC CARBON (TOC)	mg/L		N/A	N/A	N/A	N/A	N/A	39.3	62.4	N/A	N/A	11.4	N/A
Metals (6010C)													
ALUMINUM	mg/L	1.644	<0.1 U	0.0676 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.1 U
IRON	mg/L	2.395	0.154 J	0.114 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.2
SELENIUM	mg/L	0.012	<0.01 U	<0.01 U	<0.02 U	<0.01 U	<0.01 U	N/A	N/A	<0.01 U	<0.01 U	N/A	0.0102 J
Metals (6020A)													
ANTIMONY	mg/L		0.000706 J	<0.001 U	0.00109 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001 U
ARSENIC	mg/L	0.772	0.00214	0.00209	0.00106 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001 U
BARIUM	mg/L	2	0.0877	0.0829	0.117	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.176
CADMIUM	mg/L	0.0034	<0.0006 U	<0.0006 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.0006 U
CHROMIUM	mg/L	0.752	0.0098	0.00525	0.00679	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0106
COBALT	mg/L	11.495	0.00114 J	0.000868 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000938 J
LEAD	mg/L	0.0046	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	N/A	N/A	<0.001 U	<0.001 U	N/A	<0.001 U
MANGANESE	mg/L	15.494	0.0417	0.0403	0.0238	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0427
NICKEL	mg/L	0.184	0.00517 J	0.00328 J	0.00578 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00375 J
SILVER	mg/L	0.003	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	N/A	N/A	<0.001 U	<0.001 U	N/A	<0.001 U
THALLIUM	mg/L		<0.0002 U	<0.0002 U	<0.0002 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.0002 U
VANADIUM	mg/L	3.592	0.00101 J	0.000748 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001 U
ZINC	mg/L	0.31	0.0403 J	0.0239 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0186 J
Perchlorate (6850)													
PERCHLORATE	ug/L	13	<0.2 U	<0.2 U	N/A	<0.2 U	0.31 J	0.868	54.2	<0.2 U	9.3	40.2	N/A
Hexavalent Chromium (7196A)													
HEXAVALENT CHROMIUM	mg/L	0.124	<0.01 U	<0.01 U	N/A	<0.02 U	<0.02 U	N/A	N/A	0.00539 J	<0.01 UJ	N/A	N/A

LHAAP GWTP Effluent - Weekly Sampling
June - October 2014

Location ID: / Sample Date:	Units	Daily Maximum Conc.	LH18/24-SP650-6185-COMP 6/23/2014	LH18/24-SP650-6185-GRAB 6/23/2014	LH18/24-SP650-6197-GRAB 8/4/2014	LH18/24-SP650-6199-COMP 8/11/2014	LH18/24-SP650-6199-GRAB 8/11/2014	LH18/24-SP650-6200-GRAB 8/11/2014	LH18/24-SP650-6202-GRAB 8/18/2014	LH18/24-SP650-6203-COMP 8/25/2014	LH18/24-SP650-6203-GRAB 8/25/2014	LH18/24-SP650-6204-GRAB 8/25/2014	LH18/24-SP650-6205-GRAB 9/2/2014
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Volatile Organic Compounds (8260B)													
1,1,1,2-TETRACHLOROETHANE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
1,1,1-TRICHLOROETHANE	ug/L	7230	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
1,1,2,2-TETRACHLOROETHANE	ug/L		N/A	<0.4 U	N/A	N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A	N/A
1,1,2-TRICHLOROETHANE	ug/L	216.9	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
1,1-DICHLOROETHANE	ug/L	14032	N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A
1,1-DICHLOROETHENE	ug/L	253	N/A	<1 U	N/A	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A
1,1-DICHLOROPROPENE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
1,2,3-TRICHLOROBENZENE	ug/L		N/A	<0.3 UJ	N/A	N/A	<0.3 U	N/A	N/A	N/A	<0.3 U	N/A	N/A
1,2,3-TRICHLOROPROPANE	ug/L		N/A	<1 U	N/A	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A
1,2,4-TRICHLOROBENZENE	ug/L		N/A	<0.4 U	N/A	N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A	N/A
1,2,4-TRIMETHYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
1,2-DIBROMO-3-CHLOROPROPANE	ug/L		N/A	<2 U	N/A	N/A	<2 U	N/A	N/A	N/A	<2 U	N/A	N/A
1,2-DIBROMOETHANE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
1,2-DICHLOROBENZENE	ug/L		N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A
1,2-DICHLOROETHANE	ug/L	181	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
1,2-DICHLOROPROPANE	ug/L	5	N/A	<0.4 U	N/A	N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A	N/A
1,3,5-TRIMETHYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
1,3-DICHLOROBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
1,3-DICHLOROPROPANE	ug/L		N/A	<0.4 U	N/A	N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A	N/A
1,4-DICHLOROBENZENE	ug/L		N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A
2,2-DICHLOROPROPANE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
2-BUTANONE	ug/L		N/A	<5 U	N/A	N/A	<5 U	N/A	N/A	N/A	<5 U	N/A	N/A
2-CHLOROTOLUENE	ug/L		N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A
2-HEXANONE	ug/L		N/A	<5 U	N/A	N/A	<5 U	N/A	N/A	N/A	<5 U	N/A	N/A
4-CHLOROTOLUENE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
4-METHYL-2-PENTANONE	ug/L		N/A	<5 U	N/A	N/A	<5 U	N/A	N/A	N/A	<5 U	N/A	N/A
ACETONE	ug/L	2395	N/A	4.83 J	N/A	N/A	3.72 J	N/A	N/A	N/A	2.94 J	N/A	N/A
BENZENE	ug/L	181	N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A
BROMOBENZENE	ug/L		N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A
BROMOCHLOROMETHANE	ug/L		N/A	<0.4 U	N/A	N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A	N/A
BROMODICHLOROMETHANE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
BROMOFORM	ug/L		N/A	<1 U	N/A	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A
BROMOMETHANE	ug/L		N/A	<1 U	N/A	N/A	<1 U	N/A	N/A	N/A	<1 UJ	N/A	N/A
CARBON DISULFIDE	ug/L		N/A	<1 U	N/A	N/A	<1 U	N/A	N/A	N/A	<1 UJ	N/A	N/A
CARBON TETRACHLORIDE	ug/L	181	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
CHLOROBENZENE	ug/L	47180	N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A
CHLOROETHANE	ug/L		N/A	<1 U	N/A	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A
CHLOROFORM	ug/L	3615	N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A
CHLOROMETHANE	ug/L		N/A	<1 U	N/A	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A
CIS-1,2-DICHLOROETHENE	ug/L		N/A	1.6	N/A	N/A	2.13	N/A	N/A	N/A	2.14	N/A	N/A
CIS-1,3-DICHLOROPROPENE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
DIBROMOCHLOROMETHANE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A

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DIBROMOMETHANE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
DICHLORODIFLUOROMETHANE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
ETHYLBENZENE	ug/L	57025	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
HEXACHLOROBUTADIENE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
ISOPROPYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
M,P-XYLENE	ug/L	83.6	N/A	<1 U	N/A	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A
METHYLENE CHLORIDE	ug/L	1699	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
NAPHTHALENE	ug/L		N/A	<0.4 U	N/A	N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A	N/A
N-BUTYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
N-PROPYLBENZENE	ug/L		N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A
O-XYLENE	ug/L	83.6	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
P-ISOPROPYLTOLUENE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
SEC-BUTYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
STYRENE	ug/L	5987	N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A
TERT-BUTYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
TETRACHLOROETHENE	ug/L	180.7	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
TOLUENE	ug/L	4189	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
TRANS-1,2-DICHLOROETHENE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
TRANS-1,3-DICHLOROPROPENE	ug/L		N/A	<1 U	N/A	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A
TRICHLOROETHENE	ug/L	181	N/A	1.09	N/A	N/A	1.24	N/A	N/A	N/A	1.36	N/A	N/A
TRICHLOROFLUOROMETHANE	ug/L		N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
VINYL CHLORIDE	ug/L	72	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A
Inorganic Anions (9056)													
CHLORIDE	mg/L		534	556	N/A	690	687	N/A	N/A	862	913	N/A	N/A
SULFATE	mg/L		29.5	30.1	N/A	54.9	69	N/A	N/A	122	121	N/A	N/A

Blue Highlighting Indicates concentrations above the Daily Maximum Concentration

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

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

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

LHAAP GWTP Effluent - Weekly Sampling
June - October 2014

Location ID: / Sample Date:	Units	Daily Maximum Conc.	LH18/24-SP650-6206-GRAB 9/2/2014	LH18/24-SP650-6207-GRAB 9/8/2014	LH18/24-SP650-6208-COMP 9/8/2014	LH18/24-SP650-6208-GRAB 9/8/2014	LH18/24-SP650-6209-COMP 9/15/2014	LH18/24-SP650-6209-GRAB 9/15/2014	LH18/24-SP650-6210-GRAB 9/15/2014	LH18/24-SP650-6212-COMP 9/22/2014	LH18/24-SP650-6212-GRAB 9/22/2014	LH18/24-SP650-6213-GRAB 9/22/2014	LH18/24-SP650-6214-GRAB 9/29/2014
			GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Quarterly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Quarterly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.
Oil and Grease (1664A)													
OIL & GREASE	mg/L		N/A	N/A	N/A	N/A	9.8	6.8	N/A	N/A	N/A	N/A	N/A
Ammonia-N (350.1)													
AMMONIA AS N	mg/L		N/A	N/A	N/A	4.07	N/A	N/A	2.84	N/A	N/A	6.93	4.46
Ortho-Phosphate (365.2)													
ORTHO-PHOSPHATE	mg/L		0.772	N/A	N/A	0.617	N/A	N/A	0.178	N/A	N/A	1.23	0.649
Chemical Oxygen Demand (410.4)													
CHEMICAL OXYGEN DEMAND	mg/L		N/A	N/A	N/A	N/A	94.9	113	N/A	N/A	N/A	N/A	N/A
Total Organic Carbon (415.1)													
TOTAL ORGANIC CARBON (TOC)	mg/L		22.9	N/A	N/A	10.5	N/A	N/A	3.92 J	N/A	N/A	13.2	37.1
Metals (6010C)													
ALUMINUM	mg/L	1.644	N/A	N/A	N/A	N/A	0.0642 J	0.0792 J	N/A	N/A	N/A	N/A	N/A
IRON	mg/L	2.395	N/A	N/A	N/A	N/A	0.0808 J	0.0667 J	N/A	N/A	N/A	N/A	N/A
SELENIUM	mg/L	0.012	N/A	0.00711 J	<0.01 U	N/A	<0.01 U	<0.01 U	N/A	<0.01 U	<0.01 U	N/A	N/A
Metals (6020A)													
ANTIMONY	mg/L		N/A	<0.001 U	<0.001 U	N/A	<0.001 U	<0.001 U	N/A	N/A	N/A	N/A	N/A
ARSENIC	mg/L	0.772	N/A	0.00305 J	0.00258 J	N/A	0.00187 J	0.00196 J	N/A	N/A	N/A	N/A	N/A
BARIUM	mg/L	2	N/A	0.153	0.129	N/A	0.111	<0.003 UJ	N/A	N/A	N/A	N/A	N/A
CADMIUM	mg/L	0.0034	N/A	N/A	N/A	N/A	<0.0006 U	<0.0006 U	N/A	N/A	N/A	N/A	N/A
CHROMIUM	mg/L	0.752	N/A	0.00405	0.00344 J	N/A	0.00333 J	0.00253 J	N/A	N/A	N/A	N/A	N/A
COBALT	mg/L	11.495	N/A	N/A	N/A	N/A	0.000576 J	0.000558 J	N/A	N/A	N/A	N/A	N/A
LEAD	mg/L	0.0046	N/A	<0.001 U	<0.001 U	N/A	<0.001 U	<0.001 U	N/A	<0.001 U	<0.001 U	N/A	N/A
MANGANESE	mg/L	15.494	N/A	0.0367	0.0291	N/A	0.0329	0.0298	N/A	N/A	N/A	N/A	N/A
NICKEL	mg/L	0.184	N/A	0.00243 J	0.00222 J	N/A	0.0022 J	0.00209 J	N/A	N/A	N/A	N/A	N/A
SILVER	mg/L	0.003	N/A	<0.001 U	<0.001 U	N/A	<0.001 U	<0.001 U	N/A	<0.001 U	<0.001 U	N/A	N/A
THALLIUM	mg/L		N/A	<0.0002 U	<0.0002 U	N/A	<0.0002 U	<0.0002 U	N/A	N/A	N/A	N/A	N/A
VANADIUM	mg/L	3.592	N/A	N/A	N/A	N/A	<0.001 U	<0.001 U	N/A	N/A	N/A	N/A	N/A
ZINC	mg/L	0.31	N/A	N/A	N/A	N/A	0.0131 J	0.0138 J	N/A	N/A	N/A	N/A	N/A
Perchlorate (6850)													
PERCHLORATE	ug/L	13	2.78	<0.2 U	<0.2 U	0.669	<0.2 U	<0.2 U	<0.2 U	0.976	<0.2 U	0.753	0.206 J
Hexavalent Chromium (7196A)													
HEXAVALENT CHROMIUM	mg/L	0.124	N/A	<0.01 U	<0.01 U	N/A	<0.01 UJ	<0.01 UJ	N/A	<0.01 U	<0.01 U	N/A	N/A

LHAAP GWTP Effluent - Weekly Sampling
June - October 2014

Location ID: / Sample Date:	Units	Daily Maximum Conc.	LH18/24-SP650-6206-GRAB 9/2/2014	LH18/24-SP650-6207-GRAB 9/8/2014	LH18/24-SP650-6208-COMP 9/8/2014	LH18/24-SP650-6208-GRAB 9/8/2014	LH18/24-SP650-6209-COMP 9/15/2014	LH18/24-SP650-6209-GRAB 9/15/2014	LH18/24-SP650-6210-GRAB 9/15/2014	LH18/24-SP650-6212-COMP 9/22/2014	LH18/24-SP650-6212-GRAB 9/22/2014	LH18/24-SP650-6213-GRAB 9/22/2014	LH18/24-SP650-6214-GRAB 9/29/2014
			GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Quarterly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Quarterly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.
Volatile Organic Compounds (8260B)													
1,1,1,2-TETRACHLOROETHANE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
1,1,1-TRICHLOROETHANE	ug/L	7230	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
1,1,2,2-TETRACHLOROETHANE	ug/L		N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A	N/A	<0.4 U	N/A	N/A
1,1,2-TRICHLOROETHANE	ug/L	216.9	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
1,1-DICHLOROETHANE	ug/L	14032	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A
1,1-DICHLOROETHENE	ug/L	253	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A	<1 U	N/A	N/A
1,1-DICHLOROPROPENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
1,2,3-TRICHLOROBENZENE	ug/L		N/A	<0.3 U	N/A	N/A	N/A	<0.3 U	N/A	N/A	<0.3 U	N/A	N/A
1,2,3-TRICHLOROPROPANE	ug/L		N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A	<1 U	N/A	N/A
1,2,4-TRICHLOROBENZENE	ug/L		N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A	N/A	<0.4 U	N/A	N/A
1,2,4-TRIMETHYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
1,2-DIBROMO-3-CHLOROPROPANE	ug/L		N/A	<2 U	N/A	N/A	N/A	<2 U	N/A	N/A	<2 U	N/A	N/A
1,2-DIBROMOETHANE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
1,2-DICHLOROBENZENE	ug/L		N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A
1,2-DICHLOROETHANE	ug/L	181	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
1,2-DICHLOROPROPANE	ug/L	5	N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A	N/A	<0.4 U	N/A	N/A
1,3,5-TRIMETHYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
1,3-DICHLOROBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
1,3-DICHLOROPROPANE	ug/L		N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A	N/A	<0.4 U	N/A	N/A
1,4-DICHLOROBENZENE	ug/L		N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A
2,2-DICHLOROPROPANE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
2-BUTANONE	ug/L		N/A	<5 U	N/A	N/A	N/A	<5 U	N/A	N/A	<5 U	N/A	N/A
2-CHLOROTOLUENE	ug/L		N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A
2-HEXANONE	ug/L		N/A	<5 U	N/A	N/A	N/A	<5 U	N/A	N/A	<5 UJ	N/A	N/A
4-CHLOROTOLUENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
4-METHYL-2-PENTANONE	ug/L		N/A	<5 U	N/A	N/A	N/A	<5 U	N/A	N/A	<5 U	N/A	N/A
ACETONE	ug/L	2395	N/A	3.78 J	N/A	N/A	N/A	3.11 J	N/A	N/A	<5 UJ	N/A	N/A
BENZENE	ug/L	181	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A
BROMOBENZENE	ug/L		N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A
BROMOCHLOROMETHANE	ug/L		N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A	N/A	<0.4 U	N/A	N/A
BROMODICHLOROMETHANE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
BROMOFORM	ug/L		N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A	<1 U	N/A	N/A
BROMOMETHANE	ug/L		N/A	<1 UJ	N/A	N/A	N/A	<1 U	N/A	N/A	<1 U	N/A	N/A
CARBON DISULFIDE	ug/L		N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A	<1 U	N/A	N/A
CARBON TETRACHLORIDE	ug/L	181	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
CHLOROBENZENE	ug/L	47180	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A
CHLOROETHANE	ug/L		N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A	<1 U	N/A	N/A
CHLOROFORM	ug/L	3615	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A
CHLOROMETHANE	ug/L		N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A	<1 U	N/A	N/A
CIS-1,2-DICHLOROETHENE	ug/L		N/A	1.86	N/A	N/A	N/A	1.53	N/A	N/A	1.8	N/A	N/A
CIS-1,3-DICHLOROPROPENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
DIBROMOCHLOROMETHANE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A

LHAAP GWTP Effluent - Weekly Sampling
June - October 2014

Location ID: / Sample Date:	Units	Daily Maximum Conc.	LH18/24-SP650-6206-GRAB 9/2/2014	LH18/24-SP650-6207-GRAB 9/8/2014	LH18/24-SP650-6208-COMP 9/8/2014	LH18/24-SP650-6208-GRAB 9/8/2014	LH18/24-SP650-6209-COMP 9/15/2014	LH18/24-SP650-6209-GRAB 9/15/2014	LH18/24-SP650-6210-GRAB 9/15/2014	LH18/24-SP650-6212-COMP 9/22/2014	LH18/24-SP650-6212-GRAB 9/22/2014	LH18/24-SP650-6213-GRAB 9/22/2014	LH18/24-SP650-6214-GRAB 9/29/2014
			GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Quarterly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Quarterly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.
DIBROMOMETHANE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
DICHLORODIFLUOROMETHANE	ug/L		N/A	<0.5 UJ	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
ETHYLBENZENE	ug/L	57025	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
HEXACHLOROBUTADIENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
ISOPROPYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
M,P-XYLENE	ug/L	83.6	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A	<1 U	N/A	N/A
METHYLENE CHLORIDE	ug/L	1699	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
NAPHTHALENE	ug/L		N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A	N/A	<0.4 U	N/A	N/A
N-BUTYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
N-PROPYLBENZENE	ug/L		N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A
O-XYLENE	ug/L	83.6	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
P-ISOPROPYLTOLUENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
SEC-BUTYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
STYRENE	ug/L	5987	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	<0.25 U	N/A	N/A
TERT-BUTYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
TETRACHLOROETHENE	ug/L	180.7	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
TOLUENE	ug/L	4189	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
TRANS-1,2-DICHLOROETHENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
TRANS-1,3-DICHLOROPROPENE	ug/L		N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A	<1 U	N/A	N/A
TRICHLOROETHENE	ug/L	181	N/A	<0.5 UJ	N/A	N/A	N/A	1.24	N/A	N/A	1.41	N/A	N/A
TRICHLOROFLUOROMETHANE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
VINYL CHLORIDE	ug/L	72	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	<0.5 U	N/A	N/A
Inorganic Anions (9056)													
CHLORIDE	mg/L		N/A	807	924	N/A	884	879	N/A	720	711	N/A	N/A
SULFATE	mg/L		N/A	106	80	N/A	71.7	67.9	N/A	28.5	41.6	N/A	N/A

Blue Highlighting Indicates concentrations above the Daily Maximum Concentration

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

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

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

LHAAP GWTP Effluent - Weekly Sampling
June - October 2014

Location ID: / Sample Date:	Units	Daily Maximum Conc.	LH18/24-SP650-6215-GRAB 10/6/2014	LH18/24-SP650-6216-COMP 10/6/2014	LH18/24-SP650-6216-GRAB 10/6/2014	LH18/24-SP650-6217-GRAB 10/6/2014	LH18/24-SP650-6218-GRAB 10/13/2014
			GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Monthly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.
Oil and Grease (1664A)							
OIL & GREASE	mg/L		N/A	N/A	N/A	N/A	N/A
Ammonia-N (350.1)							
AMMONIA AS N	mg/L		N/A	N/A	N/A	7.87	5.31
Ortho-Phosphate (365.2)							
ORTHO-PHOSPHATE	mg/L		N/A	N/A	N/A	1.09	1.01
Chemical Oxygen Demand (410.4)							
CHEMICAL OXYGEN DEMAND	mg/L		N/A	N/A	N/A	N/A	N/A
Total Organic Carbon (415.1)							
TOTAL ORGANIC CARBON (TOC)	mg/L		N/A	N/A	N/A	60.5	43.9
Metals (6010C)							
ALUMINUM	mg/L	1.644	<0.1 U	N/A	N/A	N/A	N/A
IRON	mg/L	2.395	0.203	N/A	N/A	N/A	N/A
SELENIUM	mg/L	0.012	<0.01 U	<0.01 U	<0.01 U	N/A	N/A
Metals (6020A)							
ANTIMONY	mg/L		<0.001 U	N/A	N/A	N/A	N/A
ARSENIC	mg/L	0.772	0.00206	N/A	N/A	N/A	N/A
BARIUM	mg/L	2	0.0956	N/A	N/A	N/A	N/A
CADMIUM	mg/L	0.0034	<0.0006 U	N/A	N/A	N/A	N/A
CHROMIUM	mg/L	0.752	0.0254 J	N/A	N/A	N/A	N/A
COBALT	mg/L	11.495	0.000878 J	N/A	N/A	N/A	N/A
LEAD	mg/L	0.0046	<0.001 U	<0.001 U	<0.001 U	N/A	N/A
MANGANESE	mg/L	15.494	0.046	N/A	N/A	N/A	N/A
NICKEL	mg/L	0.184	0.0148	N/A	N/A	N/A	N/A
SILVER	mg/L	0.003	<0.001 U	<0.001 U	<0.001 U	N/A	N/A
THALLIUM	mg/L		<0.0002 U	N/A	N/A	N/A	N/A
VANADIUM	mg/L	3.592	<0.001 U	N/A	N/A	N/A	N/A
ZINC	mg/L	0.31	0.175	N/A	N/A	N/A	N/A
Perchlorate (6850)							
PERCHLORATE	ug/L	13	N/A	<0.2 U	<0.2 U	<0.2 U	3.54
Hexavalent Chromium (7196A)							
HEXAVALENT CHROMIUM	mg/L	0.124	N/A	<0.01 UJ	<0.01 UJ	N/A	N/A

LHAAP GWTP Effluent - Weekly Sampling
June - October 2014

Location ID: / Sample Date:	Units	Daily Maximum Conc.	LH18/24-SP650-6215-GRAB 10/6/2014	LH18/24-SP650-6216-COMP 10/6/2014	LH18/24-SP650-6216-GRAB 10/6/2014	LH18/24-SP650-6217-GRAB 10/6/2014	LH18/24-SP650-6218-GRAB 10/13/2014
			GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Monthly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.
Volatile Organic Compounds (8260B)							
1,1,1,2-TETRACHLOROETHANE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
1,1,1-TRICHLOROETHANE	ug/L	7230	N/A	N/A	<0.5 U	N/A	N/A
1,1,2,2-TETRACHLOROETHANE	ug/L		N/A	N/A	<0.4 U	N/A	N/A
1,1,2-TRICHLOROETHANE	ug/L	216.9	N/A	N/A	<0.5 U	N/A	N/A
1,1-DICHLOROETHANE	ug/L	14032	N/A	N/A	<0.25 U	N/A	N/A
1,1-DICHLOROETHENE	ug/L	253	N/A	N/A	<1 U	N/A	N/A
1,1-DICHLOROPROPENE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
1,2,3-TRICHLOROBENZENE	ug/L		N/A	N/A	<0.3 U	N/A	N/A
1,2,3-TRICHLOROPROPANE	ug/L		N/A	N/A	<1 U	N/A	N/A
1,2,4-TRICHLOROBENZENE	ug/L		N/A	N/A	<0.4 U	N/A	N/A
1,2,4-TRIMETHYLBENZENE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
1,2-DIBROMO-3-CHLOROPROPANE	ug/L		N/A	N/A	<2 U	N/A	N/A
1,2-DIBROMOETHANE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
1,2-DICHLOROBENZENE	ug/L		N/A	N/A	<0.25 U	N/A	N/A
1,2-DICHLOROETHANE	ug/L	181	N/A	N/A	<0.5 U	N/A	N/A
1,2-DICHLOROPROPANE	ug/L	5	N/A	N/A	<0.4 U	N/A	N/A
1,3,5-TRIMETHYLBENZENE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
1,3-DICHLOROBENZENE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
1,3-DICHLOROPROPANE	ug/L		N/A	N/A	<0.4 U	N/A	N/A
1,4-DICHLOROBENZENE	ug/L		N/A	N/A	<0.25 U	N/A	N/A
2,2-DICHLOROPROPANE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
2-BUTANONE	ug/L		N/A	N/A	<5 U	N/A	N/A
2-CHLOROTOLUENE	ug/L		N/A	N/A	<0.25 U	N/A	N/A
2-HEXANONE	ug/L		N/A	N/A	<5 U	N/A	N/A
4-CHLOROTOLUENE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
4-METHYL-2-PENTANONE	ug/L		N/A	N/A	<5 U	N/A	N/A
ACETONE	ug/L	2395	N/A	N/A	<5 U	N/A	N/A
BENZENE	ug/L	181	N/A	N/A	<0.25 U	N/A	N/A
BROMOBENZENE	ug/L		N/A	N/A	<0.25 U	N/A	N/A
BROMOCHLOROMETHANE	ug/L		N/A	N/A	<0.4 U	N/A	N/A
BROMODICHLOROMETHANE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
BROMOFORM	ug/L		N/A	N/A	<1 U	N/A	N/A
BROMOMETHANE	ug/L		N/A	N/A	<1 U	N/A	N/A
CARBON DISULFIDE	ug/L		N/A	N/A	<1 U	N/A	N/A
CARBON TETRACHLORIDE	ug/L	181	N/A	N/A	<0.5 U	N/A	N/A
CHLOROBENZENE	ug/L	47180	N/A	N/A	<0.25 U	N/A	N/A
CHLOROETHANE	ug/L		N/A	N/A	<1 U	N/A	N/A
CHLOROFORM	ug/L	3615	N/A	N/A	<0.25 U	N/A	N/A
CHLOROMETHANE	ug/L		N/A	N/A	<1 U	N/A	N/A
CIS-1,2-DICHLOROETHENE	ug/L		N/A	N/A	1.48	N/A	N/A
CIS-1,3-DICHLOROPROPENE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
DIBROMOCHLOROMETHANE	ug/L		N/A	N/A	<0.5 U	N/A	N/A

LHAAP GWTP Effluent - Weekly Sampling
June - October 2014

Location ID: / Sample Date:	Units	Daily Maximum Conc.	LH18/24-SP650-6215-GRAB 10/6/2014	LH18/24-SP650-6216-COMP 10/6/2014	LH18/24-SP650-6216-GRAB 10/6/2014	LH18/24-SP650-6217-GRAB 10/6/2014	LH18/24-SP650-6218-GRAB 10/13/2014
			GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Monthly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.
DIBROMOMETHANE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
DICHLORODIFLUOROMETHANE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
ETHYLBENZENE	ug/L	57025	N/A	N/A	<0.5 U	N/A	N/A
HEXACHLOROBUTADIENE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
ISOPROPYLBENZENE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
M,P-XYLENE	ug/L	83.6	N/A	N/A	<1 U	N/A	N/A
METHYLENE CHLORIDE	ug/L	1699	N/A	N/A	<0.5 U	N/A	N/A
NAPHTHALENE	ug/L		N/A	N/A	<0.4 U	N/A	N/A
N-BUTYLBENZENE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
N-PROPYLBENZENE	ug/L		N/A	N/A	<0.25 U	N/A	N/A
O-XYLENE	ug/L	83.6	N/A	N/A	<0.5 U	N/A	N/A
P-ISOPROPYLTOLUENE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
SEC-BUTYLBENZENE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
STYRENE	ug/L	5987	N/A	N/A	<0.25 U	N/A	N/A
TERT-BUTYLBENZENE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
TETRACHLOROETHENE	ug/L	180.7	N/A	N/A	<0.5 U	N/A	N/A
TOLUENE	ug/L	4189	N/A	N/A	<0.5 U	N/A	N/A
TRANS-1,2-DICHLOROETHENE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
TRANS-1,3-DICHLOROPROPENE	ug/L		N/A	N/A	<1 U	N/A	N/A
TRICHLOROETHENE	ug/L	181	N/A	N/A	1.05	N/A	N/A
TRICHLOROFLUOROMETHANE	ug/L		N/A	N/A	<0.5 U	N/A	N/A
VINYL CHLORIDE	ug/L	72	N/A	N/A	<0.5 U	N/A	N/A
Inorganic Anions (9056)							
CHLORIDE	mg/L		N/A	628	633	N/A	N/A
SULFATE	mg/L		N/A	37.3	33.6	N/A	N/A

Blue Highlighting Indicates concentrations above the Daily Maximum Concentration

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

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

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: / Sample Date:	Units	MCL/ MSC	29CPT02(63) 300614 6/30/2014	29CPT0280 260614 6/26/2014	29CPT0285 300614 6/30/2014	29CPT0380 250614 6/25/2014	29CPT04(87) 230614 6/23/2014	29CPT0487 230614 6/23/2014	29CPT0573 100714 7/10/2014	29CPT0683 110714 7/11/2014	29CPT0787 010714 7/1/2014	29CPT1180 140714 7/14/2014	29CPT1285 230714 7/23/2014
			RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation
Total Organic Carbon (415.1)													
TOTAL ORGANIC CARBON (TOC)	mg/L		3.47	1.01 J	3.62	24.7	10.2	N/A	N/A	N/A	N/A	N/A	N/A
Volatile Organic Compounds (8260B)													
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 UJ	<0.5 U	<0.5 U	<500 U
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<500 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	<0.4 U	<0.4 U	<1 U	N/A	<0.4 U	<0.8 U	<0.4 U	<0.4 U	<0.4 U	<400 U
1,1,2-TRICHLOROETHANE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<500 U
1,1-DICHLOROETHANE	ug/L	10000	<0.25 U	<0.25 U	<0.25 U	<0.626 U	N/A	<0.25 U	97.6	2.73	<0.25 U	721	820 J
1,1-DICHLOROETHENE	ug/L	7	<1 U	<1 U	<1 U	<2.5 U	N/A	<1 U	3.77 J	<1 U	<1 U	48.1	<1000 U
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	1.73 J	<0.5 U	<0.5 U	5.42	<500 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<0.3 U	<0.3 U	<0.3 U	<0.75 U	N/A	<0.3 U	<0.6 U	<0.3 U	<0.3 UJ	<0.3 UJ	<300 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<1 U	<1 U	<1 U	<2.5 U	N/A	<1 U	<2 U	<1 UJ	<1 UJ	<1 U	<1000 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<0.4 U	<0.4 U	<0.4 U	<1 U	N/A	<0.4 U	<0.8 U	<0.4 U	<0.4 UJ	<0.4 U	<400 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<500 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 U	<2 U	<2 U	<5 U	N/A	<2 U	<4 U	<2 UJ	<2 UJ	<2 U	<2000 U
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<500 U
1,2-DICHLOROBENZENE	ug/L	600	<0.25 U	<0.25 U	<0.25 U	<0.626 U	N/A	<0.25 U	<0.5 U	<0.25 U	<0.25 U	<0.25 U	<250 U
1,2-DICHLOROETHANE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	0.617 J	<0.5 U	<0.5 U	1.38	<500 U
1,2-DICHLOROPROPANE	ug/L	5	<0.4 U	<0.4 U	<0.4 U	<1 U	N/A	<0.4 U	<0.8 U	<0.4 U	<0.4 U	<0.4 U	<400 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<500 U
1,3-DICHLOROBENZENE	ug/L	3100	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 UJ	<0.5 U	<500 U
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	<0.4 U	<0.4 U	<1 U	N/A	<0.4 U	<0.8 U	<0.4 U	<0.4 U	<0.4 U	<400 U
1,4-DICHLOROBENZENE	ug/L	75	<0.25 U	<0.25 U	<0.25 U	<0.626 U	N/A	<0.25 U	<0.5 U	<0.25 U	<0.25 U	<0.25 U	<250 U
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<500 U
2-BUTANONE	ug/L	61000	<5 U	<5 UJ	<5 U	<12.5 U	N/A	<5 UJ	<10 U	<5 UJ	<5 UJ	3.87 J	<5000 U
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	<0.626 U	N/A	<0.25 U	<0.5 U	<0.25 U	<0.25 UJ	<0.25 U	<250 U
2-HEXANONE	ug/L	6100	<5 U	<5 UJ	<5 U	<12.5 U	N/A	<5 U	<10 U	<5 UJ	<5 UJ	<5 U	<5000 U
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 UJ	<0.5 UJ	<500 U
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	<5 UJ	<5 U	<12.5 U	N/A	<5 U	<10 U	<5 UJ	<5 UJ	<5 U	<5000 U
ACETONE	ug/L	92000	2.87 J	2.51 J	10.4	<12.5 U	N/A	<5 UJ	<10 U	<5 UJ	<5 UJ	<5 U	<5000 U
BENZENE	ug/L	5	<0.25 U	<0.25 U	<0.25 U	<0.626 U	N/A	<0.25 U	0.324 J	<0.25 U	<0.25 U	0.164 J	<250 U
BROMOBENZENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	<0.626 U	N/A	<0.25 U	<0.5 U	<0.25 U	<0.25 U	<0.25 U	<250 U
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	<0.4 U	<0.4 U	<1 U	N/A	<0.4 U	145	<0.4 U	<0.4 U	55.9	1990
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<500 U
BROMOFORM	ug/L	36	<1 U	<1 U	<1 U	<2.5 U	N/A	<1 U	<2 U	<1 U	<1 U	<1 U	<1000 U
BROMOMETHANE	ug/L	140	<1 U	<1 U	<1 U	<2.5 UJ	N/A	<1 U	<2 UJ	<1 U	<1 U	<1 U	<1000 U
CARBON DISULFIDE	ug/L	10000	<1 U	<1 U	<1 U	<2.5 U	N/A	<1 U	<2 U	<1 U	<1 U	<1 U	2760
CARBON TETRACHLORIDE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<500 U
CHLOROBENZENE	ug/L	100	<0.25 U	0.24 J	<0.25 U	<0.626 U	N/A	<0.25 U	<0.5 U	<0.25 U	<0.25 U	<0.25 U	<250 U
CHLOROETHANE	ug/L	41000	<1 U	<1 U	<1 U	<2.5 U	N/A	<1 U	4.37	<1 U	<1 UJ	2.26	<1000 U
CHLOROFORM	ug/L	1000	<0.25 U	<0.25 U	<0.25 U	<0.626 U	N/A	<0.25 U	<0.5 U	<0.25 U	<0.25 U	<0.25 U	<250 U
CHLOROMETHANE	ug/L	220	<1 U	<1 U	<1 U	1.77 J	N/A	<1 U	63.6 J	<1 U	<1 U	29.5 J	614 J

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: / Sample Date:	Units	MCL/ MSC	29CPT02(63) 300614 6/30/2014	29CPT0280 260614 6/26/2014	29CPT0285 300614 6/30/2014	29CPT0380 250614 6/25/2014	29CPT04(87) 230614 6/23/2014	29CPT0487 230614 6/23/2014	29CPT0573 100714 7/10/2014	29CPT0683 110714 7/11/2014	29CPT0787 010714 7/1/2014	29CPT1180 140714 7/14/2014	29CPT1285 230714 7/23/2014
			RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation	RIFS Addendum WP Methylene Chloride Plume Delineation
CIS-1,2-DICHLOROETHENE	ug/L	70	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	34.2	<0.5 U	<0.5 U	183	<500 U
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<500 U
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<500 U
DIBROMOMETHANE	ug/L	380	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<500 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<500 U
ETHYLBENZENE	ug/L	700	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<500 U
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 UJ	<0.5 U	<500 U
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<500 U
M,P-XYLENE	ug/L	10000	<1 U	<1 U	<1 U	<2.5 U	N/A	<1 U	<2 U	<1 U	<1 U	<1 U	<1000 U
METHYLENE CHLORIDE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	N/A	63.8	<0.5 U	132000	2350000
NAPHTHALENE	ug/L	2000	<0.4 U	<0.4 U	<0.4 U	<1 U	N/A	<0.4 U	<0.8 U	<0.4 U	<0.4 U	<0.4 U	<400 U
N-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 UJ	<0.5 U	<500 U
N-PROPYLBENZENE	ug/L	4100	<0.25 U	<0.25 U	<0.25 U	<0.626 U	N/A	<0.25 U	<0.5 U	<0.25 U	<0.25 UJ	<0.25 U	<250 U
O-XYLENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<500 U
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 UJ	<0.5 U	<500 U
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 UJ	<0.5 U	<500 U
STYRENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	<0.626 U	N/A	<0.25 U	<0.5 U	<0.25 U	<0.25 U	<0.25 U	<250 U
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 UJ	<0.5 U	<500 U
TETRACHLOROETHENE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	1.81 J	<0.5 U	<0.5 U	0.42 J	<500 U
TOLUENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	1.19 J	<0.5 U	<0.5 U	7.37	<500 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	2.26	<0.5 U	<0.5 U	14.7	<500 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	<1 U	<1 U	<2.5 U	N/A	<1 U	<2 U	<1 U	<1 U	<1 U	<1000 U
TRICHLOROETHENE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	508	0.262 J	<0.5 U	3380	1210
TRICHLOROFLUOROMETHANE	ug/L	31000	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<500 U
VINYL CHLORIDE	ug/L	2	<0.5 U	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U	1.92 J	<0.5 U	<0.5 U	9.2	<500 U

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: / Sample Date:	Units	MCL/ MSC	29CPT1385 270714 7/27/2014	29CPT1485 060814 8/6/2014	29CPT1585 120814 8/12/2014	29CPT16(85) 180814 8/18/2014	29CPT17(85) 200814 8/20/2014	29CPT1875 190914 9/19/2014	29WW16- 101414 10/14/2014
			RIFS Addendum WP - Methylene Chloride Plume Delineation	RIFS Addendum WP - Methylene Chloride Plume Delineation	RIFS Addendum WP - Methylene Chloride Plume Delineation	RIFS Addendum WP - Methylene Chloride Plume Delineation	RIFS Addendum WP - Methylene Chloride Plume Delineation	RIFS Addendum WP - Methylene Chloride Plume Delineation	RIFS Addendum WP - Methylene Chloride Plume Delineation
Total Organic Carbon (415.1)									
TOTAL ORGANIC CARBON (TOC)	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Volatile Organic Compounds (8260B)									
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
1,1,1-TRICHLOROETHANE	ug/L	200	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<2 U	<80 U	<80 U	<0.4 U	<0.4 U	<0.4 U	<20000 U
1,1,2-TRICHLOROETHANE	ug/L	5	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
1,1-DICHLOROETHANE	ug/L	10000	<1.25 U	<50 U	54 J	<0.25 U	63	<0.25 U	<12500 U
1,1-DICHLOROETHENE	ug/L	7	<5 U	<200 U	<200 U	<1 U	<1 U	<1 U	<50000 U
1,1-DICHLOROPROPENE	ug/L	2.9	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<1.5 U	<60 U	<60 U	<0.3 U	<0.3 U	<0.3 U	<15000 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<5 U	<200 U	<200 U	<1 U	<1 U	<1 U	<50000 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<2 U	<80 U	<80 U	<0.4 U	<0.4 U	<0.4 U	<20000 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<10 U	<400 U	<400 U	<2 U	<2 U	<2 U	<100000 U
1,2-DIBROMOETHANE	ug/L	0.005	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
1,2-DICHLOROBENZENE	ug/L	600	<1.25 U	<50 U	<50 U	<0.25 U	<0.25 U	<0.25 U	<12500 U
1,2-DICHLOROETHANE	ug/L	5	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
1,2-DICHLOROPROPANE	ug/L	5	<2 U	<80 U	<80 U	<0.4 U	<0.4 U	<0.4 U	<20000 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
1,3-DICHLOROBENZENE	ug/L	3100	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
1,3-DICHLOROPROPANE	ug/L	29	<2 U	<80 U	<80 U	<0.4 U	<0.4 U	<0.4 U	<20000 U
1,4-DICHLOROBENZENE	ug/L	75	<1.25 U	<50 U	<50 U	<0.25 U	<0.25 U	<0.25 U	<12500 U
2,2-DICHLOROPROPANE	ug/L	42	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
2-BUTANONE	ug/L	61000	<25 U	1080 J	<1000 U	<5 UJ	<5 UJ	<5 U	<250000 U
2-CHLOROTOLUENE	ug/L	2000	<1.25 U	<50 U	<50 U	<0.25 U	<0.25 U	<0.25 U	<12500 U
2-HEXANONE	ug/L	6100	<25 U	<1000 U	<1000 U	<5 UJ	<5 UJ	<5 U	<250000 U
4-CHLOROTOLUENE	ug/L	2000	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
4-METHYL-2-PENTANONE	ug/L	8200	<25 U	<1000 U	<1000 U	<5 UJ	<5 UJ	<5 U	<250000 U
ACETONE	ug/L	92000	<25 UJ	<1000 U	<1000 U	<5 UJ	<5 UJ	6.47 J	<250000 UJ
BENZENE	ug/L	5	<1.25 U	<50 U	<50 U	<0.25 U	<0.25 U	<0.25 U	<12500 U
BROMOBENZENE	ug/L	2000	<1.25 U	<50 U	<50 U	<0.25 U	<0.25 U	<0.25 U	<12500 U
BROMOCHLOROMETHANE	ug/L	4100	<2 U	70.3 J	<80 U	<0.4 U	72.9	<0.4 U	<20000 U
BROMODICHLOROMETHANE	ug/L	4.6	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
BROMOFORM	ug/L	36	<5 U	<200 U	<200 U	<1 U	<1 U	<1 U	<50000 U
BROMOMETHANE	ug/L	140	<5 U	<200 U	<200 UJ	<1 UJ	<1 UJ	<1 U	<50000 U
CARBON DISULFIDE	ug/L	10000	<5 U	<200 U	<200 U	<1 U	<1 UJ	<1 U	<50000 U
CARBON TETRACHLORIDE	ug/L	5	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
CHLOROBENZENE	ug/L	100	<1.25 U	<50 U	<50 U	<0.25 U	<0.25 U	<0.25 U	<12500 U
CHLOROETHANE	ug/L	41000	<5 U	<200 U	<200 U	<1 U	<1 U	<1 U	<50000 U
CHLOROFORM	ug/L	1000	<1.25 U	<50 U	<50 U	<0.25 U	<0.25 U	<0.25 U	<12500 U
CHLOROMETHANE	ug/L	220	<5 U	<200 U	<200 U	<1 U	6.2	<1 U	<50000 U

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Location ID: / Sample Date:	Units	MCL/ MSC	29CPT1385 270714 7/27/2014	29CPT1485 060814 8/6/2014	29CPT1585 120814 8/12/2014	29CPT16(85) 180814 8/18/2014	29CPT17(85) 200814 8/20/2014	29CPT1875 190914 9/19/2014	29WW16- 101414 10/14/2014
			RIFS Addendum WP - Methylene Chloride Plume Delineation	RIFS Addendum WP - Methylene Chloride Plume Delineation	RIFS Addendum WP - Methylene Chloride Plume Delineation	RIFS Addendum WP - Methylene Chloride Plume Delineation	RIFS Addendum WP - Methylene Chloride Plume Delineation	RIFS Addendum WP - Methylene Chloride Plume Delineation	RIFS Addendum WP - Methylene Chloride Plume Delineation
CIS-1,2-DICHLOROETHENE	ug/L	70	<2.5 U	<100 U	<100 U	<0.5 U	5.7	<0.5 U	<25000 U
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
DIBROMOCHLOROMETHANE	ug/L	34	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
DIBROMOMETHANE	ug/L	380	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
ETHYLBENZENE	ug/L	700	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
HEXACHLOROBUTADIENE	ug/L	20	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
ISOPROPYLBENZENE	ug/L	1000	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
M,P-XYLENE	ug/L	10000	<5 U	<200 U	<200 U	<1 U	<1 U	<1 U	<50000 U
METHYLENE CHLORIDE	ug/L	5	1400	54600	36400	<0.5 U	261000	<0.5 U	8260000
NAPHTHALENE	ug/L	2000	<2 U	<80 U	<80 U	<0.4 U	<0.4 U	<0.4 U	<20000 U
N-BUTYLBENZENE	ug/L	4100	<2.5 UJ	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
N-PROPYLBENZENE	ug/L	4100	<1.25 U	<50 U	<50 U	<0.25 U	<0.25 U	<0.25 U	<12500 U
O-XYLENE	ug/L	10000	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
P-ISOPROPYLTOLUENE	ug/L	10000	<2.5 UJ	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
SEC-BUTYLBENZENE	ug/L	4100	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
STYRENE	ug/L	100	<1.25 U	<50 U	<50 U	<0.25 U	<0.25 U	<0.25 U	<12500 U
TERT-BUTYLBENZENE	ug/L	4100	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
TETRACHLOROETHENE	ug/L	5	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
TOLUENE	ug/L	1000	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<5 U	<200 U	<200 U	<1 U	<1 U	<1 U	<50000 U
TRICHLOROETHENE	ug/L	5	<2.5 U	<100 U	138 J	<0.5 U	15.3	<0.5 U	28100 J
TRICHLOROFLUOROMETHANE	ug/L	31000	<2.5 U	<100 U	<100 U	<0.5 U	<0.5 U	<0.5 U	<25000 U
VINYL CHLORIDE	ug/L	2	<2.5 U	<100 U	<100 U	<0.5 U	0.553 J	<0.5 U	<25000 U

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

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June - October 2014

Location ID: / Sample Date:	Units	MCL/ MSC	29CPT01(58) 280614 6/28/2014	29CPT01(74) 290614 6/29/2014	29CPT01(80_5) 290614 6/29/2014	29CPT0260 260614 6/26/2014	29CPT0271 260614 6/26/2014	29CPT0284 260614 6/26/2014	29CPT0370 240614 6/24/2014	29CPT0374 240614 6/24/2014	29CPT0388 240614 6/24/2014	29CPT0440 170614 6/17/2014	29CPT0445 170614 6/17/2014	29CPT0450 170614 6/17/2014	29CPT0454 170614 6/17/2014	29CPT0456 170614 6/17/2014	29CPT0461 170614 6/17/2014	29CPT0464 170614 6/17/2014	29CPT0466 170614 6/17/2014	29CPT0470 170614 6/17/2014	29CPT0474 170614 6/17/2014
			RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample
Volatile Organic Compounds (8260B)																					
1,1,1,2-TETRACHLOROETHANE	ug/kg	11000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
1,1,1-TRICHLOROETHANE	ug/kg	20000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
1,1,2,2-TETRACHLOROETHANE	ug/kg	1400	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
1,1,2-TRICHLOROETHANE	ug/kg	500	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
1,1-DICHLOROETHANE	ug/kg	1000000	<2.68 U	<2.38 UJ	<2.5 U	<2.48 UJ	<2.54 UJ	<2.54 UJ	<2.42 U	<2.38 U	<2.64 U	<2.52 UJ	<2.46 U	<2.32 UJ	<2.36 UJ	<2.48 UJ	<2.48 U	<2.38 U	<2.52 U	<2.22 U	<2.24 U
1,1-DICHLOROETHENE	ug/kg	700	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
1,1-DICHLOROPROPENE	ug/kg	290	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
1,2,3-TRICHLOROBENZENE	ug/kg	31000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
1,2,3-TRICHLOROPROPANE	ug/kg	4.1	<2.68 U	<2.38 UJ	<2.5 U	<2.48 UJ	<2.54 UJ	<2.54 UJ	<2.42 U	<2.38 U	<2.64 U	<2.52 UJ	<2.46 U	<2.32 UJ	<2.36 UJ	<2.48 UJ	<2.48 U	<2.38 U	<2.52 U	<2.22 UJ	<2.24 UJ
1,2,4-TRICHLOROBENZENE	ug/kg	7000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
1,2,4-TRIMETHYLBENZENE	ug/kg	510000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/kg	20	<5.34 U	<4.76 UJ	<5.02 U	<4.94 UJ	<5.08 UJ	<5.08 UJ	<4.84 U	<4.76 U	<5.26 U	<5.06 UJ	<4.92 U	<4.62 UJ	<4.7 UJ	<4.94 UJ	<4.94 U	<4.74 U	<5.06 U	<4.46 U	<4.48 U
1,2-DIBROMOETHANE	ug/kg	5	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
1,2-DICHLOROBENZENE	ug/kg	60000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
1,2-DICHLOROETHANE	ug/kg	500	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
1,2-DICHLOROPROPANE	ug/kg	500	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
1,3,5-TRIMETHYLBENZENE	ug/kg	510000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
1,3-DICHLOROBENZENE	ug/kg	310000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
1,3-DICHLOROPROPANE	ug/kg	2900	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
1,4-DICHLOROBENZENE	ug/kg	7500	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
2,2-DICHLOROPROPANE	ug/kg	4200	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
2-BUTANONE	ug/kg	6100000	<6.68 U	<5.94 UJ	<6.26 U	<6.18 UJ	<6.34 UJ	<6.36 UJ	<6.06 U	<5.96 U	<6.58 U	<6.32 UJ	<6.14 U	<5.78 UJ	<5.88 UJ	<6.18 UJ	<6.18 U	<5.92 U	<6.32 U	<5.56 U	<5.58 U
2-CHLOROTOLUENE	ug/kg	200000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
2-HEXANONE	ug/kg	610000	<6.68 U	<5.94 UJ	<6.26 U	<6.18 UJ	<6.34 UJ	<6.36 UJ	<6.06 U	<5.96 U	<6.58 U	<6.32 UJ	<6.14 U	<5.78 UJ	<5.88 UJ	<6.18 UJ	<6.18 U	<5.92 U	<6.32 U	<5.56 U	<5.58 U
4-CHLOROTOLUENE	ug/kg	200000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
4-METHYL-2-PENTANONE	ug/kg	820000	<6.68 U	<5.94 UJ	<6.26 U	<6.18 UJ	<6.34 UJ	<6.36 UJ	<6.06 U	<5.96 U	<6.58 U	<6.32 UJ	<6.14 U	<5.78 UJ	<5.88 UJ	<6.18 UJ	<6.18 U	<5.92 U	<6.32 U	<5.56 U	<5.58 U
ACETONE	ug/kg	920000	7.22 J	8.23 J	<12.5 U	12.5 J	9.3 J	8.93 J	<12.1 U	<11.9 U	<13.2 U	9.92 J	<12.3 U	13.2 J	<11.8 UJ	<12.4 UJ	20 J	21.2 J	8.74 J	17.9 J	22.4
BENZENE	ug/kg	500	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
BROMOBENZENE	ug/kg	200000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
BROMOCHLOROMETHANE	ug/kg	410000	<2.68 U	<2.38 UJ	<2.5 U	<2.48 UJ	<2.54 UJ	<2.54 UJ	<2.42 U	<2.38 U	<2.64 U	<2.52 UJ	<2.46 U	<2.32 UJ	<2.36 UJ	<2.48 UJ	<2.48 U	<2.38 U	<2.52 U	<2.22 U	<2.24 U
BROMODICHLOROMETHANE	ug/kg	460	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
BROMOFORM	ug/kg	3600	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
BROMOMETHANE	ug/kg	14000	<2.68 U	<2.38 UJ	<2.5 U	<2.48 UJ	<2.54 UJ	<2.54 UJ	<2.42 U	<2.38 U	<2.64 U	<2.52 UJ	<2.46 U	<2.32 UJ	<2.36 UJ	<2.48 UJ	<2.48 U	<2.38 U	<2.52 U	<2.22 U	<2.24 U
CARBON DISULFIDE	ug/kg	1000000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
CARBON TETRACHLORIDE	ug/kg	500	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
CHLOROBENZENE	ug/kg	10000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
CHLOROETHANE	ug/kg	4100000	<2.68 U	<2.38 UJ	<2.5 U	<2.48 UJ	<2.54 UJ	<2.54 UJ	<2.42 U	<2.38 U	<2.64 U	<2.52 UJ	<2.46 U	<2.32 UJ	<2.36 UJ	<2.48 UJ	<2.48 U	<2.38 U	<2.52 U	<2.22 U	<2.24 U
CHLOROFORM	ug/kg	100000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
CHLOROMETHANE	ug/kg	22000	<5.34 U	<4.76 UJ	<5.02 U	<4.94 UJ	<5.08 UJ	<5.08 UJ	<4.84 U	<4.76 U	<5.26 U	<5.06 UJ	<4.92 U	<4.62 UJ	<4.7 UJ	<4.94 UJ	<4.94 U	<4.74 U	<5.06 U	<4.46 U	<4.48 U
CIS-1,2-DICHLOROETHENE	ug/kg	7000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
CIS-1,3-DICHLOROPROPENE	ug/kg	530	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
DIBROMOCHLOROMETHANE	ug/kg	3400	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
DIBROMOMETHANE	ug/kg	38000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
DICHLORODIFLUOROMETHANE	ug/kg	2000000	<2.68 U	<2.38 UJ	<2.5 U	<2.48 UJ	<2.54 UJ	<2.54 UJ	<2.42 U	<2.38 U	<2.64 U	<2.52 UJ	<2.46 U	<2.32 UJ	<2.36 UJ	<2.48 UJ	<2.48 U	<2.38 U	<2.52 U	<2.22 U	<2.24 U
ETHYLBENZENE	ug/kg	70000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
HEXACHLOROBUTADIENE	ug/kg	2000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
ISOPROPYLBENZENE	ug/kg	1000000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
m,p-Xylene	ug/kg	1000000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
METHYLENE CHLORIDE	ug/kg	500	<2.68 U	<2.38 UJ	<2.5 U	<2.48 UJ	<2.54 UJ	<2.54 UJ	<2.42 U	<2.38 U	<2.64 U	<2.52 UJ	<2.46 U	<2.32 UJ	<2.36 UJ	<2.48 UJ	<2.48 U	<2.38 U	<2.52 U	<2.22 U	<2.24 U
NAPHTHALENE	ug/kg	200000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
N-BUTYLBENZENE	ug/kg	410000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
N-PROPYLBENZENE	ug/kg	410000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
O-XYLENE	ug/kg	1000000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
P-ISOPROPYLTOLUENE	ug/kg	1000000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
SEC-BUTYLBENZENE	ug/kg	410000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
STYRENE	ug/kg	10000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
TERT-BUTYLBENZENE	ug/kg	410000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
TETRACHLOROETHENE	ug/kg	500	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
TOLUENE	ug/kg	100000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
TRANS-1,2-DICHLOROETHENE	ug/kg	10000	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 U	<1.12 U
TRANS-1,3-DICHLOROPROPENE	ug/kg	2900	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
TRICHLOROETHENE	ug/kg	500	<1.34 U	<1.19 UJ	<1.25 U	<1.24 UJ	<1.27 UJ	<1.27 UJ	<1.21 U	<1.19 U	<1.32 U	<1.26 UJ	<1.23 U	<1.16 UJ	<1.18 UJ	<1.24 UJ	<1.24 U	<1.19 U	<1.26 U	<1.11 UJ	<1.12 UJ
TRICHLOROFLUOROMETHANE	ug/kg	3100000	<2.68 U	<2.38 UJ	<2.5 U	<2.48 UJ	<2.54 UJ	<2.54 UJ	<2.42 U	<2.38 U	<2.64 U	<2.52 UJ	<2.46 U	<2.32 UJ	<2.36 UJ	<2.48 UJ	<2.48 U	<2.38 U	<2.52 U	<2.22 U	<2.24 U
VINYL CHLORIDE	ug/kg	200	<2.68 U	<2.38 UJ	<2.5 U	<2.48 UJ	<2.54 UJ	<2.54 UJ	<2.42 U	<2.38 U	<2.64 U	<2.52 UJ	<2.46 U	<2.32 UJ	<2.36 UJ	<2.48 UJ	<2.48 U	<2.38 U	<2.52 U	<2.22 U	<2.24 U

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/kg - milligrams per kilogram

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/kg - micrograms per kilogram

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: / Sample Date:	Units	MCL/ MSC	29CPT0478 170614 6/17/2014	29CPT0484 170614 6/17/2014	29CPT0486 180614 6/18/2014	29CPT0488 180614 6/18/2014	29CPT0572 100714 7/10/2014	29CPT0576 100714 7/10/2014	29CPT0580 100714 7/10/2014	29CPT0588 100714 7/10/2014	29CPT0608 110714 7/11/2014	29CPT0672 110714 7/11/2014	29CPT0678 110714 7/11/2014	29CPT0684 110714 7/11/2014	29CPT0771 010714 7/1/2014	29CPT0782 010714 7/1/2014	29CPT0786 010714 7/1/2014	29CPT0786 010714 DUP 7/1/2014	29CPT1166 140714 7/14/2014	29CPT1180 140714 7/14/2014	29CPT1182 140714 7/14/2014
			RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample
Volatile Organic Compounds (8260B)																					
1,1,1,2-TETRACHLOROETHANE	ug/kg	11000	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
1,1,1-TRICHLOROETHANE	ug/kg	20000	<1.17 UJ	<1.1 U	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
1,1,2,2-TETRACHLOROETHANE	ug/kg	1400	<1.17 UJ	<1.1 UJ	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
1,1,2-TRICHLOROETHANE	ug/kg	500	<1.17 UJ	<1.1 U	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
1,1-DICHLOROETHANE	ug/kg	1000000	<2.34 UJ	<2.2 U	<2.58 U	<2.36 U	<250 U	<2820 U	<2.66 U	<11.1 U	<2.3 U	<2.36 U	<2.64 U	<2.56 U	<2.86 UJ	<2.26 U	<2.5 U	<2.5 U	<2.44 U	4.24 J	<11.8 U
1,1-DICHLOROETHENE	ug/kg	700	<1.17 UJ	<1.1 U	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
1,1-DICHLOROPROPENE	ug/kg	290	<1.17 UJ	<1.1 U	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
1,2,3-TRICHLOROBENZENE	ug/kg	31000	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 UJ	<1.18 UJ	<1.32 UJ	<1.28 UJ	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
1,2,3-TRICHLOROPROPANE	ug/kg	4.1	<2.34 UJ	<2.2 UJ	<2.58 U	<2.36 U	<250 U	<2820 U	<2.66 U	<11.1 U	<2.3 U	<2.36 U	<2.64 U	<2.56 U	<2.86 UJ	<2.26 U	<2.5 U	<2.5 U	<2.44 U	<2.4 UJ	<11.8 U
1,2,4-TRICHLOROBENZENE	ug/kg	7000	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 UJ	<1.18 UJ	<1.32 UJ	<1.28 UJ	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
1,2,4-TRIMETHYLBENZENE	ug/kg	510000	<1.17 UJ	<1.1 U	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/kg	20	<4.68 UJ	<4.38 U	<5.16 U	<4.74 U	<502 U	<5660 U	<5.3 U	<22.2 U	<4.62 U	<4.72 U	<5.26 U	<5.12 U	<5.72 UJ	<4.52 U	<5 U	<5.12 U	<4.88 U	<4.8 UJ	<23.6 U
1,2-DIBROMOETHANE	ug/kg	5	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
1,2-DICHLOROBENZENE	ug/kg	60000	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 UJ	<1.18 UJ	<1.32 UJ	<1.28 UJ	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
1,2-DICHLOROETHANE	ug/kg	500	<1.17 UJ	<1.1 U	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
1,2-DICHLOROPROPANE	ug/kg	500	<1.17 UJ	<1.1 U	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
1,3,5-TRIMETHYLBENZENE	ug/kg	510000	<1.17 UJ	<1.1 U	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
1,3-DICHLOROBENZENE	ug/kg	310000	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
1,3-DICHLOROPROPANE	ug/kg	2900	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
1,4-DICHLOROBENZENE	ug/kg	7500	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
2,2-DICHLOROPROPANE	ug/kg	4200	<1.17 UJ	<1.1 U	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
2-BUTANONE	ug/kg	6100000	<5.84 UJ	<5.48 U	<6.46 U	<5.92 U	<628 U	<7080 U	<6.64 U	<27.8 U	<5.76 U	<5.88 U	<6.58 U	<6.4 U	<7.16 UJ	<5.66 U	<6.26 U	<6.4 U	<6.1 U	<6.02 UJ	<29.6 U
2-CHLOROTOLUENE	ug/kg	200000	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
2-HEXANONE	ug/kg	610000	<5.84 UJ	<5.48 U	<6.46 U	<5.92 U	<628 U	<7080 U	<6.64 U	<27.8 U	<5.76 U	<5.88 U	<6.58 U	<6.4 U	<7.16 UJ	<5.66 U	<6.26 U	<6.4 U	<6.1 U	<6.02 UJ	<29.6 U
4-CHLOROTOLUENE	ug/kg	200000	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
4-METHYL-2-PENTANONE	ug/kg	820000	<5.84 UJ	<5.48 U	<6.46 U	<5.92 U	<628 U	<7080 U	<6.64 U	<27.8 U	<5.76 U	<5.88 U	<6.58 U	<6.4 U	<7.16 UJ	<5.66 U	<6.26 U	<6.4	<6.1 U	<6.02 UJ	<29.6 U
ACETONE	ug/kg	920000	8.25 J	10.3 J	<12.9 U	<11.8 U	<1250 U	<14100 U	<13.3 U	<55.6 U	6.08 J	<11.8 U	7.86 J	<12.8 U	34.9 J	<11.3 U	<12.5 U	<12.8 U	<12.2 U	10.6 J	<59 U
BENZENE	ug/kg	500	<1.17 UJ	<1.1 UJ	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
BROMOBENZENE	ug/kg	200000	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
BROMOCHLOROMETHANE	ug/kg	410000	<2.34 UJ	<2.2 U	<2.58 U	<2.36 U	<250 U	<2820 U	<2.66 U	<11.1 U	<2.3 U	<2.36 U	<2.64 U	<2.56 U	<2.86 UJ	<2.26 U	<2.5 U	<2.5 U	<2.44 U	<2.4 UJ	<11.8 U
BROMODICHLOROMETHANE	ug/kg	460	<1.17 UJ	<1.1 UJ	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
BROMOFORM	ug/kg	3600	<1.17 UJ	<1.1 UJ	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
BROMOMETHANE	ug/kg	14000	<2.34 UJ	<2.2 U	<2.58 U	<2.36 U	<250 U	<2820 U	<2.66 U	<11.1 U	<2.3 U	<2.36 U	<2.64 U	<2.56 U	<2.86 UJ	<2.26 U	<2.5 U	<2.56 U	<2.44 U	<2.4 UJ	<11.8 U
CARBON DISULFIDE	ug/kg	1000000	<1.17 UJ	<1.1 U	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
CARBON TETRACHLORIDE	ug/kg	500	<1.17 UJ	<1.1 U	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
CHLOROBENZENE	ug/kg	10000	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
CHLOROETHANE	ug/kg	4100000	<2.34 UJ	<2.2 U	<2.58 U	<2.36 U	<250 U	<2820 U	<2.66 U	<11.1 U	<2.3 U	<2.36 U	<2.64 U	<2.56 U	<2.86 UJ	<2.26 U	<2.5 U	<2.56 U	<2.44 U	<2.4 UJ	<11.8 U
CHLOROFORM	ug/kg	100000	<1.17 UJ	<1.1 U	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
CHLOROMETHANE	ug/kg	22000	<4.68 UJ	<4.38 U	<5.16 U	<4.74 U	<502 U	<5660 U	<5.3 U	<22.2 UJ	<4.62 U	<4.72 U	<5.26 U	<5.12 U	<5.72 UJ	<4.52 U	<5 U	<5 U	<4.88 UJ	<4.8 UJ	<23.6 UJ
CIS-1,2-DICHLOROETHENE	ug/kg	7000	<1.17 UJ	<1.1 U	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	1.9 J	<5.9 U
CIS-1,3-DICHLOROPROPENE	ug/kg	530	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
DIBROMOCHLOROMETHANE	ug/kg	3400	<1.17 UJ	<1.1 U	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
DIBROMOMETHANE	ug/kg	38000	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
DICHLORODIFLUOROMETHANE	ug/kg	2000000	<2.34 UJ	<2.2 U	<2.58 U	<2.36 U	<250 U	<2820 U	<2.66 U	<11.1 U	<2.3 U	<2.36 U	<2.64 U	<2.56 U	<2.86 UJ	<2.26 U	<2.5 U	<2.5 U	<2.44 U	<2.4 UJ	<11.8 U
ETHYLBENZENE	ug/kg	70000	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	1.7 J	3.25 J	<1.15 U	<1.18 U	1.15 J	1.08 J	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	2.92 J	<5.9 U
HEXACHLOROBUTADIENE	ug/kg	2000	<1.17 UJ	<1.1 U	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
ISOPROPYLBENZENE	ug/kg	1000000	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
m,p-Xylene	ug/kg	1000000	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	6.67	11.7 J	1.32 J	1.4 J	3.97 J	3.69 J	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	1.07 J	10.2 J	9.27 J
METHYLENE CHLORIDE	ug/kg	500	<2.34 UJ	<2.2 U	<2.58 U	<2.36 U	7610	257000	8.51	146	<2.3 U	<2.36 U	1.56 J	<2.56 U	<2.86 UJ	<2.26 U	<2.5 U	<2.5 U	2.29 J	258 J	561
NAPHTHALENE	ug/kg	200000	<1.17 UJ	<1.1 UJ	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
N-BUTYLBENZENE	ug/kg	410000	<1.17 UJ	<1.1 U	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
N-PROPYLBENZENE	ug/kg	410000	<1.17 UJ	<1.1 U	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
O-XYLENE	ug/kg	1000000	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	1.7 J	<5.56 U	<1.15 U	<1.18 U	0.982 J	0.805 J	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	2.48 J	<5.9 U
P-ISOPROPYLTOLUENE	ug/kg	1000000	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
SEC-BUTYLBENZENE	ug/kg	410000	<1.17 UJ	<1.1 U	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
STYRENE	ug/kg	10000	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
TERT-BUTYLBENZENE	ug/kg	410000	<1.17 UJ	<1.1 U	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
TETRACHLOROETHENE	ug/kg	500	<1.17 UJ	<1.1 U	<1.29 U	<1.18 U	<125 U	<1410 U	0.665 J	21.8 J	<1.15 U	<1.18 U	1.01 J	1.31 J	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	0.661 J	<5.9 U
TOLUENE	ug/kg	100000	<1.17 UJ	<1.1 U	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	1.16 J	<5.9 U
TRANS-1,2-DICHLOROETHENE	ug/kg	10000	<1.17 UJ	<1.1 U	<1.29 U	<1.18 U	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
TRANS-1,3-DICHLOROPROPENE	ug/kg	2900	<1.17 UJ	<1.1 UJ	<1.29 UJ	<1.18 UJ	<125 U	<1410 U	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	<1.2 UJ	<5.9 U
TRICHLOROETHENE	ug/kg	500	<1.17 UJ	<1.1 UJ	<1.29 U	<1.18 U	<125 U	2430 J	<1.33 U	<5.56 U	<1.15 U	<1.18 U	<1.32 U	<1.28 U	<1.43 UJ	<1.13 U	<1.25 U	<1.28 U	<1.22 U	266 J	<5.9 U
TRICHLOROFLUOROMETHANE	ug/kg	3100000	<2.34 UJ	<2.2 U	<2.58 U	<2.36 U	<250 U	<2820 U	<2.66 U	<11.1 U	<2.3 U	<2.36 U	<2.64 U	<2.56 U	<2.86 UJ	<2.26 U	<2.5 U	<2.5 U	<2.44 U	<2.4 UJ	<11.8 U
VINYL CHLORIDE	ug/kg	200	<2.34 UJ	<2.2 U	<2.58 U	<2.36 U	<250 U	<2820 U	<2.66 U	<11.1 U	<2.3 U	<2.36 U	<2.64 U	<2.56 U	<2.86 UJ	<2.26 U	<2.5 U	<2.5 U	<2.44 U	<2.4 UJ	<11.8 U

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/kg - milligrams per kilogram

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/kg - micrograms per kilogram

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: / Sample Date:	Units	MCL/ MSC	29CPT1282 230714 7/23/2014	29CPT1288 230714 7/23/2014	29CPT1288 230714D 7/23/2014	29CPT1314 250714 7/25/2014	29CPT1318 250714 7/25/2014	29CPT1344 270714 7/27/2014	29CPT1402 280714 7/28/2014	29CPT1416 280714 7/28/2014	29CPT1421 280714 7/28/2014	29CPT1438 050814 8/5/2014	29CPT1450 050814 8/5/2014	29CPT1482 060814 8/6/2014	29CPT1488 060814 8/6/2014	29CPT1540 110814 8/11/2014	29CPT1576 110814 8/11/2014	29CPT16(56) 180814 8/18/2014	29CPT16(76) 180814 8/18/2014	29CPT17(68) 200814 8/20/2014	29CPT17(74) 200814 8/20/2014
			RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample
Volatile Organic Compounds (8260B)																					
1,1,1,2-TETRACHLOROETHANE	ug/kg	11000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
1,1,1-TRICHLOROETHANE	ug/kg	20000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
1,1,2,2-TETRACHLOROETHANE	ug/kg	1400	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
1,1,2-TRICHLOROETHANE	ug/kg	500	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
1,1-DICHLOROETHANE	ug/kg	1000000	<2940 UJ	<12.5 U	<252 UJ	<12.5 U	<2.52 U	<2.3 U	<2.5 U	<12.5 U	<15.4 U	<2.54 U	<2.4 U	<2.52 U	<2.42 U	<2.52 UJ	<284 U	<2.22 U	<2.6 U	<2.6 U	<2.58 U
1,1-DICHLOROETHENE	ug/kg	700	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
1,1-DICHLOROPROPENE	ug/kg	290	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
1,2,3-TRICHLOROBENZENE	ug/kg	31000	<1470 UJ	<6.22 UJ	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
1,2,3-TRICHLOROPROPANE	ug/kg	4.1	<2940 UJ	<12.5 U	<252 UJ	<12.5 U	<2.52 U	<2.3 U	<2.5 U	<12.5 U	<15.4 U	<2.54 U	<2.4 U	<2.52 U	<2.42 U	<2.52 UJ	<284 U	<2.22 U	<2.6 U	<2.6 U	<2.58 U
1,2,4-TRICHLOROBENZENE	ug/kg	7000	<1470 UJ	<6.22 UJ	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
1,2,4-TRIMETHYLBENZENE	ug/kg	510000	<1470 UJ	<6.22 U	<126 UJ	373	5.49 J	<1.15 U	<1.25 U	<6.26 U	14.3 J	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	71.1 J	<1.11 U	<1.3 U	<1.3 U	<1.29 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/kg	20	<5900 UJ	<25 U	<506 UJ	<25 U	<5.02 U	<4.62 U	<5 U	<25 U	<30.8 U	<5.06 U	<4.78 U	<5.04 U	<4.84 U	<5.04 UJ	<568 U	<4.42 U	<5.22 U	<5.22 U	<5.16 U
1,2-DIBROMOETHANE	ug/kg	5	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
1,2-DICHLOROBENZENE	ug/kg	60000	<1470 UJ	<6.22 U	<126 UJ	23.4 J	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
1,2-DICHLOROETHANE	ug/kg	500	<1470 UJ	<6.22 U	<126 UJ	17.2 J	26.3	<1.15 U	<1.25 U	1130	3880	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
1,2-DICHLOROPROPANE	ug/kg	500	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
1,3,5-TRIMETHYLBENZENE	ug/kg	510000	<1470 UJ	<6.22 U	<126 UJ	177	1.82 J	<1.15 U	<1.25 U	<6.26 U	5.61 J	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
1,3-DICHLOROBENZENE	ug/kg	310000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
1,3-DICHLOROPROPANE	ug/kg	2900	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
1,4-DICHLOROBENZENE	ug/kg	7500	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
2,2-DICHLOROPROPANE	ug/kg	4200	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
2-BUTANONE	ug/kg	6100000	<7360 UJ	<31.2 U	<632 UJ	<31.2 UJ	<6.28 UJ	<5.76 U	<6.26 U	<31.4 U	<38.4 U	<6.34 U	<5.98 U	<6.3 U	<6.06 U	<6.3 UJ	<710 U	<5.54 U	6.87 J	5.92 J	<6.46 U
2-CHLOROTOLUENE	ug/kg	200000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
2-HEXANONE	ug/kg	610000	<7360 UJ	<31.2 U	<632 UJ	<31.2 UJ	<6.28 UJ	<5.76 U	<6.26 U	<31.4 U	<38.4 U	<6.34 U	<5.98 U	<6.3 U	<6.06 U	<6.3 UJ	<710 U	<5.54 U	<6.52 U	<6.52 U	<6.46 U
4-CHLOROTOLUENE	ug/kg	200000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
4-METHYL-2-PENTANONE	ug/kg	820000	<7360 UJ	<31.2 U	<632 UJ	<31.2 UJ	<6.28 UJ	<5.76 U	<6.26 U	<31.4 U	<38.4 U	<6.34 U	<5.98 U	<6.3 U	<6.06 U	<6.3 UJ	<710 U	<5.54 U	<6.52 U	<6.52 U	<6.46 U
ACETONE	ug/kg	920000	<14700 UJ	<62.2 U	<1260 UJ	<62.4 UJ	<12.6 UJ	<11.5 UJ	<12.5 UJ	<62.6 UJ	<77 UJ	<12.7 UJ	<12 UJ	<12.6 UJ	<12.1 UJ	<12.6 UJ	<1420 U	7.51 J	19.3 J	14.1 J	9.55 J
BENZENE	ug/kg	500	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	0.707 J	<1.29 U
BROMOBENZENE	ug/kg	200000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
BROMOCHLOROMETHANE	ug/kg	410000	<2940 UJ	<12.5 U	<252 UJ	<12.5 U	<2.52 U	<2.3 U	<2.5 U	<12.5 U	<15.4 U	<2.54 U	<2.4 U	<2.52 U	<2.42 U	<2.52 UJ	<284 U	<2.22 U	<2.6 U	<2.6 U	<2.58 U
BROMODICHLOROMETHANE	ug/kg	460	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
BROMOFORM	ug/kg	3600	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
BROMOMETHANE	ug/kg	14000	<2940 UJ	<12.5 U	<252 UJ	<12.5 U	<2.52 U	<2.3 U	<2.5 U	<12.5 U	<15.4 U	<2.54 U	<2.4 U	<2.52 U	<2.42 U	<2.52 UJ	<284 U	<2.22 U	<2.6 U	<2.6 U	<2.58 U
CARBON DISULFIDE	ug/kg	1000000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	16.8 J	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
CARBON TETRACHLORIDE	ug/kg	500	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
CHLOROBENZENE	ug/kg	10000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
CHLOROETHANE	ug/kg	4100000	<2940 UJ	<12.5 U	<252 UJ	<12.5 U	<2.52 U	<2.3 U	<2.5 U	<12.5 U	<15.4 U	<2.54 U	<2.4 U	<2.52 U	<2.42 U	<2.52 UJ	<284 U	<2.22 U	<2.6 U	<2.6 UJ	<2.58 U
CHLOROFORM	ug/kg	100000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
CHLOROMETHANE	ug/kg	22000	<5900 UJ	<25 UJ	<506 UJ	<25 UJ	<5.02 UJ	<4.62 U	<5 U	<25 U	<30.8 U	<5.06 UJ	<4.78 UJ	<5.04 UJ	<4.84 UJ	<5.04 UJ	<568 U	<4.42 U	<5.22 UJ	<5.22 UJ	<5.16 UJ
CIS-1,2-DICHLOROETHENE	ug/kg	7000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
CIS-1,3-DICHLOROPROPENE	ug/kg	530	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
DIBROMOCHLOROMETHANE	ug/kg	3400	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
DIBROMOMETHANE	ug/kg	38000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
DICHLORODIFLUOROMETHANE	ug/kg	2000000	<2940 UJ	<12.5 U	<252 UJ	<12.5 U	<2.52 U	<2.3 U	<2.5 U	<12.5 U	<15.4 U	<2.54 U	<2.4 U	<2.52 U	<2.42 U	<2.52 UJ	<284 U	<2.22 U	<2.6 U	<2.6 U	<2.58 U
ETHYLBENZENE	ug/kg	70000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	1.17 J	<1.29 U
HEXACHLOROBUTADIENE	ug/kg	2000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
ISOPROPYLBENZENE	ug/kg	1000000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
m,p-Xylene	ug/kg	1000000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	4.18 J	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	4.49 J	<1.29 U
METHYLENE CHLORIDE	ug/kg	500	<2940 UJ	937 J	<252 UJ	<12.5 U	5.04 J	5.68 J	7.95	30.2 J	35.7 J	1.96 J	2.18 J	3.46 J	60.2	<2.52 UJ	29500	<2.22 U	4.53 J	5.96 J	7.22
NAPHTHALENE	ug/kg	200000	<1470 UJ	<6.22 U	<126 UJ	1210	88.1	<1.15 U	<1.25 U	<6.26 U	56.1	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	81.5 J	<1.11 U	<1.3 U	<1.3 U	<1.29 U
N-BUTYLBENZENE	ug/kg	410000	<1470 UJ	<6.22 U	<126 UJ	57.6	1.79 J	<1.15 U	<1.25 U	<6.26 U	4.33 J	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
N-PROPYLBENZENE	ug/kg	410000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
O-XYLENE	ug/kg	1000000	<1470 UJ	<6.22 U	<126 UJ	38.1	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	0.975 J	<1.29 U
P-ISOPROPYLTOLUENE	ug/kg	1000000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
SEC-BUTYLBENZENE	ug/kg	410000	<1470 UJ	<6.22 U	<126 UJ	7.17 J	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
STYRENE	ug/kg	10000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	0.698 J	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
TERT-BUTYLBENZENE	ug/kg	410000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
TETRACHLOROETHENE	ug/kg	500	<1470 UJ	<6.22 U	<126 UJ	16.1 J	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
TOLUENE	ug/kg	100000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	0.928 J	15	1.42 J
TRANS-1,2-DICHLOROETHENE	ug/kg	10000	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
TRANS-1,3-DICHLOROPROPENE	ug/kg	2900	<1470 UJ	<6.22 U	<126 UJ	<6.24 U	<1.26 U	<1.15 U	<1.25 U	<6.26 U	<7.7 U	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	<142 U	<1.11 U	<1.3 U	<1.3 U	<1.29 U
TRICHLOROETHENE	ug/kg	500	<1470 UJ	<6.22 U	<126 UJ	87.6	4.09 J	<1.15 U	<1.25 U	14.6 J	485	<1.27 U	<1.2 U	<1.26 U	<1.21 U	<1.26 UJ	2230	<1.11 U	<1.3 U	<1.3 U	<1.29 U
TRICHLOROFLUOROMETHANE	ug/kg	3100000	<2940 UJ	<12.5 U	<252 UJ	<12.5 U	<2.52 U	<2.3 U	<2.5 U	<12.5 U	<15.4 U	<2.54 U	<2.4 U	<2.52 U	<2.42 U	<2.52 UJ	<284 U	<2.22 U	<2.6 U	<2.6 U	<2.58 U
VINYL CHLORIDE	ug/kg	200	<2940 UJ	<12.5 U	<252 UJ	<12.5 U	<2.52 U	<2.3 U	<2.5 U	<12.5 U	<15.4 U	<2.54 U	<2.4 U	<2.52 U	<2.42 U	<2.52 UJ	<284 U	<2.22 U	<2.6 U	<2.6 U	<2.58 U

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/kg - milligrams per kilogram

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/kg - micrograms per kilogram

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: / Sample Date:	Units	MCL/ MSC	29CPT17(80) 200814 8/20/2014	29CPT17(84) 200814 8/20/2014	29CPT17(86) 200814 8/20/2014	29CPT1718 080814 8/8/2014	29CPT1804 170914 9/17/2014	29CPT1872 190914 9/19/2014	29SB102(6-8) 180514 5/18/2014	29SB102(8-10) 180514 5/18/2014	29SB104(6-8) 180514 5/18/2014	29SB104(6-8) 180514D 5/18/2014	29SB104(8-10) 180514 5/18/2014	29SB105(6-8) 180514 5/18/2014	29SB105(8-10) 180514 5/18/2014	29SG00112 020514 5/2/2014	29SG00211 020514 5/2/2014	29SG00311 020514 5/2/2014	29SG00410 020514 5/2/2014	29SG00510 020514 5/2/2014	29SG00610 020514 5/2/2014
			RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area
Volatile Organic Compounds (8260B)																					
1,1,1,2-TETRACHLOROETHANE	ug/kg	11000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
1,1,1-TRICHLOROETHANE	ug/kg	20000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
1,1,2,2-TETRACHLOROETHANE	ug/kg	1400	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
1,1,2-TRICHLOROETHANE	ug/kg	500	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	0.554 J	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
1,1-DICHLOROETHANE	ug/kg	1000000	6.01 J	<2.54 U	<2.66 U	<258 U	<2.48 U	<2.48 U	<2.12 U	<2.38 U	<2.22 U	<2.12 U	<2.32 U	<2.3 U	<2.12 U	<1.83 U	<1.71 U	<1.9 U	<1.81 U	<1.86 U	<1.73 U
1,1-DICHLOROETHENE	ug/kg	700	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
1,1-DICHLOROPROPENE	ug/kg	290	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
1,2,3-TRICHLOROBENZENE	ug/kg	31000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
1,2,3-TRICHLOROPROPANE	ug/kg	4.1	<2.56 U	<2.54 U	<2.66 U	<258 U	<2.48 U	<2.48 U	<2.12 U	<2.38 U	<2.22 U	<2.12 U	<2.32 U	<2.3 U	<2.12 U	<1.83 U	<1.71 U	<1.9 U	<1.81 U	<1.86 U	<1.73 U
1,2,4-TRICHLOROBENZENE	ug/kg	7000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
1,2,4-TRIMETHYLBENZENE	ug/kg	510000	<1.28 U	<1.27 U	<1.33 U	954	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/kg	20	<5.14 U	<5.06 U	<5.3 U	<514 U	<4.94 U	<4.94 U	<4.26 U	<4.78 U	<4.44 U	<4.24 U	<4.62 U	<4.58 U	<4.22 U	<3.66 UJ	<3.42 UJ	<3.8 UJ	<3.62 UJ	<3.72 UJ	<3.46 UJ
1,2-DIBROMOETHANE	ug/kg	5	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
1,2-DICHLOROBENZENE	ug/kg	60000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
1,2-DICHLOROETHANE	ug/kg	500	<1.28 U	<1.27 U	<1.33 U	365 J	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	3.76 J	4.99 J	<1.15 U	4.33 J	1860	0.633 J	40.6	174	12.7	<0.864 U
1,2-DICHLOROPROPANE	ug/kg	500	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
1,3,5-TRIMETHYLBENZENE	ug/kg	510000	<1.28 U	<1.27 U	<1.33 U	418 J	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
1,3-DICHLOROBENZENE	ug/kg	310000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
1,3-DICHLOROPROPANE	ug/kg	2900	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
1,4-DICHLOROBENZENE	ug/kg	7500	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
2,2-DICHLOROPROPANE	ug/kg	4200	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
2-BUTANONE	ug/kg	6100000	9.8 J	8.99 J	10.9 J	<642 U	<6.18 U	<6.18 U	<5.32 U	<5.96 U	<5.54 U	<5.32 U	<5.78 U	<5.72 U	<5.28 U	<4.58 U	<4.26 U	<4.74 U	<4.52 U	<4.66 U	<4.32 U
2-CHLOROTOLUENE	ug/kg	200000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
2-HEXANONE	ug/kg	610000	<6.42 U	<6.32 U	<6.62 U	<642 U	<6.18 U	<6.18 U	<5.32 U	<5.96 U	<5.54 U	<5.32 U	<5.78 U	<5.72 U	<5.28 U	<4.58 U	<4.26 U	<4.74 U	<4.52 U	<4.66 U	<4.32 U
4-CHLOROTOLUENE	ug/kg	200000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 UJ	<0.852 UJ	<0.948 UJ	<0.906 UJ	<0.932 UJ	<0.864 UJ
4-METHYL-2-PENTANONE	ug/kg	820000	<6.42 U	<6.32 U	<6.62 U	<642 U	<6.18 U	<6.18 U	<5.32 U	<5.96 U	<5.54 U	<5.32 U	<5.78 U	<5.72 U	<5.28 U	<4.58 UJ	<4.26 UJ	<4.74 UJ	<4.52 UJ	<4.66 UJ	<4.32 UJ
ACETONE	ug/kg	920000	22 J	16.9 J	13.9 J	<1290 U	<12.4 U	6.82 J	16.7 J	9.14 J	<11.1 U	<10.6 U	<11.6 U	10.3 J	<10.6 U	12.4 J	9.56 J	7.29 J	4.6 J	8.23 J	5.49 J
BENZENE	ug/kg	500	0.886 J	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
BROMOBENZENE	ug/kg	200000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
BROMOCHLOROMETHANE	ug/kg	410000	7.56	<2.54 U	<2.66 U	<258 U	<2.48 U	<2.48 U	<2.12 U	<2.38 U	<2.22 U	<2.12 U	<2.32 U	<2.3 U	<2.12 U	<1.83 U	<1.71 U	<1.9 U	<1.81 U	<1.86 U	<1.73 U
BROMODICHLOROMETHANE	ug/kg	460	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
BROMOFORM	ug/kg	3600	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
BROMOMETHANE	ug/kg	14000	<2.56 U	<2.54 U	<2.66 U	<258 U	<2.48 U	<2.48 U	<2.12 U	<2.38 U	<2.22 U	<2.12 U	<2.32 U	<2.3 U	<2.12 U	<1.83 U	<1.71 U	<1.9 U	<1.81 U	<1.86 U	<1.73 U
CARBON DISULFIDE	ug/kg	1000000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
CARBON TETRACHLORIDE	ug/kg	500	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
CHLOROBENZENE	ug/kg	10000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
CHLOROETHANE	ug/kg	4100000	<2.56 UJ	<2.54 U	<2.66 U	<258 U	<2.48 U	<2.48 U	<2.12 U	<2.38 U	<2.22 U	<2.12 U	<2.32 U	<2.3 U	<2.12 U	<1.83 U	<1.71 U	<1.9 U	<1.81 U	<1.86 U	<1.73 U
CHLOROFORM	ug/kg	100000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	0.719 J	<1.06 U	<1.16 U	<1.15 U	<1.06 U	6.66	<0.852 U	0.928 J	0.875 J	<0.932 U	<0.864 U
CHLOROMETHANE	ug/kg	22000	<5.14 UJ	<5.06 UJ	<5.3 UJ	<514 U	<4.94 U	<4.94 U	<4.26 U	<4.78 U	<4.44 U	<4.24 U	<4.62 U	<4.58 U	<4.22 U	<3.66 U	<3.42 U	<3.8 U	<3.62 U	<3.72 U	<3.46 U
CIS-1,2-DICHLOROETHENE	ug/kg	7000	0.911 J	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
CIS-1,3-DICHLOROPROPENE	ug/kg	530	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
DIBROMOCHLOROMETHANE	ug/kg	3400	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
DIBROMOMETHANE	ug/kg	38000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
DICHLORODIFLUOROMETHANE	ug/kg	2000000	<2.56 U	<2.54 U	<2.66 U	<258 U	<2.48 U	<2.48 U	<2.12 U	<2.38 U	<2.22 U	<2.12 U	<2.32 U	<2.3 U	<2.12 U	<1.83 U	<1.71 U	<1.9 U	<1.81 U	<1.86 U	<1.73 U
ETHYLBENZENE	ug/kg	70000	0.97 J	<1.27 U	<1.33 U	122 J	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
HEXACHLOROBUTADIENE	ug/kg	2000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
ISOPROPYLBENZENE	ug/kg	1000000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
m,p-Xylene	ug/kg	1000000	3.5 J	1.48 J	<1.33 U	540 J	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 UJ	<0.852 UJ	<0.948 UJ	<0.906 UJ	<0.932 UJ	<0.864 UJ
METHYLENE CHLORIDE	ug/kg	500	17400	137	168	<258 U	6.03 J	5.36 J	5.58	2.6 J	4.4 J	<2.12 U	3.42 J	6.45	1.97 J	12.2	1.48 J	<1.9 U	<1.81 U	<1.86 U	<1.73 U
NAPHTHALENE	ug/kg	200000	<1.28 U	<1.27 U	<1.33 U	5170	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
N-BUTYLBENZENE	ug/kg	410000	<1.28 U	<1.27 U	<1.33 U	236 J	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
N-PROPYLBENZENE	ug/kg	410000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
O-XYLENE	ug/kg	1000000	0.767 J	<1.27 U	<1.33 U	173 J	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	0.854 J	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
P-ISOPROPYLTOLUENE	ug/kg	1000000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
SEC-BUTYLBENZENE	ug/kg	410000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
STYRENE	ug/kg	10000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	1.65 J	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
TERT-BUTYLBENZENE	ug/kg	410000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
TETRACHLOROETHENE	ug/kg	500	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	2.96 J	0.448 J	<0.948 U	<0.906 U	<0.932 U	<0.864 U
TOLUENE	ug/kg	100000	14.5	4.24 J	1.76 J	75.1 J	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
TRANS-1,2-DICHLOROETHENE	ug/kg	10000	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	0.67 J	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
TRANS-1,3-DICHLOROPROPENE	ug/kg	2900	<1.28 U	<1.27 U	<1.33 U	<129 U	<1.24 U	<1.24 U	<1.06 U	<1.19 U	<1.11 U	<1.06 U	<1.16 U	<1.15 U	<1.06 U	<0.916 U	<0.852 U	<0.948 U	<0.906 U	<0.932 U	<0.864 U
TRICHLOROETHENE	ug/kg	500	4.7 J	<1.27 U	<1.33 U	593 J	<1.24 U	<1.24 U	0.827 J	<1.19 U	<1.11 U	<1.06 U	<1.16 U	1.78 J	<1.06 U	1980	68.2	108	61.2	15	2.81 J
TRICHLOROFLUOROMETHANE	ug/kg	3100000	<2.56 U	<2.54 U	<2.66 U	<258 U	<2.48 U	<2.48 U	<2.12 U	<2.38 U	<2.22 U	<2.12 U	<2.32 U	<2.3 U	<2.12 U	<1.83 U	<1.71 U	<1.9 U	<1.81 U	<1.86 U	<1.73 U
VINYL CHLORIDE	ug/kg	200	<2.56 U	<2.54 U	<2.66 U	<258 U	<2.48 U	<2.48 U	<2.12 U	<2.38 U	<2.22 U	<2.12 U	<2.32 U	<2.3 U	<2.12 U	<1.83 U	<1.71 U	<1.9 U	<1.81 U	<1.86 U	<1.73 U

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/kg - milligrams per kilogram

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/kg - micrograms per kilogram

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: / Sample Date:	Units	MCL/ MSC	29SG00712 020514 5/2/2014	29SG00812 020514 5/2/2014	29SG01010 020514 5/2/2014	29SG01110 020514 5/2/2014	29SG01210 020514 5/2/2014	29SG01313 030514 5/3/2014	29SG01412 030514 5/3/2014	29SG01511 030514 5/3/2014	29SG01511 030514D 5/3/2014	29SG01611 030514 5/3/2014	29SG01711 020514 5/2/2014	29SG01811 030514 5/3/2014	29SG01912 030514 5/3/2014	29SG02011 030514 5/3/2014	29SG02111 030514 5/3/2014	29SG02213 020514 5/2/2014	29SG02311 030514 5/3/2014	29SG02411 030514 5/3/2014	29SG02511 030514 5/3/2014
			RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area
Volatile Organic Compounds (8260B)																					
1,1,1,2-TETRACHLOROETHANE	ug/kg	11000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
1,1,1-TRICHLOROETHANE	ug/kg	20000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
1,1,2,2-TETRACHLOROETHANE	ug/kg	1400	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
1,1,2-TRICHLOROETHANE	ug/kg	500	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	0.852 J	<0.936 U	0.621 J	0.523 J	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
1,1-DICHLOROETHANE	ug/kg	1000000	<1.78 U	<1.92 U	<1.82 U	<1.78 U	<1.62 U	<1.96 U	<1.87 U	<1.84 U	<1.93 U	<1.77 U	<1.78 U	<1.83 U	<1.94 U	<1.88 U	<1.69 U	<1.87 U	<1.6 U	<1.76 U	<1.94 U
1,1-DICHLOROETHENE	ug/kg	700	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
1,1-DICHLOROPROPENE	ug/kg	290	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
1,2,3-TRICHLOROBENZENE	ug/kg	31000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
1,2,3-TRICHLOROPROPANE	ug/kg	4.1	<1.78 U	<1.92 U	<1.82 U	<1.78 U	<1.62 U	<1.96 U	<1.87 U	<1.84 U	<1.93 U	<1.77 U	<1.78 U	<1.83 U	<1.94 U	<1.88 U	<1.69 U	<1.87 U	<1.6 U	<1.76 U	<1.94 U
1,2,4-TRICHLOROBENZENE	ug/kg	7000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
1,2,4-TRIMETHYLBENZENE	ug/kg	510000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/kg	20	<3.56 UJ	<3.84 UJ	<3.64 U	<3.56 U	<3.24 U	<3.92 U	<3.74 U	<3.68 U	<3.86 U	<3.54 U	<3.56 U	<3.66 U	<3.88 U	<3.76 U	<3.38 U	<3.74 UJ	<3.2 U	<3.52 U	<3.88 U
1,2-DIBROMOETHANE	ug/kg	5	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
1,2-DICHLOROBENZENE	ug/kg	60000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
1,2-DICHLOROETHANE	ug/kg	500	2.96 J	3.66 J	604 J	98	1.35 J	167 J	206	1010	654	892	112	3.29 J	532 J	443 J	606	864	53.2	1.73 J	4.29 J
1,2-DICHLOROPROPANE	ug/kg	500	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
1,3,5-TRIMETHYLBENZENE	ug/kg	510000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
1,3-DICHLOROBENZENE	ug/kg	310000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
1,3-DICHLOROPROPANE	ug/kg	2900	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
1,4-DICHLOROBENZENE	ug/kg	7500	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
2,2-DICHLOROPROPANE	ug/kg	4200	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
2-BUTANONE	ug/kg	6100000	<4.44 U	<4.8 U	<4.54 U	<4.44 U	<4.06 U	<4.92 U	<4.68 U	<4.62 U	<4.82 U	<4.42 U	<4.46 U	<4.58 U	<4.84 U	<4.7 U	<4.22 U	<4.66 U	<3.98 U	<4.4 U	<4.86 U
2-CHLOROTOLUENE	ug/kg	200000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
2-HEXANONE	ug/kg	610000	<4.44 U	<4.8 U	<4.54 U	<4.44 U	<4.06 U	<4.92 U	<4.68 UJ	<4.62 U	<4.82 U	<4.42 U	<4.46 U	<4.58 U	<4.84 U	<4.7 U	<4.22 U	<4.66 U	<3.98 U	<4.4 U	<4.86 U
4-CHLOROTOLUENE	ug/kg	200000	<0.888 UJ	<0.962 UJ	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 UJ	<0.798 U	<0.882 U	<0.972 U
4-METHYL-2-PENTANONE	ug/kg	820000	<4.44 UJ	<4.8 UJ	<4.54 U	<4.44 U	<4.06 U	<4.92 U	<4.68 U	<4.62 U	<4.82 U	<4.42 U	<4.46 U	<4.58 U	<4.84 U	<4.7 U	<4.22 U	<4.66 UJ	<3.98 U	<4.4 U	<4.86 U
ACETONE	ug/kg	920000	7.94 J	9.31 J	4.93 J	<8.88 U	4.53 J	<9.82 U	<9.36 UJ	9.48 J	5.03 J	5.27 J	<8.92 U	10.6 J	11.2 J	<9.38 U	<8.44 U	<9.34 U	<7.98 U	<8.82 U	<9.72 U
BENZENE	ug/kg	500	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
BROMOBENZENE	ug/kg	200000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
BROMOCHLOROMETHANE	ug/kg	410000	<1.78 U	<1.92 U	<1.82 U	<1.78 U	<1.62 U	<1.96 U	<1.87 U	<1.84 U	<1.93 U	<1.77 U	<1.78 U	<1.83 U	<1.94 U	<1.88 U	<1.69 U	<1.87 U	<1.6 U	<1.76 U	<1.94 U
BROMODICHLOROMETHANE	ug/kg	460	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
BROMOFORM	ug/kg	3600	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
BROMOMETHANE	ug/kg	14000	<1.78 U	<1.92 U	<1.82 U	<1.78 U	<1.62 U	<1.96 U	<1.87 U	<1.84 U	<1.93 U	<1.77 U	<1.78 U	<1.83 U	<1.94 U	<1.88 U	<1.69 U	<1.87 U	<1.6 U	<1.76 U	<1.94 U
CARBON DISULFIDE	ug/kg	1000000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
CARBON TETRACHLORIDE	ug/kg	500	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
CHLOROBENZENE	ug/kg	10000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
CHLOROETHANE	ug/kg	4100000	<1.78 U	<1.92 U	<1.82 U	<1.78 U	<1.62 U	<1.96 U	<1.87 U	<1.84 U	<1.93 U	<1.77 U	<1.78 U	<1.83 U	<1.94 U	<1.88 U	<1.69 U	<1.87 U	<1.6 U	<1.76 U	<1.94 U
CHLOROFORM	ug/kg	100000	2.49 J	1.17 J	2.06 J	<0.888 U	<0.812 U	2.07 J	0.643 J	2.47 J	2.64 J	2.13 J	0.66 J	<0.914 U	<0.968 U	1.05 J	1.12 J	2.11 J	0.501 J	<0.882 U	<0.972 U
CHLOROMETHANE	ug/kg	22000	<3.56 U	<3.84 U	<3.64 U	<3.56 U	<3.24 U	<3.92 U	<3.74 U	<3.68 U	<3.86 U	<3.54 U	<3.56 U	<3.66 U	<3.88 U	<3.76 U	<3.38 U	<3.74 U	<3.2 U	<3.52 U	<3.88 U
CIS-1,2-DICHLOROETHENE	ug/kg	7000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
CIS-1,3-DICHLOROPROPENE	ug/kg	530	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
DIBROMOCHLOROMETHANE	ug/kg	3400	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
DIBROMOMETHANE	ug/kg	38000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
DICHLORODIFLUOROMETHANE	ug/kg	2000000	<1.78 U	<1.92 U	<1.82 U	<1.78 U	<1.62 U	<1.96 U	<1.87 U	<1.84 U	<1.93 U	<1.77 U	<1.78 U	<1.83 U	<1.94 U	<1.88 U	<1.69 U	<1.87 U	<1.6 U	<1.76 U	<1.94 U
ETHYLBENZENE	ug/kg	70000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
HEXACHLOROBUTADIENE	ug/kg	2000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
ISOPROPYLBENZENE	ug/kg	1000000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
m,p-Xylene	ug/kg	1000000	<0.888 UJ	<0.962 UJ	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 UJ	<0.798 U	<0.882 U	<0.972 U
METHYLENE CHLORIDE	ug/kg	500	1.04 J	1.01 J	<1.82 U	<1.78 U	<1.62 U	<1.96 U	<1.87 U	<1.84 U	<1.93 U	<1.77 U	<1.78 U	<1.83 U	<1.94 U	<1.88 U	<1.69 U	<1.87 U	<1.6 U	<1.76 U	<1.94 U
NAPHTHALENE	ug/kg	200000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
N-BUTYLBENZENE	ug/kg	410000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
N-PROPYLBENZENE	ug/kg	410000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
O-XYLENE	ug/kg	1000000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
P-ISOPROPYLTOLUENE	ug/kg	1000000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
SEC-BUTYLBENZENE	ug/kg	410000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
STYRENE	ug/kg	10000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
TERT-BUTYLBENZENE	ug/kg	410000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
TETRACHLOROETHENE	ug/kg	500	0.932 J	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
TOLUENE	ug/kg	100000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
TRANS-1,2-DICHLOROETHENE	ug/kg	10000	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	0.517 J	<0.936 U	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
TRANS-1,3-DICHLOROPROPENE	ug/kg	2900	<0.888 U	<0.962 U	<0.908 U	<0.888 U	<0.812 U	<0.982 U	<0.936 UJ	<0.922 U	<0.964 U	<0.884 U	<0.892 U	<0.914 U	<0.968 U	<0.938 U	<0.844 U	<0.934 U	<0.798 U	<0.882 U	<0.972 U
TRICHLOROETHENE	ug/kg	500	111	67.7	79.8	19.2	9.02	58	8.93 J	44.1	47.1	75.3	34.9	22.8	5.08	20.6	23.8	63.7	42.8	15.2	33.8
TRICHLOROFLUOROMETHANE	ug/kg	3100000	<1.78 U	<1.92 U	<1.82 U	<1.78 U	<1.62 U	<1.96 U	<1.87 U	<1.84 U	<1.93 U	<1.77 U	<1.78 U	<1.83 U	<1.94 U	<1.88 U	<1.69 U	<1.87 U	<1.6 U	<1.76 U	<1.94 U
VINYL CHLORIDE	ug/kg	200	<1.78 U	<1.92 U	<1.82 U	<1.78 U	<1.62 U	<1.96 U	<1.87 UJ	<1.84 U	<1.93 U	<1.77 U	<1.78 U	<1.83 U	<1.94 U	<1.88 U	<1.69 U	<1.87 U	<1.6 U	<1.76 U	<1.94 U

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/kg - milligrams per kilogram

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/kg - micrograms per kilogram

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: / Sample Date:	Units	MCL/ MSC	29SG02611 030514 5/3/2014	29SG02711 030514 5/3/2014	29SG02813 040514 5/4/2014	29SG02914 040514 5/4/2014	29SG03013 040514 5/4/2014	29SG03113 040514 5/4/2014	29SG03213 040514 5/4/2014	29SG03312 040514 5/4/2014	29SG03413 040514 5/4/2014	29SG03514 040514 5/4/2014	29SG03614 040514 5/4/2014	29SG03714 040514 5/4/2014	29SG03814 040514 5/4/2014	29SG03914 050514 5/5/2014	29SG04014 050514 5/5/2014	29SG04113 050514 5/5/2014	29SG04213 050514 5/5/2014	29SG04312 060514 5/6/2014	29SG04414 060514 5/6/2014
			RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area
Volatile Organic Compounds (8260B)																					
1,1,1,2-TETRACHLOROETHANE	ug/kg	11000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
1,1,1-TRICHLOROETHANE	ug/kg	20000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
1,1,2,2-TETRACHLOROETHANE	ug/kg	1400	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
1,1,2-TRICHLOROETHANE	ug/kg	500	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
1,1-DICHLOROETHANE	ug/kg	1000000	<1.93 U	<1.58 U	<2.06 U	<1.89 U	<1.88 U	<1.86 U	<1.83 U	<1.95 U	<1.87 U	N/A	<2.06 U	N/A	<1.93 U	<1.89 U	<1.91 U	<1.9 U	<1.91 U	<0.451 U	<0.455 U
1,1-DICHLOROETHENE	ug/kg	700	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
1,1-DICHLOROPROPENE	ug/kg	290	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
1,2,3-TRICHLOROBENZENE	ug/kg	31000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
1,2,3-TRICHLOROPROPANE	ug/kg	4.1	<1.93 U	<1.58 U	<2.06 U	<1.89 U	<1.88 U	<1.86 U	<1.83 U	<1.95 U	<1.87 U	N/A	<2.06 U	N/A	<1.93 U	<1.89 U	<1.91 U	<1.9 U	<1.91 U	<0.451 U	<0.455 U
1,2,4-TRICHLOROBENZENE	ug/kg	7000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
1,2,4-TRIMETHYLBENZENE	ug/kg	510000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/kg	20	<3.86 U	<3.16 U	<4.12 U	<3.78 U	<3.76 U	<3.72 U	<3.66 U	<3.9 U	<3.74 U	N/A	<4.14 U	N/A	<3.86 U	<3.78 U	<3.82 U	<3.8 U	<3.82 U	<1.81 U	<1.82 U
1,2-DIBROMOETHANE	ug/kg	5	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<1.81 U	<1.82 U
1,2-DICHLOROBENZENE	ug/kg	60000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
1,2-DICHLOROETHANE	ug/kg	500	4.81 J	10.4	268	N/A	128	239	96.1	121	N/A	873	262	513 J	286	263	N/A	226	239	179	398
1,2-DICHLOROPROPANE	ug/kg	500	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
1,3,5-TRIMETHYLBENZENE	ug/kg	510000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
1,3-DICHLOROBENZENE	ug/kg	310000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
1,3-DICHLOROPROPANE	ug/kg	2900	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
1,4-DICHLOROBENZENE	ug/kg	7500	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
2,2-DICHLOROPROPANE	ug/kg	4200	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
2-BUTANONE	ug/kg	6100000	<4.82 U	<3.94 U	<5.14 U	<4.72 U	<4.7 U	<4.64 U	<4.58 U	<4.88 U	<4.68 U	N/A	<5.16 U	N/A	<4.82 U	<4.72 U	<4.78 U	<4.76 U	<4.76 U	<1.81 U	<1.82 U
2-CHLOROTOLUENE	ug/kg	200000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
2-HEXANONE	ug/kg	610000	<4.82 U	<3.94 U	<5.14 U	<4.72 U	<4.7 U	<4.64 U	<4.58 U	<4.88 U	<4.68 U	N/A	<5.16 U	N/A	<4.82 U	<4.72 U	<4.78 U	<4.76 U	<4.76 U	<1.81 U	<1.82 U
4-CHLOROTOLUENE	ug/kg	200000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
4-METHYL-2-PENTANONE	ug/kg	820000	<4.82 U	<3.94 U	<5.14 U	<4.72 U	<4.7 U	<4.64 U	<4.58 U	<4.88 U	<4.68 U	N/A	<5.16 U	N/A	<4.82 U	<4.72 U	<4.78 U	<4.76 U	<4.76 U	<0.451 U	<0.455 U
ACETONE	ug/kg	920000	6.56 J	9.81 J	8.68 J	<9.46 U	14.2 J	<9.28 U	8.28 J	5.65 J	<9.36 U	N/A	10.6 J	N/A	6.38 J	<9.44 U	19.4	7.33 J	<9.52 U	<1.81 U	<1.82 U
BENZENE	ug/kg	500	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
BROMOBENZENE	ug/kg	200000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
BROMOCHLOROMETHANE	ug/kg	410000	<1.93 U	<1.58 U	<2.06 U	<1.89 U	<1.88 U	<1.86 U	<1.83 U	<1.95 U	<1.87 U	N/A	<2.06 U	N/A	<1.93 U	<1.89 U	<1.91 U	<1.9 U	<1.91 U	<0.451 U	<0.455 U
BROMODICHLOROMETHANE	ug/kg	460	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
BROMOFORM	ug/kg	3600	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
BROMOMETHANE	ug/kg	14000	<1.93 U	<1.58 U	<2.06 U	<1.89 U	<1.88 U	<1.86 U	<1.83 U	<1.95 U	<1.87 U	N/A	<2.06 U	N/A	<1.93 U	<1.89 U	<1.91 U	<1.9 U	<1.91 U	<1.81 U	<1.82 U
CARBON DISULFIDE	ug/kg	1000000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
CARBON TETRACHLORIDE	ug/kg	500	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
CHLOROBENZENE	ug/kg	10000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
CHLOROETHANE	ug/kg	4100000	<1.93 U	<1.58 U	<2.06 U	<1.89 U	<1.88 U	<1.86 U	<1.83 U	<1.95 U	<1.87 U	N/A	<2.06 U	N/A	<1.93 U	<1.89 U	<1.91 U	<1.9 U	<1.91 U	<0.451 U	<0.455 U
CHLOROFORM	ug/kg	100000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	1.1 J	0.746 J	1.12 J	<0.936 U	N/A	<1.03 U	N/A	0.663 J	0.563 J	1.07 J	1.25 J	1.92 J	2.05	0.944
CHLOROMETHANE	ug/kg	22000	<3.86 U	<3.16 U	<4.12 U	<3.78 U	<3.76 U	<3.72 U	<3.66 U	<3.9 U	<3.74 U	N/A	<4.14 U	N/A	<3.86 U	<3.78 U	<3.82 U	<3.8 U	<3.82 U	<1.81 U	<1.82 U
CIS-1,2-DICHLOROETHENE	ug/kg	7000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
CIS-1,3-DICHLOROPROPENE	ug/kg	530	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
DIBROMOCHLOROMETHANE	ug/kg	3400	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
DIBROMOMETHANE	ug/kg	38000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
DICHLORODIFLUOROMETHANE	ug/kg	2000000	<1.93 U	<1.58 U	<2.06 U	<1.89 U	<1.88 U	<1.86 U	<1.83 U	<1.95 U	<1.87 U	N/A	<2.06 U	N/A	<1.93 U	<1.89 U	<1.91 U	<1.9 U	<1.91 U	<0.451 U	<0.455 U
ETHYLBENZENE	ug/kg	70000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
HEXACHLOROBUTADIENE	ug/kg	2000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
ISOPROPYLBENZENE	ug/kg	1000000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
m,p-Xylene	ug/kg	1000000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.903 U	<0.91 U
METHYLENE CHLORIDE	ug/kg	500	<1.93 U	<1.58 U	<2.06 U	<1.89 U	<1.88 U	<1.86 U	<1.83 U	<1.95 U	<1.87 U	N/A	<2.06 U	N/A	<1.93 U	<1.89 U	<1.91 U	<1.9 U	<1.91 U	<0.903 U	<0.91 U
NAPHTHALENE	ug/kg	200000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
N-BUTYLBENZENE	ug/kg	410000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
N-PROPYLBENZENE	ug/kg	410000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
O-XYLENE	ug/kg	1000000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
P-ISOPROPYLTOLUENE	ug/kg	1000000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
SEC-BUTYLBENZENE	ug/kg	410000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
STYRENE	ug/kg	10000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
TERT-BUTYLBENZENE	ug/kg	410000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
TETRACHLOROETHENE	ug/kg	500	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	4.82	5.52
TOLUENE	ug/kg	100000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
TRANS-1,2-DICHLOROETHENE	ug/kg	10000	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	0.694 J	0.581	<0.455 U
TRANS-1,3-DICHLOROPROPENE	ug/kg	2900	<0.966 U	<0.79 U	<1.03 U	<0.946 U	<0.94 U	<0.928 U	<0.916 U	<0.976 U	<0.936 U	N/A	<1.03 U	N/A	<0.964 U	<0.944 U	<0.954 U	<0.952 U	<0.952 U	<0.451 U	<0.455 U
TRICHLOROETHENE	ug/kg	500	33.5	29.3	3.52 J	11	1.43 J	18.8	14.7	59	4.27 J	N/A	4.63 J	N/A	12.8	11.7	23.3	38.5	67.5	62.3	6.65
TRICHLOROFLUOROMETHANE	ug/kg	3100000	<1.93 U	<1.58 U	<2.06 U	<1.89 U	<1.88 U	<1.86 U	<1.83 U	<1.95 U	<1.87 U	N/A	<2.06 U	N/A	<1.93 U	<1.89 U	<1.91 U	<1.9 U	<1.91 U	<0.451 U	<0.455 U
VINYL CHLORIDE	ug/kg	200	<1.93 U	<1.58 U	<2.06 U	<1.89 U	<1.88 U	<1.86 U	<1.83 U	<1.95 U	<1.87 U	N/A	<2.06 U	N/A	<1.93 U	<1.89 U	<1.91 U	<1.9 U	<1.91 U	<0.451 U	<0.455 U

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/kg - milligrams per kilogram

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/kg - micrograms per kilogram

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: / Sample Date:	Units	MCL/ MSC	29SG04514 060514 5/6/2014	29SG04614 060514 5/6/2014	29SG04714 060514 5/6/2014	29SG04814 060514 5/6/2014	29SG04914 060514 5/6/2014	29SG05014 060514 5/6/2014	29SG05113 060514 5/6/2014	29SG05212 060514 5/6/2014	29SG05312 060514 5/6/2014	29SG05414 060514 5/6/2014	29SG05414 060514D 5/6/2014	29SG05514 060514 5/6/2014	29SG05614 060514 5/6/2014	29SG05714 060514 5/6/2014	29SG05815 060514 5/6/2014	29SG05915 070514 5/7/2014	29SG06015 070514 5/7/2014	29SG06015 070514D 5/7/2014	29SG06113 070514 5/7/2014
			RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas-29WW16 Area
Volatile Organic Compounds (8260B)																					
1,1,1,2-TETRACHLOROETHANE	ug/kg	11000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
1,1,1-TRICHLOROETHANE	ug/kg	20000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
1,1,2,2-TETRACHLOROETHANE	ug/kg	1400	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
1,1,2-TRICHLOROETHANE	ug/kg	500	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	0.463 J	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
1,1-DICHLOROETHANE	ug/kg	1000000	<0.483 U	<0.455 U	<0.456 U	0.227 J	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
1,1-DICHLOROETHENE	ug/kg	700	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	0.315 J
1,1-DICHLOROPROPENE	ug/kg	290	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
1,2,3-TRICHLOROBENZENE	ug/kg	31000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
1,2,3-TRICHLOROPROPANE	ug/kg	4.1	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
1,2,4-TRICHLOROBENZENE	ug/kg	7000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
1,2,4-TRIMETHYLBENZENE	ug/kg	510000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/kg	20	<1.93 U	<1.82 U	<1.82 U	<1.81 U	<1.72 U	<1.73 U	<1.83 U	<1.72 U	<1.89 U	<1.87 U	<1.92 U	<1.79 U	<1.82 U	<1.82 U	<1.54 U	<1.92 U	<1.91 U	<1.92 U	<1.92 U
1,2-DIBROMOETHANE	ug/kg	5	<1.93 U	<1.82 U	<1.82 U	<1.81 U	<1.72 U	<1.73 U	<1.83 U	<1.72 U	<1.89 U	<1.87 U	<1.92 U	<1.79 U	<1.82 U	<1.82 U	<1.54 U	<1.92 U	<1.91 U	<1.92 U	<1.92 U
1,2-DICHLOROBENZENE	ug/kg	60000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
1,2-DICHLOROETHANE	ug/kg	500	224	112	153	197	214	176	223	168	307	535	502	174	172	106	179	175	216	200	129
1,2-DICHLOROPROPANE	ug/kg	500	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
1,3,5-TRIMETHYLBENZENE	ug/kg	510000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
1,3-DICHLOROBENZENE	ug/kg	310000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
1,3-DICHLOROPROPANE	ug/kg	2900	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
1,4-DICHLOROBENZENE	ug/kg	7500	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
2,2-DICHLOROPROPANE	ug/kg	4200	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
2-BUTANONE	ug/kg	6100000	<1.93 U	<1.82 U	<1.82 U	<1.81 U	<1.72 U	<1.73 U	<1.83 U	<1.72 U	<1.89 U	<1.87 U	<1.92 U	<1.79 U	<1.82 U	<1.82 U	<1.54 U	<1.92 U	<1.91 U	<1.92 U	<1.92 U
2-CHLOROTOLUENE	ug/kg	200000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
2-HEXANONE	ug/kg	610000	<1.93 U	<1.82 U	<1.82 U	<1.81 U	<1.72 U	<1.73 U	<1.83 U	<1.72 U	<1.89 U	<1.87 U	<1.92 U	<1.79 U	<1.82 U	<1.82 U	<1.54 U	<1.92 U	<1.91 U	<1.92 U	<1.92 U
4-CHLOROTOLUENE	ug/kg	200000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
4-METHYL-2-PENTANONE	ug/kg	820000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
ACETONE	ug/kg	920000	3.61	<1.82 U	7.37	<1.81 U	7.37	2.25	1.24 J	<1.72 U	<1.89 U	<1.87 U	3.88	<1.79 U	<1.82 U	<1.82 U	<1.54 U	4.01	<1.91 U	<1.92 U	4.8
BENZENE	ug/kg	500	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
BROMOBENZENE	ug/kg	200000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
BROMOCHLOROMETHANE	ug/kg	410000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
BROMODICHLOROMETHANE	ug/kg	460	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
BROMOFORM	ug/kg	3600	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
BROMOMETHANE	ug/kg	14000	<1.93 U	<1.82 U	<1.82 U	<1.81 U	<1.72 U	<1.73 U	<1.83 U	<1.72 U	<1.89 U	<1.87 U	<1.92 U	<1.79 U	<1.82 U	<1.82 U	<1.54 U	<1.92 U	<1.91 U	<1.92 U	<1.92 U
CARBON DISULFIDE	ug/kg	1000000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
CARBON TETRACHLORIDE	ug/kg	500	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
CHLOROBENZENE	ug/kg	10000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
CHLOROETHANE	ug/kg	4100000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
CHLOROFORM	ug/kg	100000	<0.483 U	<0.455 U	1.39	1.15	1.44	1.62	1.79	1.29	2.8	<0.468 U	0.942	<0.447 U	<0.456 U	<0.456 U	0.696	1.55	1.1	1.17	1.34
CHLOROMETHANE	ug/kg	22000	<1.93 U	<1.82 U	<1.82 U	<1.81 U	<1.72 U	<1.73 U	<1.83 U	<1.72 U	<1.89 U	<1.87 U	<1.92 U	<1.79 U	<1.82 U	<1.82 U	<1.54 U	<1.92 U	<1.91 U	<1.92 U	<1.92 U
CIS-1,2-DICHLOROETHENE	ug/kg	7000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
CIS-1,3-DICHLOROPROPENE	ug/kg	530	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
DIBROMOCHLOROMETHANE	ug/kg	3400	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
DIBROMOMETHANE	ug/kg	38000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 UJ	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
DICHLORODIFLUOROMETHANE	ug/kg	2000000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
ETHYLBENZENE	ug/kg	70000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
HEXACHLOROBUTADIENE	ug/kg	2000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
ISOPROPYLBENZENE	ug/kg	1000000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
m,p-Xylene	ug/kg	1000000	<0.966 U	<0.91 U	<0.912 U	<0.907 U	<0.859 U	<0.866 U	<0.914 U	<0.86 U	<0.946 U	<0.936 U	<0.96 U	<0.894 U	<0.912 U	<0.911 U	<0.771 U	<0.959 U	<0.957 U	<0.959 U	<0.959 U
METHYLENE CHLORIDE	ug/kg	500	<0.966 U	<0.91 U	<0.912 U	<0.907 U	<0.859 U	<0.866 U	<0.914 U	<0.86 U	<0.946 U	<0.936 U	<0.96 U	<0.894 U	<0.912 U	<0.911 U	<0.771 U	<0.959 U	<0.957 U	<0.959 U	<0.959 U
NAPHTHALENE	ug/kg	200000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
N-BUTYLBENZENE	ug/kg	410000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
N-PROPYLBENZENE	ug/kg	410000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
O-XYLENE	ug/kg	1000000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
P-ISOPROPYLTOLUENE	ug/kg	1000000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
SEC-BUTYLBENZENE	ug/kg	410000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
STYRENE	ug/kg	10000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
TERT-BUTYLBENZENE	ug/kg	410000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
TETRACHLOROETHENE	ug/kg	500	3.83	4.14	7.03	<0.453 U	<0.429 U	<0.433 U	7.67	5.31	<0.473 U	4.73	4.31	7.22	2.7	<0.456 U	<0.385 U	2.43	<0.479 U	<0.48 U	4.48
TOLUENE	ug/kg	100000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
TRANS-1,2-DICHLOROETHENE	ug/kg	10000	<0.483 U	<0.455 U	<0.456 U	0.393 J	0.332 J	0.37 J	0.58	0.463	0.724	0.324 J	0.235 J	<0.447 U	<0.456 U	<0.456 U	0.263 J	0.549	0.46 J	0.472 J	<0.479 U
TRANS-1,3-DICHLOROPROPENE	ug/kg	2900	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
TRICHLOROETHENE	ug/kg	500	4.1	3.47	5.59	15.1	17.3	20.7	44.8	35.6	94.5	11.2	8.26	2.57	4	3.91	9.88	19	20.9	21.3	13.5
TRICHLOROFLUOROMETHANE	ug/kg	3100000	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U
VINYL CHLORIDE	ug/kg	200	<0.483 U	<0.455 U	<0.456 U	<0.453 U	<0.429 U	<0.433 U	<0.457 U	<0.43 U	<0.473 U	<0.468 U	<0.48 U	<0.447 U	<0.456 U	<0.456 U	<0.385 U	<0.479 U	<0.479 U	<0.48 U	<0.479 U

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/kg - milligrams per kilogram

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/kg - micrograms per kilogram

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: / Sample Date:	Units	MCL/ MSC	29SG06212 070514 5/7/2014	29SG06315 020514 5/2/2014	29SG06413 060514 5/6/2014	29SG06514 070514 5/7/2014	29SG06614 070514 5/7/2014	29SG06815 070514 5/7/2014	29SG06913 070514 5/7/2014	29SG07113 070514 5/7/2014	29SG07214 070514 5/7/2014	29SG07315 070514 5/7/2014	29SG07415 070514 5/7/2014	29SG07615 020514 5/2/2014	29SG07710 120514 5/12/2014	29SG07810 120514 5/12/2014	29SG07910 120514 5/12/2014	29SG08010 120514 5/12/2014	29SG08110 120514 5/12/2014	29SG08210 120514 5/12/2014	29SG08310 120514 5/12/2014
			RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas- 29WW16 Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area
Volatile Organic Compounds (8260B)																					
1,1,1,2-TETRACHLOROETHANE	ug/kg	11000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
1,1,1-TRICHLOROETHANE	ug/kg	20000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
1,1,2,2-TETRACHLOROETHANE	ug/kg	1400	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
1,1,2-TRICHLOROETHANE	ug/kg	500	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
1,1-DICHLOROETHANE	ug/kg	1000000	<0.433 U	<2.12 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<1.92 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	1.01	<0.484 U	<0.438 U
1,1-DICHLOROETHENE	ug/kg	700	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	2.27	<0.484 U	<0.438 U
1,1-DICHLOROPROPENE	ug/kg	290	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
1,2,3-TRICHLOROBENZENE	ug/kg	31000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
1,2,3-TRICHLOROPROPANE	ug/kg	4.1	<0.433 U	<2.12 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<1.92 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
1,2,4-TRICHLOROBENZENE	ug/kg	7000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
1,2,4-TRIMETHYLBENZENE	ug/kg	510000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/kg	20	<1.73 U	<4.24 UJ	<1.92 U	<1.92 U	<1.86 U	<1.88 U	<1.57 U	<1.89 U	<1.9 U	<2.01 U	<1.69 U	<3.84 UJ	<1.78 U	<1.83 U	<1.78 U	<1.82 U	<1.74 U	<1.94 U	<1.75 U
1,2-DIBROMOETHANE	ug/kg	5	<1.73 U	<1.06 U	<1.92 U	<1.92 U	<1.86 U	<1.88 U	<1.57 U	<1.89 U	<1.9 U	<2.01 U	<1.69 U	<0.962 U	<1.78 U	<1.83 U	<1.78 U	<1.82 U	<1.74 U	<1.94 U	<1.75 U
1,2-DICHLOROBENZENE	ug/kg	60000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
1,2-DICHLOROETHANE	ug/kg	500	197	69.7	307	207	190	203	148	95.1	57.3	52.7	139	450 J	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
1,2-DICHLOROPROPANE	ug/kg	500	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
1,3,5-TRIMETHYLBENZENE	ug/kg	510000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
1,3-DICHLOROBENZENE	ug/kg	310000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
1,3-DICHLOROPROPANE	ug/kg	2900	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
1,4-DICHLOROBENZENE	ug/kg	7500	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
2,2-DICHLOROPROPANE	ug/kg	4200	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
2-BUTANONE	ug/kg	6100000	<1.73 U	<5.3 U	<1.92 U	<1.92 U	<1.86 U	<1.88 U	<1.57 U	<1.89 U	<1.9 U	<2.01 U	<1.69 U	<4.8 U	<1.78 U	<1.83 U	<1.78 U	<1.82 U	<1.74 U	<1.94 U	<1.75 U
2-CHLOROTOLUENE	ug/kg	200000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
2-HEXANONE	ug/kg	610000	<1.73 U	<5.3 U	<1.92 U	<1.92 U	<1.86 U	<1.88 U	<1.57 U	<1.89 U	<1.9 U	<2.01 U	<1.69 U	<4.8 U	<1.78 U	<1.83 U	<1.78 U	<1.82 U	<1.74 U	<1.94 U	<1.75 U
4-CHLOROTOLUENE	ug/kg	200000	<0.433 U	<1.06 UJ	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 UJ	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
4-METHYL-2-PENTANONE	ug/kg	820000	<0.433 U	<5.3 UJ	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<4.8 UJ	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
ACETONE	ug/kg	920000	<1.73 U	<10.6 U	<1.92 U	3.29 J	<1.86 U	2.41 J	<1.57 U	2.23 J	2.06 J	1.57 J	<1.69 UJ	<9.62 U	<1.78 U	5.16	<1.78 U	6.47	<1.74 U	<1.94 U	<1.75 U
BENZENE	ug/kg	500	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
BROMOBENZENE	ug/kg	200000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
BROMOCHLOROMETHANE	ug/kg	410000	<0.433 U	<2.12 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<1.92 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
BROMODICHLOROMETHANE	ug/kg	460	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
BROMOFORM	ug/kg	3600	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
BROMOMETHANE	ug/kg	14000	<1.73 U	<2.12 U	<1.92 U	<1.92 U	<1.86 U	<1.88 U	<1.57 U	<1.89 U	<1.9 U	<2.01 U	<1.69 U	<1.92 U	<1.78 U	<1.83 U	<1.78 U	<1.82 U	<1.74 U	<1.94 U	<1.75 U
CARBON DISULFIDE	ug/kg	1000000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
CARBON TETRACHLORIDE	ug/kg	500	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
CHLOROBENZENE	ug/kg	10000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
CHLOROETHANE	ug/kg	4100000	<0.433 U	<2.12 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<1.92 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
CHLOROFORM	ug/kg	100000	1.44	<1.06 U	<0.48 U	1.02	0.833	1.57	1.2	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	0.739	<0.458 U	<0.445 U	1.26	0.818	<0.484 U	<0.438 U
CHLOROMETHANE	ug/kg	22000	<1.73 U	<4.24 U	<1.92 U	<1.92 U	<1.86 U	<1.88 U	<1.57 U	<1.89 U	<1.9 U	<2.01 U	<1.69 U	<3.84 U	<1.78 U	<1.83 U	<1.78 U	<1.82 U	<1.74 U	<1.94 U	<1.75 U
CIS-1,2-DICHLOROETHENE	ug/kg	7000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	0.733	<0.458 U	<0.445 U	1.59	85.5	<0.484 U	<0.438 U
CIS-1,3-DICHLOROPROPENE	ug/kg	530	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
DIBROMOCHLOROMETHANE	ug/kg	3400	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
DIBROMOMETHANE	ug/kg	38000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
DICHLORODIFLUOROMETHANE	ug/kg	2000000	<0.433 U	<2.12 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<1.92 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
ETHYLBENZENE	ug/kg	70000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
HEXACHLOROBUTADIENE	ug/kg	2000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
ISOPROPYLBENZENE	ug/kg	1000000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
m,p-Xylene	ug/kg	1000000	<0.866 U	<1.06 UJ	<0.96 U	<0.958 U	<0.932 U	<0.941 U	<0.784 U	<0.943 U	<0.951 U	<1.01 U	<0.846 U	<0.962 UJ	<0.888 U	<0.917 U	<0.889 U	<0.909 U	<0.87 U	<0.969 U	<0.875 U
METHYLENE CHLORIDE	ug/kg	500	<0.866 U	<2.12 U	<0.96 U	<0.958 U	<0.932 U	<0.941 U	<0.784 U	<0.943 U	<0.951 U	<1.01 U	<0.846 U	<1.92 U	<0.888 U	<0.917 U	<0.889 U	<0.909 U	<0.87 U	<0.969 U	<0.875 U
NAPHTHALENE	ug/kg	200000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
N-BUTYLBENZENE	ug/kg	410000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
N-PROPYLBENZENE	ug/kg	410000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
O-XYLENE	ug/kg	1000000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
P-ISOPROPYLTOLUENE	ug/kg	1000000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
SEC-BUTYLBENZENE	ug/kg	410000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
STYRENE	ug/kg	10000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
TERT-BUTYLBENZENE	ug/kg	410000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
TETRACHLOROETHENE	ug/kg	500	<0.433 U	<1.06 U	3.35	<0.479 U	2.81	<0.471 U	2.67	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
TOLUENE	ug/kg	100000	<0.433 U	<1.06 U	<0.48 U	<0.479 U	<0.466 U	0.245 J	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
TRANS-1,2-DICHLOROETHENE	ug/kg	10000	0.462	<1.06 U	<0.48 U	<0.479 U	<0.466 U	0.815	0.568	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	0.539	<0.484 U	<0.438 U
TRANS-1,3-DICHLOROPROPENE	ug/kg	2900	<0.433 U	<1.06 U	<0.48 U	<0.479 U	1.48	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<0.962 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
TRICHLOROETHENE	ug/kg	500	34.4	1.53 J	4.23	4.55	3.69	34.7	31.8	1.58	2.48	2.81	6.93	12.4	<0.444 U	<0.458 U	<0.445 U	0.817	32.5	<0.484 U	<0.438 U
TRICHLOROFLUOROMETHANE	ug/kg	3100000	<0.433 U	<2.12 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<1.92 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U
VINYL CHLORIDE	ug/kg	200	<0.433 U	<2.12 U	<0.48 U	<0.479 U	<0.466 U	<0.471 U	<0.392 U	<0.472 U	<0.475 U	<0.503 U	<0.423 U	<1.92 U	<0.444 U	<0.458 U	<0.445 U	<0.455 U	<0.435 U	<0.484 U	<0.438 U

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/kg - milligrams per kilogram

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/kg - micrograms per kilogram

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: / Sample Date:	Units	MCL/ MSC	29SG08410 120514 5/12/2014	29SG08510 120514 5/12/2014	29SG08610 120514 5/12/2014	29SG08710 120514 5/12/2014	29SG08810 120514 5/12/2014	29SG08910 120514 5/12/2014	29SG09010 120514 5/12/2014	29SG0910 020514 5/2/2014	29SG09110 120514 5/12/2014	29SG09210 120514 5/12/2014	29SG09310 120514 5/12/2014	29SG09410 130514 5/13/2014	29SG09510 130514 5/13/2014	29SG09610 130514 5/13/2014	29SG09710 130514 5/13/2014 1	29SG09710 130514D 5/13/2014	29SG09810 130514 5/13/2014	29SG10010 130514 5/13/2014	29SG10110 130514 5/13/2014
			RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area
Volatile Organic Compounds (8260B)																					
1,1,1,2-TETRACHLOROETHANE	ug/kg	11000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
1,1,1-TRICHLOROETHANE	ug/kg	20000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
1,1,2,2-TETRACHLOROETHANE	ug/kg	1400	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
1,1,2-TRICHLOROETHANE	ug/kg	500	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	0.683	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
1,1-DICHLOROETHANE	ug/kg	1000000	<0.449 U	<0.383 U	0.38 J	0.947	<0.425 U	<0.488 U	<0.452 U	<1.8 U	<0.439 U	0.745	5.47	<0.48 U	<0.446 U	<0.44 U	0.419 J	<0.494 U	<24.2 U	<0.458 U	<0.47 U
1,1-DICHLOROETHENE	ug/kg	700	<0.449 U	<0.383 U	0.724	1.38	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	6.42	17.3	12.7	<0.446 U	<0.44 U	8.11	<0.494 U	<24.2 U	3.69	2.77
1,1-DICHLOROPROPENE	ug/kg	290	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
1,2,3-TRICHLOROBENZENE	ug/kg	31000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
1,2,3-TRICHLOROPROPANE	ug/kg	4.1	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<1.8 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
1,2,4-TRICHLOROBENZENE	ug/kg	7000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
1,2,4-TRIMETHYLBENZENE	ug/kg	510000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	3.25	<0.47 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/kg	20	<1.8 U	<1.53 U	<1.61 U	<1.74 U	<1.7 U	<1.95 U	<1.81 U	<3.6 UJ	<1.75 U	<1.86 U	<1.86 U	<1.92 U	<1.78 U	<1.76 U	<1.77 U	<1.97 U	<96.9 U	<1.83 U	<1.88 U
1,2-DIBROMOETHANE	ug/kg	5	<1.8 U	<1.53 U	<1.61 U	<1.74 U	<1.7 U	<1.95 U	<1.81 U	<0.9 U	<1.75 U	<1.86 U	<1.86 U	<1.92 U	<1.78 U	<1.76 U	<1.77 U	<1.97 U	<96.9 U	<1.83 U	<1.88 U
1,2-DICHLOROBENZENE	ug/kg	60000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
1,2-DICHLOROETHANE	ug/kg	500	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	102	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
1,2-DICHLOROPROPANE	ug/kg	500	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
1,3,5-TRIMETHYLBENZENE	ug/kg	510000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
1,3-DICHLOROBENZENE	ug/kg	310000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
1,3-DICHLOROPROPANE	ug/kg	2900	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
1,4-DICHLOROBENZENE	ug/kg	7500	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
2,2-DICHLOROPROPANE	ug/kg	4200	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 UJ	<0.442 UJ	<0.494 UJ	<24.2 U	<0.458 U	<0.47 U
2-BUTANONE	ug/kg	6100000	<1.8 U	<1.53 U	<1.61 U	<1.74 U	<1.7 U	<1.95 U	<1.81 U	<4.5 U	<1.75 U	<1.86 U	<1.86 U	<1.92 U	<1.78 U	<1.76 U	<1.77 U	<1.97 U	<96.9 U	<1.83 U	<1.88 U
2-CHLOROTOLUENE	ug/kg	200000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
2-HEXANONE	ug/kg	610000	<1.8 U	<1.53 U	<1.61 U	<1.74 U	<1.7 U	<1.95 U	<1.81 U	<4.5 U	<1.75 U	<1.86 U	<1.86 U	<1.92 U	<1.78 U	<1.76 U	<1.77 U	<1.97 U	<96.9 U	<1.83 U	<1.88 U
4-CHLOROTOLUENE	ug/kg	200000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 UJ	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
4-METHYL-2-PENTANONE	ug/kg	820000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<4.5 UJ	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
ACETONE	ug/kg	920000	5.33	<1.53 U	<1.61 U	<1.74 U	<1.7 U	<1.95 U	4.3	<9 U	4.91	<1.86 U	<1.86 U	2.81	12.5	4.61	7.47	2.48	<96.9 U	22.5	19
BENZENE	ug/kg	500	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
BROMOBENZENE	ug/kg	200000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
BROMOCHLOROMETHANE	ug/kg	410000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<1.8 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
BROMODICHLOROMETHANE	ug/kg	460	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
BROMOFORM	ug/kg	3600	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
BROMOMETHANE	ug/kg	14000	<1.8 U	<1.53 U	<1.61 U	<1.74 U	<1.7 U	<1.95 U	<1.81 U	<1.8 U	<1.75 U	<1.86 U	<1.86 U	<1.92 U	<1.78 U	<1.76 UJ	<1.77 UJ	<1.97 UJ	<96.9 U	<1.83 U	<1.88 U
CARBON DISULFIDE	ug/kg	1000000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	0.799	<0.442 U	<0.494 U	<24.2 U	12.8	16.7
CARBON TETRACHLORIDE	ug/kg	500	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
CHLOROBENZENE	ug/kg	10000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
CHLOROETHANE	ug/kg	4100000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<1.8 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
CHLOROFORM	ug/kg	100000	1.14	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	1.06 J	<0.439 U	<0.466 U	0.817	<0.48 U	1.13	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	1.08
CHLOROMETHANE	ug/kg	22000	<1.8 U	<1.53 U	<1.61 U	<1.74 U	<1.7 U	<1.95 U	<1.81 U	<3.6 U	<1.75 U	<1.86 U	<1.86 U	<1.92 U	<1.78 U	<1.76 U	<1.77 U	<1.97 U	<96.9 U	<1.83 U	<1.88 U
CIS-1,2-DICHLOROETHENE	ug/kg	7000	<0.449 U	1.46	11.9	124	0.649	<0.488 U	<0.452 U	<0.9 U	<0.439 U	78.6	449	5.63	<0.446 U	<0.44 U	78.7	17.2	348	5.41	1.27
CIS-1,3-DICHLOROPROPENE	ug/kg	530	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
DIBROMOCHLOROMETHANE	ug/kg	3400	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
DIBROMOMETHANE	ug/kg	38000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
DICHLORODIFLUOROMETHANE	ug/kg	2000000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<1.8 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
ETHYLBENZENE	ug/kg	70000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
HEXACHLOROBUTADIENE	ug/kg	2000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
ISOPROPYLBENZENE	ug/kg	1000000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	0.428 J	<0.47 U
m,p-Xylene	ug/kg	1000000	<0.899 U	<0.765 U	<0.803 U	<0.869 U	<0.849 U	<0.976 U	<0.904 U	<0.9 UJ	<0.877 U	<0.931 U	<0.931 U	<0.96 U	<0.892 U	<0.881 U	<0.883 U	<0.987 U	<48.5 U	<0.916 U	<0.941 U
METHYLENE CHLORIDE	ug/kg	500	<0.899 U	<0.765 U	<0.803 U	<0.869 U	<0.849 U	<0.976 U	<0.904 U	<1.8 U	<0.877 U	<0.931 U	<0.931 U	<0.96 U	<0.892 U	<0.881 U	<0.883 U	1.79	<48.5 U	<0.916 U	<0.941 U
NAPHTHALENE	ug/kg	200000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
N-BUTYLBENZENE	ug/kg	410000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
N-PROPYLBENZENE	ug/kg	410000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
O-XYLENE	ug/kg	1000000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
P-ISOPROPYLTOLUENE	ug/kg	1000000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
SEC-BUTYLBENZENE	ug/kg	410000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	0.49	<0.47 U
STYRENE	ug/kg	10000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
TERT-BUTYLBENZENE	ug/kg	410000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
TETRACHLOROETHENE	ug/kg	500	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	2.32	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
TOLUENE	ug/kg	100000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
TRANS-1,2-DICHLOROETHENE	ug/kg	10000	<0.449 U	<0.383 U	<0.401 U	0.636	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	1.02	4.21	<0.48 U	<0.446 U	<0.44 U	8.55	1.28	<24.2 U	<0.458 U	<0.47 U
TRANS-1,3-DICHLOROPROPENE	ug/kg	2900	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<0.9 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
TRICHLOROETHENE	ug/kg	500	<0.449 U	<0.383 U	8.89	71.3	<0.425 U	<0.488 U	<0.452 U	33.8	<0.439 U	25.9	581	0.593	<0.446 U	<0.44 U	76	8.58	1270	<0.458 U	<0.47 U
TRICHLOROFLUOROMETHANE	ug/kg	3100000	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<1.8 U	<0.439 U	<0.466 U	<0.465 U	<0.48 U	<0.446 U	<0.44 U	<0.442 U	<0.494 U	<24.2 U	<0.458 U	<0.47 U
VINYL CHLORIDE	ug/kg	200	<0.449 U	<0.383 U	<0.401 U	<0.435 U	<0.425 U	<0.488 U	<0.452 U	<1.8 U	<0.439 U	0.427 J	<0.465 U	<0.48 U	<0.446 U	<0.44 U	0.676	<0.494 U	<24.2 U	<0.458 U	<0.47 U

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/kg - milligrams per kilogram

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/kg - micrograms per kilogram

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: / Sample Date:	Units	MCL/ MSC	29SG10210 130514 5/13/2014	29SG10310 130514 5/13/2014	29SG10410 130514 5/13/2014	29SG10510 130514 5/13/2014	29SG10610 130514 5/13/2014	29SG10710 130514 5/13/2014	29SG10810 130514 5/13/2014	29SG11010 140514 5/14/2014	29SG11310 140514 5/14/2014	29SG11410 140514 5/14/2014	29SG11410 140514D 5/14/2014	29SG11510 130514 5/13/2014	29SG11610 130514 5/13/2014	29SG11710 130514 5/13/2014	29SG11810 130514 5/13/2014	29SG11910 140514 5/14/2014	29SG12010 140514 5/14/2014	29SG12110 140514 5/14/2014	29SG12210 140514 5/14/2014
			RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area
Volatile Organic Compounds (8260B)																					
1,1,1,2-TETRACHLOROETHANE	ug/kg	11000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
1,1,1-TRICHLOROETHANE	ug/kg	20000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
1,1,2,2-TETRACHLOROETHANE	ug/kg	1400	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
1,1,2-TRICHLOROETHANE	ug/kg	500	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
1,1-DICHLOROETHANE	ug/kg	1000000	<0.461 U	<0.444 U	<0.451 U	1.98	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
1,1-DICHLOROETHENE	ug/kg	700	2.97	<0.444 U	3.36	24.3	<26.3 U	<22.9 U	<23.7 U	2.6	3.88	11.7	9.21	39.8	<22.6 U	<23 U	<23.7 U	68.7	62.9	40.7	120
1,1-DICHLOROPROPENE	ug/kg	290	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
1,2,3-TRICHLOROBENZENE	ug/kg	31000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
1,2,3-TRICHLOROPROPANE	ug/kg	4.1	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
1,2,4-TRICHLOROBENZENE	ug/kg	7000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
1,2,4-TRIMETHYLBENZENE	ug/kg	510000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/kg	20	<1.84 U	<1.78 U	<1.8 U	<1.89 U	<105 U	<91.8 U	<94.9 U	<1.83 U	<1.78 U	<2.11 U	<1.83 U	<91.6 U	<90.5 U	<91.9 U	<95 U	<91.5 U	<101 U	<101 U	<389 U
1,2-DIBROMOETHANE	ug/kg	5	<1.84 U	<1.78 U	<1.8 U	<1.89 U	<105 U	<91.8 U	<94.9 U	<1.83 U	<1.78 U	<2.11 U	<1.83 U	<91.6 U	<90.5 U	<91.9 U	<95 U	<91.5 U	<101 U	<101 U	<389 U
1,2-DICHLOROBENZENE	ug/kg	60000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
1,2-DICHLOROETHANE	ug/kg	500	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
1,2-DICHLOROPROPANE	ug/kg	500	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
1,3,5-TRIMETHYLBENZENE	ug/kg	510000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
1,3-DICHLOROBENZENE	ug/kg	310000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
1,3-DICHLOROPROPANE	ug/kg	2900	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
1,4-DICHLOROBENZENE	ug/kg	7500	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
2,2-DICHLOROPROPANE	ug/kg	4200	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
2-BUTANONE	ug/kg	6100000	<1.84 U	<1.78 U	1.32 J	<1.89 U	<105 U	<91.8 U	<94.9 U	<1.83 U	<1.78 U	<2.11 U	<1.83 U	<91.6 U	<90.5 U	<91.9 U	<95 U	<91.5 U	<101 U	<101 U	<389 U
2-CHLOROTOLUENE	ug/kg	200000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
2-HEXANONE	ug/kg	610000	<1.84 U	<1.78 U	<1.8 U	<1.89 U	<105 U	<91.8 U	<94.9 U	<1.83 U	<1.78 U	<2.11 U	<1.83 U	<91.6 U	<90.5 U	<91.9 U	<95 U	<91.5 U	<101 U	<101 U	<389 U
4-CHLOROTOLUENE	ug/kg	200000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
4-METHYL-2-PENTANONE	ug/kg	820000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
ACETONE	ug/kg	920000	9.43	5.3	6.55	<1.89 U	<105 U	<91.8 U	<94.9 U	17.9	1.1 J	<2.11 U	2.9	<91.6 U	<90.5 U	<91.9 U	<95 U	<91.5 UJ	<101 UJ	<101 UJ	<389 UJ
BENZENE	ug/kg	500	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
BROMOBENZENE	ug/kg	200000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
BROMOCHLOROMETHANE	ug/kg	410000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
BROMODICHLOROMETHANE	ug/kg	460	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
BROMOFORM	ug/kg	3600	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
BROMOMETHANE	ug/kg	14000	<1.84 U	<1.78 U	<1.8 U	<1.89 U	46.3 J	56.8 J	<94.9 U	<1.83 U	<1.78 U	<2.11 U	<1.83 U	<91.6 U	<90.5 U	<91.9 U	<95 U	<91.5 U	<101 U	<101 U	<389 U
CARBON DISULFIDE	ug/kg	1000000	8.34	0.945	1.82	<0.472 U	<26.3 U	<22.9 U	<23.7 U	4.5	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
CARBON TETRACHLORIDE	ug/kg	500	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
CHLOROBENZENE	ug/kg	10000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
CHLOROETHANE	ug/kg	4100000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
CHLOROFORM	ug/kg	100000	<0.461 U	1.12	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
CHLOROMETHANE	ug/kg	22000	<1.84 U	<1.78 U	<1.8 U	<1.89 U	<105 U	<91.8 U	<94.9 U	<1.83 U	<1.78 U	<2.11 U	<1.83 U	<91.6 U	<90.5 U	<91.9 U	<95 U	<91.5 U	<101 U	<101 U	<389 U
CIS-1,2-DICHLOROETHENE	ug/kg	7000	1.21	1.63	1.82	269	578	204	38.4	4.93	4.05	38.8	28.7	747	247	106	43.1	667	1030	1560	1420
CIS-1,3-DICHLOROPROPENE	ug/kg	530	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
DIBROMOCHLOROMETHANE	ug/kg	3400	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
DIBROMOMETHANE	ug/kg	38000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
DICHLORODIFLUOROMETHANE	ug/kg	2000000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
ETHYLBENZENE	ug/kg	70000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
HEXACHLOROBUTADIENE	ug/kg	2000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
ISOPROPYLBENZENE	ug/kg	1000000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
m,p-Xylene	ug/kg	1000000	<0.921 U	<0.888 U	<0.901 U	<0.945 U	<52.6 U	<45.9 U	<47.5 U	<0.917 U	<0.892 U	<1.06 U	<0.916 U	<45.8 U	<45.2 U	<46 U	<47.5 U	<45.8 U	<50.7 U	<50.5 U	<194 U
METHYLENE CHLORIDE	ug/kg	500	<0.921 U	<0.888 U	<0.901 U	<0.945 U	<52.6 U	<45.9 U	<47.5 U	<0.917 U	<0.892 U	<1.06 U	<0.916 U	<45.8 U	<45.2 U	<46 U	<47.5 U	<45.8 U	<50.7 U	<50.5 U	<194 U
NAPHTHALENE	ug/kg	200000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
N-BUTYLBENZENE	ug/kg	410000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
N-PROPYLBENZENE	ug/kg	410000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
O-XYLENE	ug/kg	1000000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
P-ISOPROPYLTOLUENE	ug/kg	1000000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
SEC-BUTYLBENZENE	ug/kg	410000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
STYRENE	ug/kg	10000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
TERT-BUTYLBENZENE	ug/kg	410000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
TETRACHLOROETHENE	ug/kg	500	<0.461 U	<0.444 U	1.54	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
TOLUENE	ug/kg	100000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
TRANS-1,2-DICHLOROETHENE	ug/kg	10000	<0.461 U	<0.444 U	0.308 J	17.6	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	5.06	4.03	25.7	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
TRANS-1,3-DICHLOROPROPENE	ug/kg	2900	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	1.4	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
TRICHLOROETHENE	ug/kg	500	<0.461 U	<0.444 U	2.13	395	3220	1170	421	<0.459 U	0.389 J	35.1	30.2	2910	1710	922	1160	<22.9 U	<25.3 U	51.8	11700
TRICHLOROFLUOROMETHANE	ug/kg	3100000	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	<0.529 U	<0.458 U	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U
VINYL CHLORIDE	ug/kg	200	<0.461 U	<0.444 U	<0.451 U	<0.472 U	<26.3 U	<22.9 U	<23.7 U	<0.459 U	<0.446 U	0.675	0.551	<22.9 U	<22.6 U	<23 U	<23.7 U	<22.9 U	<25.3 U	<25.3 U	<97.2 U

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/kg - milligrams per kilogram

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/kg - micrograms per kilogram

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: / Sample Date:	Units	MCL/ MSC	29SG12310 140514 5/14/2014	29SG12310 140514D 5/14/2014	29SG12410 140514 5/14/2014	29SG13010 110614 6/11/2014	29SG13110 110614 6/11/2014	29SG13210 110614 6/11/2014	29SG13310 110614 6/11/2014	29SG13410 110614 6/11/2014	29SG13510 110614 6/11/2014	29SG13610 110614 6/11/2014	29SG13710 110614 6/11/2014	29SG13810 120614 6/12/2014	29SG13910 120614 6/12/2014	29SG14010 120614 6/12/2014	29SG14110 120614 6/12/2014	29SG14210 120614 6/12/2014	29SG14310 120614 6/12/2014	29SG14410 120614 6/12/2014	29SG14510 120614 6/12/2014	29SG14610 120614 6/12/2014
			RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area	RIFS Add WP - Soil In Lieu of Soil Gas- Bldg 801-F Area
Volatile Organic Compounds (8260B)																						
1,1,1,2-TETRACHLOROETHANE	ug/kg	11000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
1,1,1-TRICHLOROETHANE	ug/kg	20000	<22.5 U	<26 U	<0.435 U	2.83 J	<5.56 U	512 J	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
1,1,2,2-TETRACHLOROETHANE	ug/kg	1400	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
1,1,2-TRICHLOROETHANE	ug/kg	500	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
1,1-DICHLOROETHANE	ug/kg	1000000	<22.5 U	<26 U	<0.435 U	2.92 J	<11.1 U	<252 U	<12 U	<270 U	<2.34 U	<2.34 U	<2.34 U	<2.38 U	<2.32 U	<2.34 U	<2.42 U	<2.2 U	<2.54 U	<2.34 U	<2.28 U	<2.32 U
1,1-DICHLOROETHENE	ug/kg	700	<22.5 U	<26 U	3.46	4.44 J	16.5 J	526 J	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	0.922 J	<1.17 U	<1.14 U	0.832 J
1,1-DICHLOROPROPENE	ug/kg	290	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
1,2,3-TRICHLOROBENZENE	ug/kg	31000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
1,2,3-TRICHLOROPROPANE	ug/kg	4.1	<22.5 U	<26 U	<0.435 U	<2.28 U	<11.1 U	<252 U	<12 U	<270 U	<2.34 U	<2.34 U	<2.34 U	<2.38 U	<2.32 U	<2.34 U	<2.42 U	<2.2 U	<2.54 U	<2.34 U	<2.28 U	<2.32 U
1,2,4-TRICHLOROBENZENE	ug/kg	7000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
1,2,4-TRIMETHYLBENZENE	ug/kg	510000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/kg	20	<89.9 U	<104 U	<1.74 U	<4.56 U	<22.2 U	<504 U	<24 U	<542 U	<4.7 U	<4.68 U	<4.68 U	<4.78 U	<4.64 U	<4.68 U	<4.82 U	<4.4 U	<5.06 U	<4.68 U	<4.56 U	<4.64 U
1,2-DIBROMOETHANE	ug/kg	5	<89.9 U	<104 U	<1.74 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
1,2-DICHLOROBENZENE	ug/kg	60000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
1,2-DICHLOROETHANE	ug/kg	500	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
1,2-DICHLOROPROPANE	ug/kg	500	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
1,3,5-TRIMETHYLBENZENE	ug/kg	510000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
1,3-DICHLOROBENZENE	ug/kg	310000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
1,3-DICHLOROPROPANE	ug/kg	2900	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
1,4-DICHLOROBENZENE	ug/kg	7500	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
2,2-DICHLOROPROPANE	ug/kg	4200	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
2-BUTANONE	ug/kg	6100000	<89.9 U	<104 U	1.85	<5.7 U	<27.8 U	<628 U	<30.2 U	<676 U	<5.88 U	<5.84 U	<5.86 U	<5.98 U	<5.8 U	<5.86 U	<6.04 U	<5.5 U	<6.34 U	<5.86 UJ	<5.7 U	<5.8 U
2-CHLOROTOLUENE	ug/kg	200000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
2-HEXANONE	ug/kg	610000	<89.9 U	<104 U	<1.74 U	<5.7 U	<27.8 U	<628 U	<30.2 U	<676 U	<5.88 U	<5.84 U	<5.86 U	<5.98 U	<5.8 U	<5.86 U	<6.04 U	<5.5 U	<6.34 U	<5.86 U	<5.7 U	<5.8 U
4-CHLOROTOLUENE	ug/kg	200000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
4-METHYL-2-PENTANONE	ug/kg	820000	<22.5 U	<26 U	<0.435 U	<5.7 U	<27.8 U	<628 U	<30.2 U	<676 U	<5.88 U	<5.84 U	<5.86 U	<5.98 U	<5.8 U	<5.86 U	<6.04 U	<5.5 U	<6.34 U	<5.86 UJ	<5.7 U	<5.8 U
ACETONE	ug/kg	920000	<89.9 UJ	<104 UJ	16.3	<11.4 U	<55.6 U	<1260 U	<60.2 U	<1350 U	<11.7 U	<11.7 U	<11.7 U	<11.9 U	<11.6 U	<11.7 U	<12.1 U	<11 U	<12.7 U	<11.7 UJ	<11.4 U	12.7 J
BENZENE	ug/kg	500	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
BROMOBENZENE	ug/kg	200000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
BROMOCHLOROMETHANE	ug/kg	410000	<22.5 U	<26 U	<0.435 U	<2.28 U	<11.1 U	<252 U	<12 U	<270 U	<2.34 U	<2.34 U	<2.34 U	<2.38 U	<2.32 U	<2.34 U	<2.42 U	<2.2 U	<2.54 U	<2.34 U	<2.28 U	<2.32 U
BROMODICHLOROMETHANE	ug/kg	460	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
BROMOFORM	ug/kg	3600	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
BROMOMETHANE	ug/kg	14000	<89.9 U	<104 U	<1.74 U	<2.28 U	<11.1 U	141 J	<12 U	<270 U	<2.34 U	<2.34 U	<2.34 U	<2.38 U	<2.32 U	<2.34 U	<2.42 U	<2.2 U	<2.54 U	<2.34 U	<2.28 U	<2.32 U
CARBON DISULFIDE	ug/kg	1000000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
CARBON TETRACHLORIDE	ug/kg	500	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
CHLOROBENZENE	ug/kg	10000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	781	<6.02 U	334 J	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
CHLOROETHANE	ug/kg	4100000	<22.5 U	<26 U	<0.435 U	<2.28 U	<11.1 U	<252 U	<12 U	<270 U	<2.34 U	<2.34 U	<2.34 U	<2.38 U	<2.32 U	<2.34 U	<2.42 U	<2.2 U	<2.54 U	<2.34 U	<2.28 U	<2.32 U
CHLOROFORM	ug/kg	100000	<22.5 U	<26 U	0.944	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
CHLOROMETHANE	ug/kg	22000	<89.9 U	<104 U	<1.74 U	<4.56 U	<22.2 U	<504 U	<24 U	<542 U	<4.7 U	<4.68 U	<4.68 U	<4.78 U	<4.64 U	<4.68 U	<4.82 U	<4.4 U	<5.06 U	<4.68 U	<4.56 U	<4.64 U
CIS-1,2-DICHLOROETHENE	ug/kg	7000	72	81.7	6.99	22.5	38.3	<126 U	7.75 J	<135 U	<1.17 U	0.982 J	<1.17 U	<1.19 U	<1.16 U	<1.17 U	1.04 J	<1.1 U	24.7	2.99 J	52.3	66.3
CIS-1,3-DICHLOROPROPENE	ug/kg	530	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
DIBROMOCHLOROMETHANE	ug/kg	3400	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
DIBROMOMETHANE	ug/kg	38000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
DICHLORODIFLUOROMETHANE	ug/kg	2000000	<22.5 U	<26 U	<0.435 U	<2.28 U	<11.1 U	<252 U	<12 U	<270 U	<2.34 U	<2.34 U	<2.34 U	<2.38 U	<2.32 U	<2.34 U	<2.42 U	<2.2 U	<2.54 U	<2.34 U	<2.28 U	<2.32 U
ETHYLBENZENE	ug/kg	70000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	81.2 J	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
HEXACHLOROBUTADIENE	ug/kg	2000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
ISOPROPYLBENZENE	ug/kg	1000000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
m,p-Xylene	ug/kg	1000000	<44.9 U	<52 U	<0.871 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
METHYLENE CHLORIDE	ug/kg	500	782	900	<0.871 U	2.44 J	<11.1 U	785	<12 U	<270 U	1.54 J	<2.34 U	1.98 J	<2.38 U	<2.32 U	<2.34 U	<2.42 U	1.81 J	<2.54 U	<2.34 U	1.16 J	<2.32 U
NAPHTHALENE	ug/kg	200000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
N-BUTYLBENZENE	ug/kg	410000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
N-PROPYLBENZENE	ug/kg	410000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
O-XYLENE	ug/kg	1000000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
P-ISOPROPYLTOLUENE	ug/kg	1000000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
SEC-BUTYLBENZENE	ug/kg	410000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	1.71 J	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
STYRENE	ug/kg	10000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	106 J	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
TERT-BUTYLBENZENE	ug/kg	410000	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
TETRACHLOROETHENE	ug/kg	500	<22.5 U	<26 U	1.95	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
TOLUENE	ug/kg	100000	19.9 J	21.2 J	<0.435 U	<1.14 U	<5.56 U	64.9 J	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
TRANS-1,2-DICHLOROETHENE	ug/kg	10000	<22.5 U	<26 U	0.411 J	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
TRANS-1,3-DICHLOROPROPENE	ug/kg	2900	<22.5 U	<26 U	<0.435 U	<1.14 U	<5.56 U	<126 U	<6.02 U	<135 U	<1.17 U	<1.17 U	<1.17 U	<1.19 U	<1.16 U	<1.17 U	<1.21 U	<1.1 U	<1.27 U	<1.17 U	<1.14 U	<1.16 U
TRICHLOROETHENE	ug/kg	500	711	715	388	172	916	13800	754	14300	33.2	63.7	96.1	9.56	4.69 J	41.8	54.3	5.24 J	133	37.4	69	245
TRICHLOROFLUOROMETHANE	ug/kg	3100000	<22.5 U	<26 U	<0.435 U	<2.28 U	<11.1 U	<252 U	<12 U	<270 U	<2.34 U	<2.34 U	<2.34 U	<2.38 U	<2.32 U	<2.34 U	<2.42 U	<2.2 U	<2.54 U	<2.34 U	<2.28 U	<2.32 U
VINYL CHLORIDE	ug/kg	200	<22.5 U	<26 U	<0.435 U	<2.28 U	<11.1 U	<252 U	<12 U	<270 U	<2.34 U	<2.34 U	<2.34 U	<2.38 U	<2.32 U	<2.34 U	<2.42 U	<2.2 U	<2.54 U	<2.34 U	<2.28 U	<2.32 U

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/kg - milligrams per kilogram

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/kg - micrograms per kilogram

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: Sample Date:	Units	MCL/ MSC	29SB102(6-8) 180514 5/18/2014	29SB102(8-10) 180514 5/18/2014	29SB103(10-12) 220714 7/22/2014	29SB103(6-8) 220714 7/22/2014	29SB103(8-10) 220714 7/22/2014
			RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area
PERCHLORATE	ug/kg	7200	3.34 J	3.01 J	2920	4560	3630 J

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

N/A - not analyzed

ug/kg - micrograms per kilogram

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: Sample Date:	Units	MCL/ MSC	29SB104(10-12) 220714 7/22/2014	29SB104(10-12) 220714D 7/22/2014	29SB104(6-8) 180514 5/18/2014	29SB104(6-8) 180514D 5/18/2014	29SB104(8-10) 180514 5/18/2014
			RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area
PERCHLORATE	ug/kg	7200	5400	6490	6060	5790	7960

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

N/A - not analyzed

ug/kg - micrograms per kilogram

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: Sample Date:	Units	MCL/ MSC	29SB105(6-8) 180514 5/18/2014	29SB105(8-10) 180514 5/18/2014	29SB108(10-12) 220714 7/22/2014	29SB108(6-8) 220714 7/22/2014	29SB108(8-10) 220714 7/22/2014
			RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SD46 Area	RIFS Add WP - 29SD46 Area	RIFS Add WP - 29SD46 Area
PERCHLORATE	ug/kg	7200	80.8	265	7400	1190	3230

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

N/A - not analyzed

ug/kg - micrograms per kilogram

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: Sample Date:	Units	MCL/ MSC	29CPT01(56) 290614 6/29/2014	29CPT01(70) 290614 6/29/2014	29CPT01(83) 290614 6/29/2014	29CPT0272 260614 6/26/2014	29CPT0275 260614 6/26/2014	29CPT0281 260614 6/26/2014	29CPT0454 170614 6/17/2014	29CPT0470 170614 6/17/2014	29CPT0485 170614 6/17/2014
			RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample	RIFS Add WP - Methylene Chloride Plume Char. Sample
Total Organic Carbon (LYDKHN)											
TOTAL ORGANIC CARBON (TOC)	mg/kg		<1000 U	7540	5630	4440	4600	6980	2980	22800	2350

Blue Highlighting Indicates concentrations above the MCL/MSC

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/kg - milligrams per kilogram

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

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: / Sample Date:	Units	MCL/ MSC	29SB100(0-1) 150514 5/15/2014	29SB100(0-2) 140614 6/14/2014	29SB101(0-1) 150514 5/15/2014	29SB102(0-2) 150514 5/15/2014	29SB103(0-2) 150514 5/15/2014	29SB104(0-2) 150514 5/15/2014	29SB104(0-2) 150514D 5/15/2014	29SB105(0-2) 150514 5/15/2014	29SB109(0-0_5) 130614 6/13/2014	29SB109(0-0_5) 190514 5/19/2014	29SB110(0-0_5) 130614 6/13/2014
			RIFS Add WP - 29WW20 Area	RIFS Add WP - 29WW20 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SB98 Area	RIFS Add WP - 29SD46 Area	RIFS Add WP - 29SD46 Area	RIFS Add WP - 29SD46 Area
Explosives (8270D)													
2,4-DINITROTOLUENE	mg/kg	0.42	N/A	0.0215 J	N/A	N/A	N/A	N/A	N/A	N/A	<0.0276 U	N/A	<0.0284 U
2,6-DINITROTOLUENE	mg/kg	0.42	N/A	0.0398 J	N/A	N/A	N/A	N/A	N/A	N/A	<0.0276 U	N/A	<0.0284 U
Explosives (8330B)													
2,4,6-TRINITROTOLUENE	mg/kg	5.1	<0.194 U	<0.194 U	<0.187 U	<0.206 U	<0.196 U	<0.184 U	<0.204 U	<0.19 U	<0.193 U	<0.192 U	<0.193 U
2-AMINO-4,6-DINITROTOLUENE	mg/kg	1.7	<0.194 U	<0.194 U	<0.187 U	<0.206 U	<0.196 U	<0.184 U	<0.204 U	<0.19 U	<0.193 U	<0.192 U	<0.193 U
4-AMINO-2,6-DINITROTOLUENE	mg/kg	1.7	<0.194 UJ	<0.194 UJ	<0.187 UJ	<0.206 UJ	<0.196 UJ	<0.184 UJ	<0.204 UJ	<0.19 UJ	<0.193 UJ	<0.192 UJ	<0.193 UJ

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/kg - milligrams per kilogram

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/kg - micrograms per kilogram

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: Sample Date:	Units	MCL/ MSC	29SB110(0-0_5) 180514 5/18/2014	29SB111(0-0_5) 130614 6/13/2014	29SB111(0-035) 190514 5/19/2014	29SB112(0-0_5) 130614 6/13/2014	29SB112(0-0_5) 180514 5/18/2014	29SB112(2-4) 130614 6/13/2014	29SB113(0-0_5) 130614 6/13/2014	29SB114(0-0_5) 140614 6/14/2014	29SB114(0-0_5) 190514 5/19/2014	29SB115(0-0_5) 140614 6/14/2014
			RIFS Add WP - 29SD46 Area	RIFS Add WP - 29SD46 Area	RIFS Add WP - 29SD46 Area	RIFS Add WP - 29SD46 Area	RIFS Add WP - 29SD46 Area	RIFS Add WP - 29SD46 Area	RIFS Add WP - 29SD46 Area	RIFS Add WP - 29SD46 Area	RIFS Add WP - 29SD13 Area	RIFS Add WP - 29SD13 Area
Explosives (8270D)												
2,4-DINITROTOLUENE	mg/kg	0.42	N/A	<0.0252 U	N/A	0.0544 J	N/A	<0.0596 U	0.022 J	<0.0248 U	N/A	<0.0252 U
2,6-DINITROTOLUENE	mg/kg	0.42	N/A	<0.0252 U	N/A	0.0862	N/A	0.0704 J	0.0365 J	<0.0248 U	N/A	<0.0252 U
Explosives (8330B)												
2,4,6-TRINITROTOLUENE	mg/kg	5.1	<0.2 U	<0.189 U	<0.181 U	<0.202 U	<0.193 U	N/A	N/A	<0.185 U	<0.212 U	<0.21 U
2-AMINO-4,6-DINITROTOLUENE	mg/kg	1.7	<0.2 U	<0.189 U	<0.181 U	<0.202 U	<0.193 U	N/A	N/A	<0.185 U	<0.212 U	<0.21 U
4-AMINO-2,6-DINITROTOLUENE	mg/kg	1.7	<0.2 UJ	<0.189 UJ	<0.181 UJ	<0.202 UJ	<0.193 UJ	N/A	N/A	<0.185 UJ	<0.212 UJ	<0.21 UJ

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/kg - milligrams per kilogram

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/kg - micrograms per kilogram

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: Sample Date:	Units	MCL/ MSC	29SB115(0-0_5) 150514 5/15/2014	29SB116(0-0_5) 140614 6/14/2014	29SB116(0-0_5) 160514 5/16/2014	29SB117(0-0_5) 140614 6/14/2014	29SB117(2-4) 140614 6/14/2014	29SB90(0-0_5) 140614 6/14/2014	29SB90(0-0_5) 140614DUP 6/14/2014	29SB90(0-2) 170514 5/17/2014	29SB91(0-0_5) 140614 6/14/2014	29SB92(0-2) 140614 6/14/2014	29SB92(0-2) 170514 5/17/2014
			RIFS Add WP - 29SD13 Area	RIFS Add WP - 29SD13 Area	RIFS Add WP - 29SD13 Area	RIFS Add WP - 29SD13 Area	RIFS Add WP - 29SD13 Area	RIFS Add WP - Bldg 806-A	RIFS Add WP - Bldg 806-A	RIFS Add WP - Bldg 806-A	RIFS Add WP - Bldg 806-A	RIFS Add WP - Bldg 806-A	RIFS Add WP - Bldg 806-A
Explosives (8270D)													
2,4-DINITROTOLUENE	mg/kg	0.42	N/A	<0.0304 U	N/A	<0.52 UJ	<0.536 UJ	<0.0276 U	<0.03 U	N/A	<0.0314 U	0.0385 J	N/A
2,6-DINITROTOLUENE	mg/kg	0.42	N/A	<0.0304 U	N/A	<0.52 UJ	<0.536 UJ	<0.0276 U	<0.03 U	N/A	<0.0314 U	0.0488 J	N/A
Explosives (8330B)													
2,4,6-TRINITROTOLUENE	mg/kg	5.1	<0.197 U	<0.183 U	<0.199 U	<0.202 U	N/A	7.5	0.192 J	0.332 J	1.18	<0.195 U	<0.184 U
2-AMINO-4,6-DINITROTOLUENE	mg/kg	1.7	<0.197 U	<0.183 U	<0.199 U	<0.202 U	N/A	0.104 J	<0.182 U	<0.195 U	<0.19 U	<0.195 U	<0.184 U
4-AMINO-2,6-DINITROTOLUENE	mg/kg	1.7	<0.197 UJ	<0.183 UJ	<0.199 UJ	<0.202 UJ	N/A	0.187 J	<0.182 UJ	<0.195 UJ	<0.19 UJ	<0.195 UJ	<0.184 UJ

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

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mg/kg - milligrams per kilogram

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UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/kg - micrograms per kilogram

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: Sample Date:	Units	MCL/ MSC	29SB92(2-4) 140614 6/14/2014	29SB93(0-2) 140614 6/14/2014	29SB93(0-2) 170514 5/17/2014	29SB94(0-1) 140614 6/14/2014	29SB94(0-2) 170514 5/17/2014	29SB95(0-1) 140614 6/14/2014	29SB95(0-2) 170514 5/17/2014	29SB96(0-1) 140614 6/14/2014	29SB96(0-2) 170514 5/17/2014	29SB97(0-2) 140614 6/14/2014	29SB97(0-2) 140614DUP 6/14/2014
			RIFS Add WP - Bldg 806-A	RIFS Add WP - Bldg 806-A	RIFS Add WP - Bldg 806-A	RIFS Add WP - 29DLineWHW01 Area	RIFS Add WP - 29DLineWHW01 Area	RIFS Add WP - 29DLineWHW01 Area	RIFS Add WP - 29DLineWHW01 Area	RIFS Add WP - 29DLineWHW01 Area	RIFS Add WP - 29DLineWHW01 Area	RIFS Add WP - 29WW20 Area	RIFS Add WP - 29WW20 Area
Explosives (8270D)													
2,4-DINITROTOLUENE	mg/kg	0.42	<0.126 U	<0.0322 U	N/A	<0.034 U	N/A	<0.0276 U	N/A	<0.027 U	N/A	<0.0292 U	0.0233 J
2,6-DINITROTOLUENE	mg/kg	0.42	0.0796 J	<0.0322 U	N/A	<0.034 U	N/A	<0.0276 U	N/A	<0.027 U	N/A	<0.0292 U	0.0368 J
Explosives (8330B)													
2,4,6-TRINITROTOLUENE	mg/kg	5.1	N/A	<0.185 U	<0.196 U	<0.19 U	<0.199 U	3.28	<0.198 U	<0.192 U	<0.212 U	<0.206 U	<0.189 U
2-AMINO-4,6-DINITROTOLUENE	mg/kg	1.7	N/A	<0.185 U	<0.196 U	<0.19 U	<0.199 U	0.67	<0.198 U	<0.192 U	<0.212 U	<0.206 U	<0.189 U
4-AMINO-2,6-DINITROTOLUENE	mg/kg	1.7	N/A	<0.185 U	<0.196 UJ	<0.19 UJ	<0.199 UJ	0.467 J	<0.198 UJ	<0.192 UJ	<0.212 UJ	<0.206 UJ	<0.189 UJ

Blue Highlighting Indicates concentrations above the MCL/MSC

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ug/kg - micrograms per kilogram

LHAAP-29 RIFS Addendum Work Plan Field Work
June - October 2014

Location ID: Sample Date:	Units	MCL/ MSC	29SB97(0-2) 150514 5/15/2014	29SB98(0-2) 140614 6/14/2014	29SB98(0-2) 150514 5/15/2014	29SB99(0-1) 170514 5/17/2014	29SB99(0-2) 140614 6/14/2014
			RIFS Add WP - 29WW20 Area	RIFS Add WP - 29WW20 Area	RIFS Add WP - 29WW20 Area	RIFS Add WP - 29WW20 Area	RIFS Add WP - 29WW20 Area
Explosives (8270D)							
2,4-DINITROTOLUENE	mg/kg	0.42	N/A	0.029 J	N/A	N/A	<0.0268 U
2,6-DINITROTOLUENE	mg/kg	0.42	N/A	0.0357 J	N/A	N/A	<0.0268 U
Explosives (8330B)							
2,4,6-TRINITROTOLUENE	mg/kg	5.1	<0.184 U	<0.193 U	<0.21 U	<0.212 U	<0.202 U
2-AMINO-4,6-DINITROTOLUENE	mg/kg	1.7	<0.184 U	<0.193 U	<0.21 U	<0.212 U	<0.202 U
4-AMINO-2,6-DINITROTOLUENE	mg/kg	1.7	<0.184 UJ	<0.193 UJ	<0.21 UJ	<0.212 UJ	<0.202 UJ

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

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mg/kg - milligrams per kilogram

N/A - not analyzed

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UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/kg - micrograms per kilogram

FY2014

LONGHORN ARMY AMMUNITION PLANT

Installation Action Plan

Printed 05 January 2015

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Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multiyear cleanup program for an installation. The plan identifies environmental cleanup requirements at each site or area of concern (AOC), and proposes a comprehensive, installation-wide approach, along with the costs and schedules associated with conducting investigations and taking the necessary remedial actions (RA).

In an effort to coordinate planning information between the restoration manager, Base Realignment and Closure (BRAC), the US Army Environmental Command (USAEC), Longhorn Army Ammunition Plant (LHAAP), the executing agencies, regulatory agencies, and the public, an IAP was completed. The IAP is used to track requirements, schedules, and tentative budgets for all major Army installation cleanup programs.

All site-specific funding and schedule information has been prepared according to projected overall Army funding levels and is, therefore, subject to change.

Acronyms

AEDB-R	Army Environmental Database- Restoration
AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirements
AST	Aboveground Storage Tank
BIP	Blow in Place
Bldg	Building
BRAC	Base Realignment and Closure
BRACO	Base Realignment and Closure Office
CERCLA	Comprehensive Environmental, Response, Compensation and Liability Act
CLI	Caddo Lake Institute
CS	Confirmatory Sampling
cy	cubic yards
DD	Decision Document
DERPMIS	Defense Environmental Restoration Program Management Information System
DoD	Department of Defense
EBS	Environmental Baseline Survey
EDS	Explanation of Significant Differences
EE/CA	Engineering Evaluation/Cost Analysis
EOD	Explosive Ordnance Disposal
ER,A	Environmental Restoration, Army (formerly DERA)
ESS	Explosives Safety Submission
FFA	Federal Facility Agreement
FRA	Final Remedial Action
FS	Feasibility Study
FWS	(US) Fish and Wildlife Service
FY	Fiscal Year
GWTP	Groundwater Treatment Plan
HTRW	Hazardous, Toxic and Radioactive Waste
IAP	Installation Action Plan
ICT	Information and Communication Technologies
INF	Intermediate-Range Nuclear Force
IRA	Interim Remedial Action
IRP	Installation Restoration Program
ISC	Information Systems Command
K	thousand
LAP	Load, Assemble, and Pack
LHAAP	Longhorn Army Ammunition Plant
LTM	Long-Term Management
LUC	Land Use Controls
MC	Munitions Constituents
MEC	Munitions and Explosives of Concern
mm	millimeters
MMRP	Military Munitions Response Program
MNA	Monitored Natural Attenuation
MOA	Memorandum of Agreement

Acronyms

MRSPP	Munitions Response Site Prioritization Protocol
MSCs	Medium-Specific Concentrations
N/A	Not Applicable
NA	No Action
NFA	No Further Action
NPL	National Priorities List
ORIS	Operational Range Inventory - Sustainment
PA	Preliminary Assessment
PBA	Performance-Based Acquisition
PBC	Performance-Based Contract
PCB	Polychlorinated Biphenyls
POL	Petroleum, Oil, and Lubricants
PP	Proposed Plan
QA	Quality Assurance
Qtr	quarter
RA	Remedial Action
RA(C)	Remedial Action-Construction
RA(O)	Remedial Actions - Operation
RAB	Restoration Advisory Board
RAWP	Remedial Action Work Plan
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RIP	Remedy-in-Place
RMIS	Restoration Management Information System
ROD	ecord of Decision
RRSE	Relative Risk Site Evaluation
RTC	Response to Comments
SI	Site Inspection
TAPP	Technical Assistance for Public Participation
TBD	To be determined
TCE	Trichloroethylene
TCEQ	Texas Commission on Environmental Quality
TERC	Total Environmental Restoration Contract
TNT	Trinitrotoluene
TRC	Technical Review Committee
TWC	Texas Water Commission
TX	Texas
UEP	Unlined Evaporation Pond
ug/L	micrograms per liter
USACE	US Army Corps of Engineers
USACHPPM	US Army Center for Health, Promotion and Preventive Medicine
USAEC	US Army Environmental Command
USAEHA	US Army Environmental Hygiene Agency
USATHAMA	US Army Toxic and Hazardous Materials Agency

Acronyms

USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
USSR	Union of Soviet Socialist Republics
VOC	Volatile Organic Compound
WP	White Phosphorous
WWII	World War II
WWTP	Wastewater Treatment Plant

Installation Information

Installation Locale

Installation Size (Acreage): 8,416.00
City: Marshall
County: Harrison
State: Texas
Other Locale Information

LHAAP is located in central east Texas, in the northeast corner of Harrison County, approximately 14 miles northeast of Marshall, Texas, and 40 miles west of Shreveport, LA. The closed installation currently occupies approximately 1,400 of its original 8,416 acres between State Highway 43 and the western shore of Caddo Lake. The area surrounding LHAAP is primarily rural and consists of forest lands, the small towns of Karnack and Uncertain, Texas, Caddo Lake, and Caddo Lake State Park.

Installation Mission

The LHAAP was an Army Materiel Command installation which the Army declared excess to its needs in July 1997. While active, the installation's mission was the production of trinitrotoluene (TNT) [World War II (WWII) era only], pyrotechnic items, and rocket motors. In 2003, the BRAC Division was tasked with its disposal.

Lead Organization

Base Realignment and Closure Division

Lead Executing Agencies for Installation

US Army Corps of Engineers (USACE), Tulsa District

Regulator Participation

Federal	US Environmental Protection Agency (USEPA), Region VI
State	Texas Commission on Environmental Quality (TCEQ)

National Priorities List (NPL) Status

A score of 40 was recorded on 01-AUG-90.

Final RA(C) Completion Date: 201610

Date for NPL Deletion: TBD

Installation Restoration Advisory Board (RAB)/Technical Review Committee (TRC)/Technical Assistance for Public Participation (TAPP) Status

RAB established 2004

Installation Program Summaries

IRP

Primary Contaminants of Concern: Explosives, Metals, Munitions constituents (MC), Perchlorate, Petroleum, Oil and Lubricants (POL), Volatiles (VOC)

Affected Media of Concern: Groundwater, Sediment, Soil, Surface Water

Installation Information

MMRP

Primary Contaminants of Concern: Explosives

Affected Media of Concern: Groundwater, Soil

Cleanup Program Summary

Installation Historic Activity

The LHAAP was established in October 1942, with the primary mission of producing 2,4,6-TNT flake. Monsanto Chemical Company was the first contract operator of the plant. Production of 2,4,6-TNT continued through WWII until August 1945, when the plant went on standby status until February 1952. From then until 1956, Universal Match Corporation was the contracting operator, producing such pyrotechnic ammunition as photoflash bombs, simulators, hand signals, and tracers for 40 millimeter (mm) ammunition. With the departure of Universal Match Corporation in 1956, Thiokol assumed this responsibility, along with rocket motor production. Production of rocket motors continued to be the primary mission of LHAAP until 1965, when the production of pyrotechnic and illuminating ammunition was re-established.

Prior to 1994, operations consisted of compounding pyrotechnic and propellant mixtures, load, assemble, and pack (LAP) activities, accommodating receipt and shipment of containerized cargo, and maintenance and/or layaway of standby facilities and equipment as they apply to mobilization planning. The installation was also responsible for the static firing and elimination of Pershing I and II rocket motors in compliance with the intermediate-range nuclear force (INF) treaty in effect between the US and the former Union of Soviet Socialist Republics (USSR). In October 1996, a lease in excess of 1,000 of the 8,416 acres was granted to the Caddo Lake Institute (CLI) for biological and ecological studies by local schools and universities.

In July 1997, the plant became inactive and excess to the Army's needs. In July 1998 the Army contracted EarthTech, Inc. to liquidate all personal property and specific installed property. That contract was completed in fiscal year (FY)2000. In 1999 the Army contracted with Project Development Corporation to demolish specified structurally unsafe buildings. In 2003 the demolition of all remaining buildings began. The demolition of the power plant was completed in 2009. Only the transformers remaining, all planned demolition has taken place. A memorandum of agreement (MOA) between the Army and the US Fish and Wildlife Service (USFWS), was signed on Oct. 21, 2000 designating an area, consisting of approximately 7,200 acres, for establishment of a wildlife refuge overlay at LHAAP. In October 2002 LHAAP was transferred to the Base Realignment and Closure Office (BRACO) to manage as an excess property. In April 2004, the Army and the USFWS entered into an MOA that set forth the transfer process of LHAAP acreage. Since May 2004, approximately 7,000 LHAAP acres have been transferred to the USFWS. The USFWS manages these acres as the Caddo Lake National Wildlife Refuge within the perimeter fence of the former installation. Although the perimeter fence and gates remain functional, guards are no longer posted since the Army's security contract expired on March 14, 2007. The CLI lease with the Army was transferred to the USFWS with the affected acreage.

On Aug. 9, 1990, the LHAAP was placed on the NPL. After being listed on the NPL, LHAAP, the USEPA, and the Texas Water Commission (TWC) (now called the TCEQ) entered into a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120 Agreement for remedial activities at LHAAP. The CERCLA Section 120 agreement, referred to as the federal facility agreement (FFA), became effective Dec. 30, 1991. The installation applied for a Resource Conservation and Recovery Act (RCRA) Part A permit.

In February 1992, a RCRA Part B permit was signed. As a result, a RCRA facility assessment (RFA) identified 57 potential sites of concern. Since that time, scrubbing of the list [removal of non-Environmental Restoration, Army (ER,A) eligible sites, redundancies, etc.] has resulted in the current Army Environmental Database - Restoration (AEDB-R) list of 50 sites. In late 2007, the USEPA Region VI clarified their view of the NPL status of LHAAP as consisting of only those sites listed in the FFA and any additional sites with significant contamination. During a meeting between the Army, the USEPA and the TCEQ held in February 2008 at TCEQ headquarters, regulators and the Army agreed on the sites that will be addressed as NPL, including those listed and those considered to be NPL-caliber. The NPL sites are LHAAP-004, LHAAP-037, LHAAP-046, LHAAP-047, LHAAP-049, LHAAP-050, LHAAP-058, and LHAAP-067 as well as the following sites which are listed in the FFA: LHAAP-001, LHAAP-011, LHAAP-012, LHAAP-013, LHAAP-014, LHAAP-016, LHAAP-017, LHAAP-018, LHAAP-024, LHAAP-027, LHAAP-029, LHAAP-032, LHAAP-054. The USEPA will continue to provide review and concurrence on documents related to these sites and will co-sign records of decision (ROD). The schedule for each of these sites will be described in this IAP, which will serve as formal documentation of the resolution between the Army and USEPA.

The non-NPL sites will be addressed through CERCLA, with RCRA issues addressed, as necessary, as applicable or relevant and appropriate requirements (ARAR), with the TCEQ as lead regulator. The USEPA will provide review; however, the decision documents (DD) will be signed by the Army alone with the TCEQ providing a letter of concurrence. In addition to the site listing of the FFA, an installation assessment by the Army in February 1980 and the RFA in April 1988 identified additional potential sites of concern. The information management system used in the early-1990s [Defense Environmental Restoration Program Management Information system (DERPMIS)] identified 59 sites at that time. In the mid-1990s, the tracking system being used at the time [the restoration management information system (RMIS)] was updated to remove duplicate sites, sites contained within other sites, sites that were not a part of the restoration program, and sites that never existed.

Cleanup Program Summary

The following sites have been transferred: LHAAP-001, LHAAP-005, LHAAP-009, LHAAP-011, LHAAP-12, LHAAP-013, LHAAP-014, LHAAP-015, LHAAP-034, LHAAP-045, LHAAP-052, LHAAP-057, LHAAP-061, and LHAAP-063. Sites LHAAP-08, -32, -35/36, -35C(53), -48, -49, -55, -002-R-01 have been offered for transfer.

Installation Program Cleanup Progress

IRP

Prior Year Progress:

- A record of decision (ROD) drafted for LHAAP-003
- A remedial action work plan (RAWP) finalized for LHAAP-037
- A RAWP finalized for LHAAP-046
- A RAWP finalized for LHAAP-050
- A RAWP finalized for LHAAP-058
- A RAWP finalized for LHAAP-067
- RIP completed for LHAAP-037, -046, -050, -058, and -067

Future Plan of Action:

- Remedial action (operations) [RA(O)]/long-term management (LTM) will be implemented for LHAAP-037, LHAAP-046, LHAAP-050, LHAAP-058 and LHAAP-067
- A ROD will be completed for LHAAP-003, LHAAP-004, LHAAP-016, LHAAP-017, LHAAP-018/024, LHAAP-029, and LHAAP-047

MMRP

Prior Year Progress: None, awaiting resolution of dispute with EPA.

Future Plan of Action: A ROD will be completed for LHAAP-001-R-01 and LHAAP-003-R-01. The LTM phase will begin.

5-Year / Periodic Review Summary

5-Year / Periodic Review Summary

Status	Begin Date	End Date	End FY
Complete	201203	201405	2014
Complete	200706	200706	2007
Complete	200206	200206	2002

Last Completed 5-Year / Periodic Review Details

Associated ROD/DD Name	Sites
BURNING GROUND #3(LHAAP-018 & LHAAP-024)	LHAAP-018, LHAAP-024
CAPPING LANDFILLS 12 & 16	LHAAP-012, LHAAP-016
Decision Document LHAAP-08, 48 & 53	LHAAP-008, LHAAP-053
Final ROD LHAAP-035B (037) & LHAAP-067	LHAAP-067
Final ROD LHAAP-050, Former Sump Water..	LHAAP-050
Final ROD LHAAP-35A(058), Shops Area	LHAAP-058
Flashing Area/Burning Grnd No 2:LHAAP-17	LHAAP-017
Former TNT Waste Disposal Plant:LHAAP-32	LHAAP-032
LHAAP-02, Vacuum Truck Overnight Parking	LHAAP-002
LHAAP-12 Final ROD	LHAAP-012
NO ACTION ROD 1, 11, 27, 54	LHAAP-001, LHAAP-011, LHAAP-027, LHAAP-054
NO ACTION ROD 13 & 14	LHAAP-013, LHAAP-014
ROD Former Pistol Range	PBC Longhorn
ROD LHAAP-49, Former Acid Storage Area	PBC Longhorn
SUMPS (145) VARIOUS	LHAAP-035, LHAAP-036

Results LHAAP-12: Minor erosion & subsidence of landfill cap and well within plume dry

LHAAP-16: Need O&M plan for cap, minor erosion of cap and high concentrations of TCE detected

LHAAP-18/24: ICT issues and perchlorate discharge from plant exceedance

Actions LHAAP-12: Repaired erosion and backfilled and seeded subsidence area

LHAAP-16: Repaired erosion

Plans LHAAP-12: Install new well

LHAAP-16: Prepare O&M Plan for landfill cap and implement final remedy

LHAAP-18/24: The FS which is planned for 2014 will address the issues

Recommendations and Implementation Plans:

Land Use Control (LUC) Summary

LUC title: LHAAP-037 & 067 GW

Site(s): LHAAP-067

ROD/DD title: Final ROD LHAAP-035B (037) & LHAAP-067

Location of LUC

LHAAP-037 and LHAAP-067 groundwater

Land Use Restriction: Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Media specific restriction - restrict drinking water well installation, Media specific restriction - restrict withdrawal or use of groundwater for agricultural/irrigation purposes

Types of Engineering Controls: None

Types of Institutional Controls: Restrictions on Groundwater Withdrawal

Date in Place: 201110

Modification Date: N/A

Date Terminated: N/A

Inspecting Organization: USACE District

Record of LUC: Master Plan or Equivalent

Documentation Date: N/A

LUC Enforcement: Annual Inspections, 5 Year Reviews

Contaminants: VOC

Additional Information

N/A

LUC title: LUC for LHAAP-012 Capping

Site(s): LHAAP-012

ROD/DD title: LHAAP-12 Final ROD

Location of LUC

Site LHAAP-012

Land Use Restriction: Landfill restriction - Prohibit activities that would impact the LF cap (or cover system) and drainage system, Landfill restriction - Prohibit excavation on LF cap or cover system, Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Media specific restriction - restrict drinking water well installation, Media specific restriction - restrict withdrawal or use of groundwater for agricultural/irrigation purposes

Types of Engineering Controls: Fences, Signs

Types of Institutional Controls: Deed Restrictions, Dig Permits

Date in Place: 200706

Modification Date: N/A

Date Terminated: N/A

Inspecting Organization: USACE District

Record of LUC: Master Plan or Equivalent

Documentation Date: 200706

LUC Enforcement: Annual Inspections, 5 Year Reviews

Contaminants: VOC

Additional Information

N/A

LONGHORN ARMY AMMUNITION PLANT

Non-BRAC Excess
Installation Restoration Program

IRP Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 54/8

Installation Site Types with Future and/or Underway Phases

2 Above Ground Storage Tank
(LHAAP-049, LHAAP-067)
3 Burn Area
(LHAAP-001, LHAAP-017, LHAAP-018)
1 Contaminated Ground Water
(PBC Longhorn)
1 Disposal Pit/Dry Well
(LHAAP-063)
5 Landfill
(LHAAP-011, LHAAP-012, LHAAP-016, LHAAP-019, LHAAP-057)
1 Oil Water Separator
(LHAAP-056)
6 Spill Site Area
(LHAAP-051, LHAAP-052, LHAAP-058, LHAAP-066, LHAAP-070, LHAAP-071)
15 Storage Area
(LHAAP-002, LHAAP-003, LHAAP-006, LHAAP-007, LHAAP-009, LHAAP-015, LHAAP-034, LHAAP-036, LHAAP-037, LHAAP-045, LHAAP-059, LHAAP-060, LHAAP-064, LHAAP-065, LHAAP-068)
2 Surface Impoundment/Lagoon
(LHAAP-005, LHAAP-024)
2 Underground Storage Tank
(LHAAP-035, LHAAP-069)
4 Waste Lines
(LHAAP-029, LHAAP-046, LHAAP-047, LHAAP-050)
4 Waste Treatment Plant
(LHAAP-004, LHAAP-008, LHAAP-055, LHAAP-061)

Most Widespread Contaminants of Concern

Explosives, Metals, Munitions constituents (MC), Perchlorate, Petroleum, Oil and Lubricants (POL), Volatiles (VOC)

Media of Concern

Groundwater, Sediment, Soil, Surface Water

Completed Remedial Actions (Interim Remedial Actions / Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY	Cost
LHAAP-018	BURNING GROUND/WASHOUT POND(SWMU 18)	IRA	REMOVAL	1997	TBD
LHAAP-024	FORMER UNLINED EVAP POND (SWMU 24)	IRA	CAPPING	1997	TBD
LHAAP-024	FORMER UNLINED EVAP POND (SWMU 24)	IRA	REMOVAL	1997	TBD
LHAAP-012	ACTIVE LANDFILL (SWMU 12)	IRA	CAPPING	2005	$5.0 K
LHAAP-016	OLD LANDFILL (SWMU 16)	IRA	CAPPING	2005	$14.0 K
LHAAP-012	ACTIVE LANDFILL (SWMU 12)	FRA	NATURAL ATTENUATION	2007	TBD
LHAAP-012	ACTIVE LANDFILL (SWMU 12)	FRA	INSTITUTIONAL CONTROLS	2007	TBD
LHAAP-004	LHAAP PILOT WASTEWATER TREATMENT PLANT	IRA	WASTE REMOVAL - SOILS	2011	TBD
LHAAP-018	BURNING GROUND/WASHOUT POND(SWMU 18)	IRA	GROUND WATER TREATMENT	2011	TBD
LHAAP-024	FORMER UNLINED EVAP POND (SWMU 24)	IRA	GROUND WATER TREATMENT	2011	TBD

IRP Summary

Completed Remedial Actions (Interim Remedial Actions / Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY	Cost
LHAAP-035	SUMPS (145) VARIOUS	FRA	WASTE REMOVAL - SOILS	2011	TBD
LHAAP-046	PLANT 2 AREA	FRA	NATURAL ATTENUATION	2013	TBD
LHAAP-046	PLANT 2 AREA	FRA	INSTITUTIONAL CONTROLS	2013	TBD
LHAAP-050	FORMER WASTE DISPOSAL FACILITY	FRA	REMOVAL	2013	TBD
LHAAP-058	MAINTENANCE COMPLEX	FRA	BIOREMEDIATION - IN SITU GROUNDWATER	2013	TBD
LHAAP-067	ABOVE GROUND STORAGE TANK	FRA	NATURAL ATTENUATION	2013	TBD
LHAAP-067	ABOVE GROUND STORAGE TANK	FRA	INSTITUTIONAL CONTROLS	2013	TBD

Duration of IRP

Year of IRP Inception: 197906

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 201610/204409

Date of IRP completion including Long Term Management (LTM): 204409

IRP Contamination Assessment

Contamination Assessment Overview

In early 2008, the installation-wide ecological risk assessment was completed. In 2012 it was discovered that explosives analysis data which had been deemed unusable was inadvertently included in the ecological risk assessment. The impact of removing the unusable data from the ecological risk assessment was evaluated with additional samples collected and an ecological risk assessment addendum completed in 2014. Work currently being conducted under a performance-based contract (PBC) includes conducting additional sampling activities at several sites and finalizing outstanding FSs, with PPs and a ROD to follow during calendar year 2014. Regulatory concurrence was obtained for reports recommending no action for these 11 sites: LHAAP-06, LHAAP-07, LHAAP-23, LHAAP-35, LHAAP-36, LHAAP-51, LHAAP-55, LHAAP-60, LHAAP-64, LHAAP-66, and LHAAP-68.

In 2008, DDs were signed for sites LHAAP-6, 7, 48, 51, 55, 60, 64, 66, and 68. Also in 2008 the FSs were completed for all applicable total environmental restoration contract (TERC) sites including the three TERC NPL sites (LHAAP-32, LHAAP-37, and LHAAP-67) and a ROD document was signed for TERC NPL site LHAAP-32 in 2008. No action DDs were signed in 2008 for the remaining TERC sites (LHAAP-8, LHAAP-48, LHAAP-53, and LHAAP-59) and in 2010 the RODs were signed for LHAAP-37, LHAAP-46, LHAAP-49, LHAAP-50, LHAAP-58, LHAAP-67 and Pistol Range. In 2014 a no further action DD was completed for LHAAP-19, -56, -65 & -69. In 2014, a no further action DD will be completed for LHAAP-05, -09, -15, -34, -52, -57, -61, -63, -70, & -71. In 2012, the following IRP sites were added to AEDB-R: LHAAP-46, -47, -49, -56, -59, & -65.

Sediment samples collected by the Army from Caddo Lake near the mouths of two branches of Goose Prairie Creek indicated elevated lead and mercury concentrations. The sampling locations are outside of the installation boundary. In 2004, an investigation of contaminants in fish tissue from three Caddo Lake sites, one of which is upgradient at Clinton Lake, was funded by the USEPA Region 6 and performed by the TCEQ Region 5. It concluded that mercury was present at elevated levels from all three sites, dioxin was also present, but highest at Clinton Lake (a lake upstream from LHAAP), and pesticides, polychlorinated biphenyls (PCB) and perchlorate were not detected in either edible fish fillets or whole fish.

Approximately 7,000 acres of the plant have transferred to the USFWS and are being operated as the Caddo Lake National Wildlife Refuge. The remaining acreage is also expected to transfer to the USFWS as restoration activities are completed.

Cleanup Exit Strategy

As RODs are finalized and remedial designs (RDs) and RAs are implemented, long-term RA(O) and monitoring will continue until ramp-down.

Ramp-down/exit strategies at the sites will continue to be based on human and environmental exposure.

IRP Previous Studies

	Title	Author	Date
1979			
	Assessment of Contaminant Migration, Longhorn Army Ammunition Plant	Robert H. Balter Co	APR-1979
1980			
	Installation Assessment of Longhorn Army Ammunition Plant, Report No. 150	U.S. Army Toxic and Hazardous Materials Agency	FEB-1980
	Land Disposal Study No. 38-26-0104-81, LHAAP, 23 January - 8 February 1980	USAEHA	MAY-1980
1981			
	Wastewater Engineering Special Study No. 32-62-0182-82	Wastewater Engineering Special Study No. 32-62-0182-82	SEP-1981
1983			
	Phase II, Hazardous Waste Management Special Study No. 39-26-0147-83, DARCOM Open-Burning/Open-Detonation Grounds Evaluation, LHAAP, 31 July - 3 August 1981	USAEHA	SEP-1983
1984			
	Closure of Unlined Evaporation Pond	Kindle, Stone and Associates	JUN-1984
	Longhorn Army Ammunition Plant Contamination Survey, Contract # DAAA09-78-C-3004,	Environmental Protection Systems, Inc	JUN-1984
1986			
	Closure Report, Unlined Evaporation Pond, Longhorn Army Ammunition Plant	Army Corps of Engineers, Tulsa	JUN-1986
1994			
	Interim Risk Assessment for Burning Ground 3 & Unlined Evaporation Pond Sites (18 & 24)	Army Corps of Engineers, Tulsa	JAN-1994
	Soil and Groundwater Background Concentration Study	Army Corps of Engineers, Tulsa	MAY-1994
	Remedial Investigation /Feasibility Study Report for Areas 13 & 14	Army Corps of Engineers, Tulsa	JUN-1994
	Draft Final Workplan Addendum Soil and Groundwater Background Concentration Study	Army Corps of Engineers, Tulsa	JUN-1994
1995			
	Final Soil Background Concentration Report (Revised)	Army Corps of Engineers, Tulsa	MAR-1995
	Groundwater Background Concentration Report	Army Corps of Engineers, Tulsa	MAY-1995
	Final HydroGeologic Assessment Report	Army Corps of Engineers, Tulsa	MAY-1995
	Final Prop Plan of Action for Sites 13 & 14	Army Corps of Engineers, Tulsa	JUN-1995
	Groundwater Sampling Results-May 95, Interim Remedial Action-Phase III, Burning Ground 3 and UEP, LHAAP 18 & 24	Army Corps of Engineers, Tulsa	JUN-1995
	Remedial Investigation/Feasibility Study Report for Sites 13 & 14	Army Corps of Engineers, Tulsa	JUN-1995
	Final Record of Decision for Early Interim Remedial Action at Landfill Sites 12 & 16	Army Corps of Engineers, Tulsa	JUL-1995
1996			

IRP Previous Studies

	Title	Author	Date
1996			
	Final Work Plan for Phase III Interim Remedial Action at Burning Ground 3	Army Corps of Engineers, Tulsa	JAN-1996
	Group 4 Baseline Risk Assessment Work Plan	Army Corps of Engineers, Tulsa	FEB-1996
	Final Project Work Plans, Interim Remedial Action Landfills 12 & 16 Caps	Army Corps of Engineers, Tulsa	JUN-1996
	Group 4 Sumps Groundwater Monitoring Quarterly Report	Army Corps of Engineers	JUN-1996
	Draft Final Design Analysis Report for the Site 16 Time Critical Removal Action	Army Corps of Engineers	JUN-1996
	Draft Final Comprehensive Chemical Data Acquisition Plan for the RI/FS	Army Corps of Engineers, Tulsa	JUL-1996
	Draft Final Field Summary Report for the Phase II, Group 2 Sites Remedial Investigation	Army Corps of Engineers, Tulsa	JUL-1996
	Treatment Simulation and Toxicity Testing Results of Site 16 Groundwater	Army Corps of Engineers, Tulsa	AUG-1996
	Final Project Construction Drawings, Interim Remedial Action, Landfill 12 & 16 Caps	Army Corps of Engineers, Tulsa	AUG-1996
1997			
	Final Remedial Investigation Report Group 1 Sites (Sites 1, 11, 27, and XX) and Vol. 2 Baseline Risk Assessment	Army Corps of Engineers, Tulsa	APR-1997
1998			
	Final Record of Decision for Early Interim Remedial Action at Group 1 Sites	Army Corps of Engineers, Tulsa	FEB-1998
	Group 2 Final Workplan	Army Corps of Engineers, Tulsa	MAR-1998
	Environmental Baseline Study	Army Corps of Engineers, Tulsa	APR-1998
	Group 4 Final Workplan	Army Corps of Engineers, Tulsa	JUL-1998
2000			
	Site 16 Risk Assessment	Army Corps of Engineers, Tulsa	MAR-2000
	Hazardous and Medical Waste Study - Response Complete Verification and Relative Risk Site Evaluation for the Longhorn Army Ammunition Plant	USACHPPM	JUL-2000
	Final Site 16 Remedial Investigation Report	Army Corps of Engineers, Tulsa	OCT-2000
2001			
	Final Remedial Investigation Report for Group 2 Sites	Jacobs Engineering Group, Inc	APR-2001
	Baseline Risk Assessment: Human Health for Site 16 Landfill Remedial Investigation and Feasibility Study	Jacobs Engineering Group, Inc	JUN-2001
	Final Ecological Risk Assessment: Supplement to Site 16 Landfill Remedial Investigation Report	Jacobs Engineering Group, Inc	OCT-2001
2002			
	Final Group 4 Sites Remedial Investigation Report (Sites 35A, 35B, 46, 47, 48, 50, 60, and Goose Prairie Creek)	Jacobs Engineering Group, Inc	JAN-2002
	Final Group 4 Sites Remedial Investigation Addendum (Sites 04, 08, 67, and Hydrocarbon Study)	Jacobs Engineering Group, Inc	FEB-2002
	Final Group 2 Sites Remedial Investigation Report Addendum (Site 49)	Jacobs Engineering Group, Inc	FEB-2002

IRP Previous Studies

Title	Author	Date
2002		
Final Feasibility Study for Site 16	Jacobs Engineering Group, Inc	MAR-2002
Final Five-Year Review for Sites 18 & 24 (Burning Ground No. 3), Site 16 (Old Landfill), and Site 12 (Sanitary Landfill)	Complete Environmental Service	AUG-2002
Group 2 Sites Baseline Human Health and Screening Ecological Risk Assessment (Sites 12, 17, 18/24, 29, 32, 49, Harrison Bayou, and Caddo Lake)	Jacobs Engineering Group, Inc	AUG-2002
2004		
Final Installation-Wide Background Study Workplan	Shaw Environmental and Infrastructure	JAN-2004
Final Groundwater Data Gaps Investigation Workplan (Groups 2 and 4)	Shaw Environmental and Infrastructure	FEB-2004
Final Technical Memorandum: Modeling Approach for Derivation of Soil and Groundwater Concentrations Protective of Surface Water and Sediment	Shaw Environmental and Infrastructure	MAR-2004
Final Sediment Sampling Report for Caddo Lake and Clinton Lake	Shaw Environmental and Infrastructure	APR-2004
Final Environmental Condition of Property I	Shaw Environmental and Infrastructure	MAY-2004
Final Background Soil Study Report	Shaw Environmental and Infrastructure	JUL-2004
Final Evaluation of LHAAP-45 Surface Soil Analytical Data	Shaw Environmental and Infrastructure	SEP-2004
Final Groundwater Data Gaps Investigation Workplan (Groups 2 and 4), Addenda 1 and 2	Shaw Environmental and Infrastructure	SEP-2004
Final Environmental Condition of Property II	Army Corps of Engineers, Tulsa	NOV-2004
2005		
Final Site 12 Feasibility Study	Shaw Environmental and Infrastructure	JAN-2005
Final Environmental Site Assessment Phase I and II Report	Plexus Scientific Corporation	FEB-2005
Final Feasibility Report for Site 12 Addendum (Revision 2)	Shaw Environmental and Infrastructure	MAR-2005
Final Proposed Plan for Landfill 12 (LHAAP-12),	Shaw Environmental and Infrastructure	MAR-2005
Final Project Report Plant-Wide Perchlorate Investigation	Solutions To Environmental Problems (STEP)	APR-2005
Final Site Inspection Report for the Military Munitions Response Program	Engineering-Environmental Management, Inc	JUN-2005
Final Feasibility Study for LHAAP-67 (Aboveground Storage Tank Farm),	Shaw Environmental and Infrastructure	AUG-2005
Final Feasibility Study for LHAAP-35B (37) (Chemical Laboratory)	Shaw Environmental and Infrastructure	OCT-2005
Final Site Evaluation Report for LHAAP-32 (Former Waste TNT Disposal Plant)	Shaw Environmental and Infrastructure	NOV-2005
2006		
Final Installation-Wide Work Plan	Shaw Environmental and Infrastructure	JAN-2006
Decision Documentation for LHAAP-03 (Wastewater	Shaw Environmental and	JAN-2006

IRP Previous Studies

	Title	Author	Date
2006			
	Collection At Paint Shop), LHAAP-06 (Building 54F), and LHAAP-23 (Building 707-C Storage Area for PCBs),	Infrastructure	
	Final Work Plan for Engineering Evaluation / Cost Analysis for Military Munitions Response Program	CAPE	MAR-2006
	Final Background Surface Water and Sediment Study Report	Shaw Environmental and Infrastructure	JUL-2006
	Draft Final Proposed Plan, LHAAP-37 & 67	Shaw Environmental and Infrastructure	JUL-2006
	Final Record of Decision, LHAAP-12	US Army	JUL-2006
	Remainder of PBC docs that have been submitted :	Workplans; Summary report for 46 and pistol range (Draft); Evaluation Report for 02 (Draft)	SEP-2006
	Draft Final Site Evaluation Report, LHAAP-02; Work Plan Addenda for LHAAP-04, 07, 46, 51, 35/36, 29, Pistol Range, and Chromium Specification;	Shaw Environmental and Infrastructure	SEP-2006
	Draft Final Evaluation of Monitored Natural Attenuation, LHAAP-12, 37 & 67	Shaw Environmental and Infrastructure	DEC-2006
2007			
	Final Groundwater Monitoring Report Sites 12 and 16 (spring 2003, spring 2004 and winter 2004)	ALL Consulting	JAN-2007
	Final Modeling Report,Derivation of Soil and Groundwater Concentrations Protective of Surface Water and Sediment, Rev. 01	Shaw Environmental and Infrastructure	FEB-2007
	Final LHAAP-12 Well Abandonment and Installation Report Groundwater, Data Gaps Investigation Groups 2 and 4	Shaw Environmental, Inc.	APR-2007
	Final Site Evaluation Report, LHAAP-48 & 53	Shaw Environmental and Infrastructure	APR-2007
	Final Addendum 11 Monitored Natural Attenuation Sampling LHAAP-16, -17, -29, -46, -47, -50, 35A(58), Final Installation-Wide Work Plan	Shaw Environmental, Inc.	MAY-2007
	Legal Notice - Industrial Solid Waste Notice of Land Use Controls at LHAAP-12	Rose Zeiler, LHAAP Site Manager	JUN-2007
	Final Results of Modeling for Natural Attenuation of Trichloroethene at LHAAP-12	Shaw Environmental, Inc.	JUN-2007
	Evaluation of Perimeter Well Data for Use as Groundwater Background	Shaw Environmental, Inc.	JUN-2007
	Final Natural Attenuation Evaluation LHAAP-12, LHAAP-35B(37) and LHAAP-67 (Report and Appendix A)	Shaw Environmental, Inc.	JUN-2007
	Remedial Design Addendum Landfill 12 (LHAAP-12)	Shaw Environmental, Inc.	JUN-2007
	Baseline Ecological Risk Assessment Surface Water Sampling Plan for Goose Prairie Creek, Revision 01	Shaw Environmental, Inc.	JUL-2007
	Final Results of Modeling for Natural Attenuation of Chlorinated Solvents in Groundwater at LHAAP-35B(37) & 67	Shaw Environmental, Inc.	JUL-2007
	Final LHAAP-59 Site Investigation Report	Shaw Environmental, Inc.	AUG-2007
	Draft Final Second Five year review Report, LHAAP-12, 16, 18 & 24	Shaw Environmental, Inc.	AUG-2007
	Memorandum: Supplemental Groundwater Activities at LHAAP-37	Shaw Environmental, Inc.	SEP-2007

IRP Previous Studies

	Title	Author	Date
2007			
	Final Landfill 12 (LHAAP-12) Operating Properly and Successfully Demonstration Report	Shaw Environmental, Inc.	SEP-2007
	Memorandum: Analysis of Soil Samples Collected from LHAAP-59 on September 14, 2007	Shaw Environmental, Inc.	OCT-2007
	Final Installation-Wide Baseline Ecological Risk Assessment Vols. I & II	Shaw Environmental, Inc.	NOV-2007
	Final Site Investigation Report: LHAAP-06, 07, 51, 55, 64, 66 and 68 (rev 1)	Shaw Environmental, Inc.	DEC-2007
2008			
	Final Proposed Plan, LHAAP-08	Shaw Environmental, Inc.	JAN-2008
	Final Data Evaluation Report Chemical Concentrations in soil Samples Associated with LHAAP-35/36 Sumps	Shaw Environmental, Inc.	JAN-2008
	Final Proposed Plan, LHAAP-32	Shaw Environmental, Inc.	JAN-2008
	Final Proposed Plan, LHAAP-48 & 53	Shaw Environmental, Inc.	JAN-2008
	Draft Final LHAAP-32 Record of Decision	Shaw Environmental, Inc.	MAR-2008
	Draft Final LHAAP-08, 48 & 53 Decision Document	Shaw Environmental, Inc.	MAR-2008
	Final Decision Document, LHAAP-6, 7, 51, 55, 64, 66 and 68	Shaw Environmental, Inc.	JUL-2008
	Final LHAAP-32 Record of Decision	Shaw Environmental, Inc.	AUG-2008
	Final LHAAP-59 Decision Document	Shaw Environmental, Inc.	SEP-2008
	Final Five-Year Review Second Five-Year Revise Report for LHAAP-12, 16 and 18/24	Shaw Environmental Inc.	SEP-2008
	Final LHAAP-60 Decision Document	Shaw Environmental, Inc.	OCT-2008
	Final LHAAP-8, 48, 53 and 002-R Decision Document	Shaw Environmental, Inc.	NOV-2008
2009			
	Draft Site Evaluation Report and Soil Removal Report for LHAAP-49	Shaw Environmental, Inc.	JAN-2009
	Draft Final LHAAP-37/67 Record of Decision	Shaw Environmental, Inc.	JAN-2009
	Final Site Investigation Report, LHAAP-2	Shaw Environmental, Inc.	JAN-2009
	Final Engineering Evaluation/Cost Analysis, LHAAP-4	Shaw Environmental, Inc.	MAR-2009
2010			
	Final Proposed Plan, LHAAP-46	Shaw Environmental, Inc.	JAN-2010
	Final Proposed Plan, LHAAP-35A(58)	Shaw Environmental, Inc.	JAN-2010
	Final Proposed Plan, LHAAP-50	Shaw Envronmental, Inc.	JAN-2010
	Final Proposed Plan, LHAAP-49	Shaw Environmental, Inc.	JAN-2010
	Final Proposed Plan, LHAAP-17	Shaw Environmental, Inc.	MAY-2010
	Final Record of Decision, LHAAP-37/67	US Army	JUN-2010
	Final Decision Document, LHAAP-02	Shaw Environmental, Inc.	JUL-2010
	Final Record of Decision, LHAAP-49	Shaw Environmental, Inc.	AUG-2010
	Final Cover Evaluation & Final Landfill Closure Report, LHAAP-19, C&D Landfill	ETTL Engineers & Consultants Inc.	SEP-2010
	Final Record of Decision, LHAAP-46	Shaw Environmental, Inc.	SEP-2010
	Final Record of Decision, LHAAP-50	Shaw Environmental, Inc.	SEP-2010

IRP Previous Studies

	Title	Author	Date
2010			
	Final Record of Decision, LHAAP-35A(58)	Shaw Environmental, Inc.	SEP-2010
	Final Proposed Plan, LHAAP-16	Shaw Environmental, Inc.	SEP-2010
	Final Decision Document, LHAAP-35/36	Shaw Environmental, Inc.	OCT-2010
2011			
	Final Proposed Plan, LHAAP-29	Shaw Environmental, Inc.	MAR-2011
	Final MC Summary Report, LHAAP-001-R-01 & LHAAP-003-R-01	Shaw Environmental, Inc.	JUN-2011
	Final Proposed Plan, LHAAP-001-R-01 & LHAAP-003-R-01	Shaw Environmental, Inc.	JUN-2011
	Final Feasibility Study, LHAAP-47	Shaw Environmental, Inc.	JUL-2011
	Final Remedial Design, LHAAP-35B(37) & LHAAP-67	US Army Corps of Engineers, Tulsa District	AUG-2011
	Final Remedial Design, LHAAP-46	Shaw Environmental, Inc.	SEP-2011
	Final Remedial Design, LHAAP-50	Shaw Environmental, Inc.	SEP-2011
	Final Remedial Design, LHAAP-35A(58)	Shaw Environmental, Inc.	SEP-2011
2012			
	Final Remedial Action Operation Summary Report, Years 1 and 2, Landfill-12	Shaw Environmental, Inc.	JUL-2012
	Final Remedial Action Operation Summary Report, Years 3 and 4, Landfill-12	Shaw Environmental, Inc.	JUL-2012
	Final Feasibility Study for Groundwater, LHAAP-04, Former Pilot Wastewater Treatment Plant	Shaw Environmental, Inc.	AUG-2012
2013			
	Final Remedial Action Work Plan for LHAAP-67, Aboveground Storage Tank Farm	AECOM Technical Services	MAR-2013
	Final Remedial Action Work Plan for LHAAP-46, Plant 2 Area	AECOM Technical Services	MAR-2013
	Final Remedial Investigation/Focused Feasibility Study for LHAAP-03, Former Waste Collection Pad near Building 722-P, Paint Shop	AECOM Technical Services	MAR-2013
	Final Proposed Plan for LHAAP-03, Former Waste Collection Pad Building 722-P Paint Shop	AECOM Technical Services	MAY-2013
	Final Remedial Action Work Plan for LHAAP-50, Former Sump Water Tank	AECOM Technical Services	JUN-2013
	Final Remedial Action Work Plan for LHAAP-35B(37), Chemical Laboratory	AECOM Technical Services	JUN-2013
	Final Remedial Action Work Plan, LHAAP-58	AECOM Technical Services	AUG-2013
	Final Proposed Plan for LHAAP-47, Plant 3 Area Solid Rocket Motor Fuel Production	AECOM Technical Services	DEC-2013
	Final Post-Screening Investigation Report for LHAAP-18/24, Burning Ground No. 3 and Evaporation Pond	AECOM Technical Services	DEC-2013
2014			
	Final 2013 Five-Year Review Report For LHAAP	AECOM Technical Services	MAY-2014
	Final Baseline Ecological Risk Assessment Addendum, LHAAP	AGEISS Inc.	JUL-2014

LONGHORN ARMY AMMUNITION PLANT

Non-BRAC Excess

Installation Restoration Program

Site Descriptions

Site ID: LHAAP-001
Site Name: INERT BURNING GROUNDS (SWMU 1)

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: LOW

Phases	Start	End
PA	197906	198406
SI	197906	198406
RI/FS	199008	199801
LTM	201201	204409

RIP Date: N/A

RC Date: 199801

SITE DESCRIPTION

A no action ROD was signed by the USEPA in February 1998; the site is closed and suitable for non-residential use. A five-year review report in the form of a letter stating the use of the site remains non-residential is required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

The LTM in the form of five-year reviews is required and will continue.

Site ID: LHAAP-002
Site Name: VACCUM TRUCK OVERNITE PARKING LOT

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: NOT EVALUATED

Phases	Start	End
PA	197906	198705
RI/FS	200901	201007
LTM	201201	204409

RIP Date: N/A

RC Date: 201007

SITE DESCRIPTION

A notification [not a remedy or land use control (LUC)] has been filed in Harrison County, Texas (TX) stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential is required. Five-year review costs are captured with LHAAP-35A(58) Five-year review costs because this site falls within the boundary of LHAAP-35A(58).

CLEANUP/EXIT STRATEGY

The LTM in the form of five-year reviews are required and continue.

Site ID: LHAAP-003
Site Name: BUILDING 722-PAINT SHOP

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
PA	197906	198705
SI	200710	200909
RI/FS	200909	201512
RD	201210	201601
RA(C)	201210	201606

RIP Date: N/A

RC Date: 201606

SITE DESCRIPTION

LHAAP-03 was a waste collection site outside of the paint shop at Building 722-P. Building 722-P was used for paint spraying and polyurethane spray coating of various items. Heavy metal-based primers, other waste solvents and contaminated rags were collected in a 55-gallon drum on a gravel pad in an open-sided shed.

The site investigation report for LHAAP-03 was completed in August 2009. The site investigation identified soil contaminated with metals exceeding medium-specific concentrations (MSCs). A remedial investigation (RI)/FS was finalized to evaluate removal action alternatives for the metals-contaminated soil at LHAAP-03. A ROD is delayed until dispute is resolved with EPA. The RD and soil removal action will also be covered under the PBC. Five-year review costs for this site will be captured with LHAAP-35A(58) five-year review costs because this site falls within the boundary of LHAAP-35A(58).

CLEANUP/EXIT STRATEGY

This site is being addressed under a PBA through September 2017. The remedy being considered for this site is excavation and off-site disposal. Tasks to be completed before the PBA ends are completion of primary documents (ROD and RD), and accomplishment of remedy-in-place (RIP). At this time, it is expected that the post-PBA LTM will involve five-year reviews, which will be addressed as part of the remedial action for LHAAP-35A(58).

Site ID: LHAAP-004
Site Name: LHAAP PILOT WASTEWATER TREATMENT PLANT

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Perchlorate

Media of Concern: Groundwater

Phases	Start	End
PA	197906	198705
RI/FS	201112	201512
RD	201201	201602
IRA	200908	201108
RA(C)	201404	201609
RA(O)	201201	204409

RIP Date: 201609

RC Date: 204409

SITE DESCRIPTION

The LHAAP Pilot wastewater plant was closed under RCRA guidelines in November 1997. The installation-wide baseline ecological risk assessment in 2007 did not identify any potential risk to ecological receptors. Additional investigations after the risk assessment found unacceptable levels of mercury in soil, and perchlorate, an emerging contaminant, in soil at levels that could potentially migrate into the groundwater. A soil removal action was recommended in the 2009 EE/CA for LHAAP-04. The soil removal was performed, and is documented in the final completion report, non-time critical removal action at LHAAP-04. As part of the removal action, a well was installed to sample groundwater beneath the backfilled excavation area. The results indicated that perchlorate was present in the groundwater at a concentration that exceeded the TCEQ groundwater industrial use value for perchlorate. The FS evaluating remedial alternatives for LHAAP-04 was finalized in August 2012. The RAs for this site have been funded under an existing contract. The ROD is delayed until dispute is resolved with EPA. The costs for the ROD and RD are captured under the PBA. LTM and Five-year reviews will be required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

This site is being addressed under a performance-based acquisition (PBA) through September 2017. Tasks to be completed before the PBA ends are completion of primary documents (ROD and RD), and accomplishment of RIP. The FS was completed in 2012. The remedy being considered for this site is: in situ bioremediation and monitored natural attenuation (MNA) for groundwater, and LTM. The final remedy has not been selected yet for this site. At this time, it is expected that the post-PBA long-term RA(O) and LTM will involve MNA and LUC.

Site ID: LHAAP-005
Site Name: POWER HOUSE BOILER POND

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: NOT EVALUATED

Phases	Start	End
PA	197906	198705
RI/FS	198705	201412

RIP Date: N/A

RC Date: 201412

SITE DESCRIPTION

CLEANED UNDER RCRA GUIDE LINES Decision Document to be finalized at the end of 2014. A notification (not a remedy or LUC) was filed in Harrison County, TX stating that the site is suitable for residential use.

CLEANUP/EXIT STRATEGY

Site ID: LHAAP-006
Site Name: BUILDING 54F SOLVENT

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: NOT EVALUATED

Phases	Start	End
PA	197906	198705
RI/FS	200712	200812
LTM	201201	204409

RIP Date: N/A

RC Date: 200812

SITE DESCRIPTION

An NFA DD was signed in December 2008. A notification (not a remedy or LUC) has been filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential is required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

The LTM in the form of five-year reviews is required.

Site ID: LHAAP-007
Site Name: BUILDING 50G DRUM PROCESSING

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE:

Phases	Start	End
PA	197906	198705
RI/FS	200712	200812
LTM	201201	204409

RIP Date: N/A

RC Date: 200812

SITE DESCRIPTION

The site was originally closed under RCRA in 1987. An NFA DD under CERCLA was signed in December 2008. A notification (not a remedy or LUC) has been filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential is required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

The LTM in the form of five-year reviews is required.

Site ID: LHAAP-008
Site Name: SEWAGE TREATMENT PLANT

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE:

Phases	Start	End
PA	197906	198705
RI/FS	200202	200811
LTM	201201	204409

RIP Date: N/A

RC Date: 200811

SITE DESCRIPTION

The site was originally closed under RCRA in 1987. A NFA Decision Document under CERCLA was signed in 2008. A notification (not a remedy or LUC) has been filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential is required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

The LTM in the form of five-year reviews is required.

Site ID: LHAAP-009
Site Name: BUILDING 31-W DRUM STORAGE

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: NOT EVALUATED

Phases	Start	End
PA	197906	198705
RI/FS	198705	201412

RIP Date: N/A

RC Date: 201412

SITE DESCRIPTION

TO BE CLOSED UNDER RCRA GUIDE LINES Decision Document to be finalized in 2014. A notification (not a remedy or LUC) was filed in Harrison County, TX stating that the site is suitable for residential use. No further action is required.

CLEANUP/EXIT STRATEGY

Site ID: LHAAP-011
Site Name: SUS TNT BURIAL SITE AT AVE P&Q(SWMU 11)

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: LOW

Phases	Start	End
PA	197906	198705
SI	197906	198705
RI/FS	199008	199801
LTM	201201	204409

RIP Date: N/A

RC Date: 199801

SITE DESCRIPTION

An NFA ROD was signed by the USEPA by February 1998 The site is closed and suitable for industrial use. A five-year review report in the form of a memorandum report stating the use of the site remains industrial will be required for internal Army records. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

The LTM in the form of five-year reviews is required.

Site ID: LHAAP-012
Site Name: ACTIVE LANDFILL (SWMU 12)

STATUS

Parcel: LANDFILL 12 (FWS) (51 acres)

Regulatory Driver: CERCLA
RRSE: HIGH

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
PA	197906	198705
SI	197906	198705
RI/FS	199008	200607
RD	200509	200706
IRA	199509	200509
RA(C)	200509	200706
RA(O)	200509	204409

RIP Date: 200706

RC Date: 204409

SITE DESCRIPTION

Landfill 12 (previously called the Active Landfill), consisting of seven acres, was used for the disposal of nonhazardous industrial waste. The landfill had been used intermittently since 1963. Continuous use of the landfill began around 1978. Although the back section had been closed, the front section of the landfill continued to be used until its closure in March 1994. Site inspections (SI) conducted in 1993 concluded that an early IRA (landfill cap) was necessary to reduce further contamination to the groundwater. In 1997 the cap was completed, using treated soils from LHAAP-18 as subgrade fill. Cap maintenance started in 1998, and in 2002 the first five-year review was completed. The second five-year review was completed in 2008. The third five-year review was completed in 2013.

In 2002 the RI was completed. Groundwater analysis showed that some metals, chlorides, VOC, explosive compounds, and low levels of perchlorate were present. Surface water and sediment sample analysis showed similar contamination. Low levels of perchlorate were also detected in the soils. In three groundwater sampling rounds conducted in February 2003, February 2004, and December 2004, perchlorate was not detected with reporting limits of four micrograms per liter (ug/L) in the first two rounds, and only detected twice when a method with a lower reporting limit (0.2 ug/L) was used. Chromium in groundwater is now believed to be related to stainless steel well casings. In January 2006 the 12 wells with stainless steel casings and screen were removed. In 2006, five new wells were installed for long-term monitoring using polyvinyl chloride casing and screen. Results of subsequent groundwater sampling supported the postulation that the stainless steel casing in the monitoring wells was the source of the chromium.

In 2005 the FS was finalized. The recommended final remedy is MNA with LUCs consisting of cap protective provisions and groundwater restrictions. In August 2006 sampling to support MNA began. The PP addressed human and ecological risk. The ROD has been signed (July 2006), and in June 2007 the RD addendum was signed. The surrounding sediment and surface water were evaluated as part of the plant-wide ecological risk assessment and no chemicals of concern were identified.

Post-PBA (FY2017 and out-years) actions will include MNA with LUC consisting of cap protective provisions and groundwater restrictions. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

As a part of RA(O), cap maintenance, MNA, and five-year reviews will be funded under the PBA through September 2017. Post-PBA activities will be limited to long-term RA(O) and five-year reviews to review MNA progress and any new site information.

Site ID: LHAAP-015
Site Name: AREA 49W DRUM STORAGE

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: NOT EVALUATED

Phases	Start	End
PA	197906	198705
RI/FS	198705	201412

RIP Date: N/A

RC Date: 201412

SITE DESCRIPTION

An NFA DD is scheduled to be finalized at the end of 2014. This site was classified as a CERFA Category 1 site which describes areas where no release or disposal of hazardous substance has occurred, no further action is required for this site.

CLEANUP/EXIT STRATEGY

Site ID: LHAAP-016
Site Name: OLD LANDFILL (SWMU 16)

STATUS

Parcel: Burning Ground (FWS) (380 acres)

Regulatory Driver: CERCLA
RRSE: HIGH

Contaminants of Concern: Perchlorate, Volatiles (VOC)

Media of Concern: Groundwater, Soil, Surface Water

Phases	Start	End
PA	197906	198705
SI	197906	198705
RI/FS	199008	201512
RD	200508	201603
IRA	199410	200509
RA(C)	200508	201606
RA(O)	200508	204409

RIP Date: 201606

RC Date: 204409

SITE DESCRIPTION

Landfill 16 (formally called the old landfill), consisting of about 22 acres, was originally used to dispose of products generated from the TNT wastewater treatment plant (WWTP); however, a variety of waste was disposed of in the landfill until the 1980s. This waste may have included burned rocket motor casings, substandard TNT, barrels of chemicals, oil, paint, scrap iron and wood. VOCs and metals above action levels have been found in the soil, surface water and groundwater around the site. Low levels of explosive compounds were detected in the groundwater.

SIs conducted in 1993 concluded that an early IRA (landfill cap) was necessary to reduce further contamination to the groundwater. The cap was completed in 1998, using treated soils from LHAAP-18 as subgrade fill. In late-1997, as part of the treatability study, eight extraction wells were installed to prevent contaminated groundwater from impacting Harrison Bayou. This system is still in operation; however, extracted water volume is low. Groundwater extracted from the Landfill 16 containment system is piped to the LHAAP-18 groundwater treatment plant (GWTP).

Perchlorate was first detected in groundwater at this site in 2000. VOCs and perchlorate have been detected in the surface water of Harrison Bayou.

In 2002 the RI was completed along with a five-year review. In March 2002 a final interim FS for Site 16 was issued. Under the PBC, a draft FS addendum to the March 2002 interim FS was submitted in February 2007. The FS was finalized in March 2010. A preliminary MNA evaluation was completed in 2007. The second five-year review was completed in 2008. The PP was finalized September 2010. Quarterly surface water sampling of the Harrison Bayou area has not shown significant contamination. The ROD is delayed until dispute is resolved with EPA. The ROD will include cap maintenance, in situ bioremediation, biobarriers, MNA and LUCs.

An environmental security technology certification program research and development project for enhanced in situ bioremediation (VOCs, perchlorate and explosives in groundwater) was started in 2003 and continued to 2008. Ecological concerns most likely will be addressed with the final remedy at this site. Post-PBA actions will include RA(O) and groundwater monitoring. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

This site is being addressed under a PBA through September 2017. The remedy being considered for this site is passive

Site ID: LHAAP-016
Site Name: OLD LANDFILL (SWMU 16)

biobarriers, in situ bioremediation and MNA for groundwater, and LTM. Tasks to be completed before the PBA ends are completion of primary documents (ROD and RD), and accomplishment of remedy-in-place (RIP). At this time, it is expected that the post-PBA long-term RA(O)and LTM will involve monitoring MNA with maintenance of the cap and LUC.

Site ID: LHAAP-017
Site Name: NO 2 FLASHING AREA BRN GROUND(SWMU 17)

STATUS

Parcel: Burning Ground (FWS) (380 acres)

Regulatory Driver: CERCLA
RRSE: HIGH

Contaminants of Concern: Explosives, Perchlorate, Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA	197906	198705
SI	197906	198705
RI/FS	199008	201512
RD	200508	201603
RA(C)	201404	201606
RA(O)	201603	204409

RIP Date: 201606

RC Date: 204409

SITE DESCRIPTION

This site (about 500 by 600 feet) was used to burn bulk TNT, photoflash powder, and reject material from Universal Match Corporation's production processes. From 1959 until 1980 the site was operated as a burning ground. In 1959 buildings razed at Site 29 (the former TNT production area) were burned at Burning Ground No. 2/Flashing Area (LHAAP-17). This site is situated about 400-500 feet southwest of Burning Ground No. 3.

In 1984 waste residues were removed and the area grassed over. VOCs and explosive compounds were found in the groundwater. Explosive compounds were found in the soil. In 2000 perchlorate was detected at this site [in groundwater at 300 parts per million (ppm), but less in soil].

In 2002 the RI was completed and a draft FS was prepared. In 2004 additional data gap studies were completed. A revised draft FS was submitted in 2009 by the PBC and the FS was finalized in 2010. The PP was finalized in May 2010.The ROD is delayed until dispute is resolved with EPA. The ROD will include soil removal, extraction and treatment of groundwater, MNA and LUCs.

A research and development project for enhanced in situ-bioremediation (VOCs, perchlorate and explosives in soil and groundwater) was started in 2002 and completed in 2004. Results indicate that perchlorate contamination was reduced. An additional intermediate well was installed at the site in February 2008.

Post-PBA actions during LTM will involve monitoring of MNA. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

This site is being addressed under a PBA through September 2017. The remedy being considered for this site is groundwater extraction, followed by MNA for groundwater, and excavation and disposal for soil. Tasks to be completed before September 2017 are completion of primary documents (ROD and RD), and accomplishment of RIP. At this time, it is expected that the post-PBC long-term RA(O) and LTM will involve monitoring of MNA and LUC.

Site ID: LHAAP-018
Site Name: BURNING GROUND/WASHOUT POND(SWMU 18)

STATUS

Parcel: Burning Ground (FWS) (380 acres)

Regulatory Driver: CERCLA
RRSE: HIGH

Contaminants of Concern: Metals, Perchlorate, Volatiles (VOC)

Media of Concern: Groundwater, Soil, Surface Water

Phases	Start	End
PA	197906	198705
SI	197906	198705
RI/FS	199008	201512
RD	200508	201603
IRA	199503	201108
RA(C)	200508	201605
RA(O)	200508	204409

RIP Date: 201605

RC Date: 204409

SITE DESCRIPTION

This 34.5 acre site, also known as Burning Ground No. 3, began operations in 1955. It was used for the treatment, storage, and disposal of solid and liquid explosives, pyrotechnics, and combustible solvent wastes by open burning, open detonation, and burial. The unlined evaporation pond (UEP) (LHAAP-024) was constructed in 1963 within Burning Ground No. 3. Explosive compounds, VOCs, and metals were detected in the soils and groundwater. In 1998 perchlorate was detected in the groundwater. In 1986 sludge from the UEP was removed and the area was capped. Quarterly monitoring has been conducted at the site since closure of the UEP.

In May 1995 an IRA ROD was signed. This IRA addressed soil and shallow groundwater contamination. In 1997, 30,000 cubic yards (cy) of soil were excavated and treated. The treated soil was used as fill in LHAAP-012 and -016. A GWTP, with approximately 5,000 feet of interception collection trenches, has been installed to control migration of contaminated groundwater. After treatment the extracted groundwater is discharged into Harrison Bayou. In 1999 perchlorate was detected at this site and a fluidized bed reactor treatment system was installed.

In 2002 the RI was completed, followed by a draft FS. In September 2007 the PBC contractor began an optimization pilot study for the groundwater extraction system with a report completed in February 2009. A post-screening investigation work plan was finalized in 2013 to address site data gaps and support completion of the RI/FS. The PSI work has been completed and the revised FS is planned to be completed in 2014.

Post-PBA actions during LTM are expected to include review of MNA progress. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

This site is being addressed under a PBA through September 2017. The remedy being considered for this site is optimization of the groundwater extraction system, bioaugmentation, and MNA. Tasks to be completed before September 2017 are completion of primary documents (FS, PP, ROD, RD) and accomplishment of RIP and continued RA(O).

The final remedy has not been selected yet for this site. At this time, the post-PBC long-term RA(O) and LTM are expected to include groundwater extraction, bioremediation and five-year reviews.

Site ID: LHAAP-019
Site Name: CONSTRUCTION MATERIALS LANDFILL

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE:

Phases	Start	End
PA	197906	198705
SI	197906	198705
RI/FS	201009	201401
LTM	201401	204409

RIP Date: N/A

RC Date: 201401

SITE DESCRIPTION

The site was originally closed under RCRA in 1987. A NFA DD under CERCLA was finalized in early 2014. A notification (not a remedy or LUC) was filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential will be required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

Post-PBA activities will be limited to five-year review reports in the form of a letter stating the use of the site remains non-residential.

Site ID: LHAAP-024
Site Name: FORMER UNLINED EVAP POND (SWMU 24)

STATUS

Parcel: Burning Ground (FWS) (380 acres)

Regulatory Driver: CERCLA
RRSE: HIGH

Contaminants of Concern: Metals, Perchlorate, Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA	199005	199005
SI	199005	199008
RI/FS	199008	201512
RD	200508	201603
IRA	199503	201108
RA(C)	200508	201605
RA(O)	200508	204409

RIP Date: 201605

RC Date: 204409

SITE DESCRIPTION

This three-acre UEP was constructed in 1963 within Burning Ground No. 3. Explosive compounds, VOCs, and metals were detected in the soils and groundwater. In 1999, perchlorate was detected in the groundwater. In 1986, sludge from the UEP was removed and the area was capped. Quarterly monitoring has been conducted at the site since closure of the UEP.

In May 1995, an IRA ROD was signed. This IRA addressed soil and shallow groundwater contamination. In 1997, 30,000 cy of soil was excavated and treated. The treated soil was used as fill in LHAAP-012 and LHAAP-016. A GWTP, with approximately 5,000 feet of interception collection trenches, has been installed to control migration of contaminated groundwater. After treatment, the extracted groundwater is discharged into Harrison Bayou. In 1999 perchlorate was detected at this site and in 2001 a fluidized bed reactor treatment system was installed.

In 2002 the RI was completed, followed by a draft FS. In September 2007 the PBC contractor began an optimization study for the groundwater extraction system with a report on the results completed February 2009. A post-screening investigation work plan was finalized in 2013 to address site data gaps and support completion of the RI/FS. The PSI work has been completed and the revised FS is planned to be completed in 2014.

Post-PBA actions are currently expected to involve review of MNA progress. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

This site is being addressed under a PBA through September 2017. As with LHAAP-018, the remedy being considered for this site is optimization of the groundwater extraction system, bioaugmentation and MNA. Tasks to be completed before September 2017 are completion of primary documents (FS, PP, ROD, RD) and accomplishment of RIP and continued RA(O).

The final remedy has not been selected yet for this site but the post-PBC long-term RA(O) and LTM are expected to include groundwater extraction, bioremediation and five-year reviews.

Site ID: LHAAP-029
Site Name: FORMER TNT PRODUCTION AREA(SWMU 29)

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: HIGH

Contaminants of Concern: Munitions constituents (MC), Perchlorate, Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA	197906	198705
SI	197906	198705
RI/FS	199008	201512
RD	200508	201603
RA(C)	200508	201606
RA(O)	200508	204409

RIP Date: 201606

RC Date: 204409

SITE DESCRIPTION

The former TNT production area, consisting of about 85 acres, was in operation from April 1943 to August 1945 as a six-line plant, with a supporting acid plant. The plant produced 180 million kilograms of TNT throughout the period of operation. A bulk toluene storage area, servicing the TNT production area, was located adjacent to the production area. The TNT wastewater (red water) from the production of the TNT was sent through wooden pipelines to a storage tank and pump house, and then to the TNT WWTP (LHAAP-032). Cooling water (blue water) from the production area ran through main lines and into an open ditch. In 1959, the structures, except for the foundations, were demolished and removed. Through the late-1980s a portion of the northeast corner of the site (approximately two acres) was used for the washout of Pershing 1 and 2 rocket motor casings using trichloroethylene (TCE) and methylene chloride.

Explosive compounds have been detected in the soil, surface water, sediment, and groundwater samples. High concentrations of VOCs (including TCE and methylene chloride) have been detected in the groundwater with the highest concentrations in the intermediate hydrostratigraphic unit, and methylene chloride, dense non-aqueous phase liquid is suspected. In 2000 perchlorate was first detected in the soil and in the groundwater [at 88 parts per million (ppm)] at this site.

In 2002, the RI was completed and this site is included in the Group 2 draft FS. In FY2005 field sampling for soils was conducted. In FY2006, six wells were installed and sampled. Sediment samples were also collected from waste lines and outfall ditches. A revised draft FS was submitted by the PBC in 2008 and was finalized in 2010. The ROD is delayed until dispute is resolved with EPA. The ROD currently includes soil removal, flushing and plugging lines, in situ chemical oxidation treatment of groundwater, MNA and LUCs. An addendum to the RI/FS is being initiated in 2014 to evaluate additional remedial alternatives to address the intermediate methylene chloride plume at the site. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

LHAAP-49, the former acid plant (also known as former acid storage), was originally funded under LHAAP-29 due to the association in plant function. This was the location where acids were received and prepared for use in the TNT manufacturing process. The final site evaluation was finalized in 2009 and the ROD was finalized in 2010.

CLEANUP/EXIT STRATEGY

This site is being addressed under a PBA through September 2017. The remedy being considered for this site is in situ groundwater remediation followed by MNA, flushing and plugging lines, and excavation and disposal for soil and sediments. Tasks to be completed before September 2017 are completion of primary documents (ROD, RD), and accomplishment of RIP. The final remedy has not been selected yet for this site. At this time, the post-PBA RA(O) is expected to involve MNA and LUC.

Site ID: LHAAP-034
Site Name: BUILDING 701 PCB STORAGE

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: NOT EVALUATED

Phases	Start	End
PA	197906	198705
SI	197906	198705
RI/FS	198705	201412

RIP Date: N/A

RC Date: 201412

SITE DESCRIPTION

LHAAP-034 consists of a building formerly used for storage of PCB-contaminated material from transformer spills. In Operation from 1980 through 1984. An NFA DD is scheduled to be finalized at the end of 2014. This site was classified as a CERFA Category 1 site which describes areas where no release or disposal of hazardous substance has occurred, no further action is required for this site.

CLEANUP/EXIT STRATEGY

Site ID: LHAAP-035
Site Name: SUMPS (145) VARIOUS

STATUS

Parcel: East FIA II(FWS) (175 acres),Production Area Ib (FWS) (107.59 acres),Production Area Ia (FWS) (456.72 acres)

Regulatory Driver: CERCLA

RRSE: HIGH

Phases	Start	End
PA	197906	198705
SI	197906	198705
RI/FS	199301	201011
RD	200508	201011
RA(C)	200508	201011
LTM	201201	204409

RIP Date: N/A

RC Date: 201011

SITE DESCRIPTION

This site contained 125 industrial wastewater sumps. The sumps were located in different production areas within LHAAP. Many of the sumps were removed or closed in 1996.

Several buildings at sites where sumps were located have a history of perchlorate use. Perchlorate contamination at these sites has been identified in the soil, surface water and groundwater. RA(C) consisted of soil removal around sumps.

In 2002, the RI was completed and in late FY2003 the initial perchlorate assessment was completed. Additional soil sampling, for the sumps, was completed in fall 2006. The NFA DD was signed in November 2010. A notification (not a remedy or LUC) has been filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential is required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

The following are associated with LHAAP-35 in AEDB-R because there were sumps at the sites; however, they are being addressed as separate sites for other environmental issues [i.e. five-year reviews, RA(O)/LTM]:
LHAAP-002 LHAAP-003 LHAAP-004 LHAAP-006 LHAAP-007 LHAAP-036
LHAAP-058 LHAAP-060 LHAAP-65 LHAAP-068 (PBC) LHAAP-008 LHAAP-037 (TERC)

CLEANUP/EXIT STRATEGY

The LTM in the form of five-year reviews is required. Soil that was found to be contaminated with perchlorate at sites where sumps were located is being addressed by those individual sites (i.e. LHAAP-047 and LHAAP-050)

Site ID: LHAAP-036
Site Name: EXPLOSIVE WASTE PADS (27)

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE:

Phases	Start	End
PA	197906	198705
SI	197906	198705
RI/FS	199301	201011
LTM	201201	204409

RIP Date: N/A

RC Date: 201011

SITE DESCRIPTION

This site consists of 20 waste pads made of metal roof over four by eight concrete pad. It is included in Group 4 RI/FS. The NFA DD was signed in November 2010. A notification (not a remedy or LUC) has been filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential is required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

The LTM in the form of five-year reviews is required.

Site ID: LHAAP-037
Site Name: CHEMICAL LABORATORY WASTE PAD

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
PA	199005	199008
RI/FS	201003	201006
RD	201006	201108
RA(C)	201201	201309
RA(O)	201201	204409

RIP Date: 201309

RC Date: 204409

SITE DESCRIPTION

This site is a collection point for spent solvents from the quality assurance (QA) lab. It consists of one 55-gallon drum set on a concrete pad. The site is included in the Group 4 RI/FS. The ROD was finalized in August 2010 and included MNA and LUCs for the site. The RD was finalized in August 2011. The RAWP was finalized in 2013. RIP was achieved in September 2013. The RA(O) is on hold while a two-year bioplug demonstration is implemented at the site beginning in March 2012. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

This site is being addressed under a PBA through September 2017. Actions to be completed before the PBA ends are accomplishment of RIP followed by RA(O)/LTM including institutional controls (LUC). The RD complete in 2011 includes the following remedies for this site: MNA for groundwater, and RA(O). At this time, it is expected that the post-PBA long-term RA(O) will involve monitoring MNA and LUC.

Site ID: LHAAP-045
Site Name: MAGAZINE AREA

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: MEDIUM

Phases	Start	End
PA	199005	199008
SI	200003	200409
RI/FS	200409	200409
LTM	201201	204409

RIP Date: N/A

RC Date: 200409

SITE DESCRIPTION

This site consists of 800 acres with 58 bunkers and two buildings used for storage of munitions. An SI conducted by US Army Center for Health, Promotion and Preventive Medicine (USACHPPM) (now know as the Public Health Command), determined perchlorate contamination. RI to be completed in September 2003. The final evaluation of LHAAP-45 surface soil analytical data was finalized in September 2004. The site received USEPA concurrence for no further environmental investigation necessary. The site is closed and suitable for industrial use. A five-year review report in the form of a memorandum report stating the use of the site remains industrial will be required for internal Army records. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

The LTM in the form of five-year reviews is required.

Site ID: LHAAP-046
Site Name: PLANT 2 AREA

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
PA	200201	200201
RI/FS	201006	201009
RD	201106	201109
RA(C)	201201	201304
RA(O)	201201	204409

RIP Date: 201304

RC Date: 204409

SITE DESCRIPTION

LHAAP-46, also known as Plant 2, had facilities for production of JB-2 propellant fuel 1944-1945 and was used to produce pyrotechnic ammunition, such as photoflash bombs, simulators, hand signals, and tracers for 40mm ammo from 1952-1956. Plant 2 was reactivated to produce pyrotechnic and illuminating devices from 1964 to 1997. Site investigations determined that groundwater was contaminated with VOCs. The ROD was finalized in September 2010 and includes MNA and LUCs for the site. A notification (not a remedy or LUC) will be filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential will be required. The RD was finalized in September 2011. The RAWP was finalized in 2013 and RIP was achieved in April 2013. This site is in RA(O). The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

This site is being addressed under a PBA through September 2017. The remedy selected for this site is MNA for groundwater. Tasks to be completed before September 2017 are accomplishment of RIP followed by RA(O)/LTM. The final remedy has been selected for this site. At this time, it is expected that the post-PBA RA(O) will involve monitoring MNA and LUC.

Site ID: LHAAP-047
Site Name: PLANT 3 AREA

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: HIGH

Contaminants of Concern: Metals, Perchlorate, Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA	197906	198705
RI/FS	201201	201512
RD	201201	201602
RA(C)	201201	201610
RA(O)	201201	204409

RIP Date: 201610

RC Date: 204409

SITE DESCRIPTION

LHAAP-47, also known as Plant 3, was used from 1954 to the early-1980s to produce rocket motors. Some of the rocket motor facilities converted to produce pyrotechnic and illumination devices, and continued this operation until 1997. Site investigations determined that groundwater was contaminated with VOCs, perchlorate, and metals and a soil source for perchlorate was identified. The FS evaluating remedial alternatives for LHAAP-47 was finalized in July 2011. The RAs for this site have been funded under an existing contract. The ROD is delayed until dispute is resolved with EPA. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

This site is being addressed under a PBA through September 2017. The remedy being considered for this site is bioaugmentation, biobarriers and MNA. Tasks to be completed before September 2017 are completion of primary documents (ROD and RD) and accomplishment of RIP and continued RA(O).

The final remedy has not been selected yet for this site. At this time, the post-PBC long-term RA(O) and LTM are expected to include MNA and five-year reviews.

Site ID: LHAAP-049
Site Name: FORMER ACID STORAGE AREA

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE:

Phases	Start	End
PA	200903	200906
RI/FS	201005	201008
LTM	201201	204409

RIP Date: N/A

RC Date: 201008

SITE DESCRIPTION

LHAAP-49 is the former aid storage area, which was used from 1942 to 1945 for storage and formulation of acids and acid mixtures in support of TNT production during WWII. The NFA ROD was finalized in August 2010. A notification (not a remedy or LUC) has been filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential is required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

The LTM in the form of five-year reviews is required.

Site ID: LHAAP-050
Site Name: FORMER WASTE DISPOSAL FACILITY

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: HIGH

Contaminants of Concern: Metals, Perchlorate, Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA	199005	199008
SI	199506	199707
RI/FS	199801	201001
RD	200508	201102
RA(C)	200508	201309
RA(O)	200508	204409

RIP Date: 201309

RC Date: 204409

SITE DESCRIPTION

This site of about one acre received wastewater from the sumps at Plants 2 and 3 from 1955 to the early-1970s. Washout of ammonium perchlorate containers was also performed on this site.

VOCs and perchlorate were detected in the soil samples. VOCs, metals and perchlorate were detected in groundwater. The VOCs and perchlorates in groundwater pose an unacceptable risk. In 2004 an additional data gap sampling was completed and in February 2008 an additional shallow well was installed downgradient of this site.

In 2002, the RI was completed and the FS was finalized in 2010. The ROD was finalized in 2010. The ROD includes soil removal, MNA and LUCs (groundwater use restriction) for the site. A notification (not a remedy or LUC) will be filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential will be required. The RD was finalized in September 2011. The RAWP was finalized in 2013. RIP was achieved in September 2013. This site is in RA(O). The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

This site is being addressed under a PBA through September 2017. The remedy selected for this site is MNA for groundwater, and excavation and disposal for soil. Tasks to be completed before September 2017 are accomplishment of RIP followed by RA(O)/LTM. The final remedy has been selected for this site. At this time, it is expected that the post-PBA RA(O) will involve MNA and LUC.

Site ID: LHAAP-051
Site Name: PHOTOGRAPHIC LABORATORY/BLDG #60B

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE:

Phases	Start	End
PA	199005	199008
RI/FS	200712	200812
LTM	201201	204409

RIP Date: N/A

RC Date: 200812

SITE DESCRIPTION

Building 60B was the location for processing x-ray film. It will be handled under RCRA closure. An NFA DD was signed in December 2008. A notification (not a remedy or LUC) has been filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential is required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

The LTM in the form of five-year reviews is required.

Site ID: LHAAP-052
Site Name: MAGAZINE AREA WASHOUT

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: LOW

Phases	Start	End
PA	199005	199008
SI	199506	199804
RI/FS	199706	201409
LTM	201409	204409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

A standpipe near the intersection of Avenue E and 19th was used to wash out trucks used for transport of TNT. An NFA DD will be finalized at the end of 2014. Limited monitoring in the form of certification of proper land use every five years is required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

Post-PBA activities will be limited to five-year review reports in the form of a letter stating the use of the site remains non-residential.

Site ID: LHAAP-055
Site Name: SEPTIC TANK (10)

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE:

Phases	Start	End
PA	199005	199008
RI/FS	199008	200812
LTM	201201	204409

RIP Date: N/A

RC Date: 200812

SITE DESCRIPTION

This site is being handled under RCRA guidelines. An NFA DD was signed in December 2008. A notification (not a remedy or LUC) has been filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential is required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

The LTM in the form of five-year reviews is required.

Site ID: LHAAP-056
Site Name: VEHICLE WASH RACK AND OIL/WATER SEP

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: NOT EVALUATED

Phases	Start	End
PA	199304	200801
RI/FS	201201	201401
LTM	201401	204409

RIP Date: N/A

RC Date: 201401

SITE DESCRIPTION

This site consisted of a concrete washrack sloped to drain, connected to an oil/water separator. The site had a permitted discharge to a drainage ditch. The site is located within the shop area. The sump on this site was investigated under LHAAP-035. DD was finalized in early 2014. A notification will be filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. Because LHAAP-056 is entirely contained within the LHAAP-35A(58) land use control boundary, this requirement is being met under LHAAP-35A(58). A five-year review report in the form of a letter stating the use of the site remains non-residential will be required. Five-year review costs are captured with LHAAP-35A(58) because this site falls within the boundary of LHAAP-35A(58).

CLEANUP/EXIT STRATEGY

This is a zero cost site. An NFA DD was funded in 2012.

Site ID: LHAAP-057
Site Name: RUBBLE BURIAL SITE

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: NOT EVALUATED

Phases	Start	End
PA	199005	199008
RI/FS	199008	201412

RIP Date: N/A

RC Date: 201412

SITE DESCRIPTION

LHAAP-057 was used for burial of inert materials that were cleared from property records. An NFA DD is scheduled to be finalized in 2014. This site was classified as a CERFA Category 1 site which describes areas where no release or disposal of hazardous substance has occurred, no further action is required for this site.

CLEANUP/EXIT STRATEGY

Site ID: LHAAP-058
Site Name: MAINTENANCE COMPLEX

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
PA	199005	199008
SI	199502	199506
RI/FS	201006	201009
RD	201106	201109
RA(C)	201109	201309
RA(O)	201109	204409

RIP Date: 201309

RC Date: 204409

SITE DESCRIPTION

LHAAP-35A(58), also known as the shops area, was used to provide plant-operated laundry, automotive, woodworking, metalworking, painting, refrigeration, and electrical services. VOCs were detected in groundwater. The ROD was finalized in 2010 and includes in situ bioremediation for the eastern plume and MNA and LUCs (groundwater use restriction) for both the eastern and western groundwater plume for the site. A notification (not a remedy or LUC) will be filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential will be required. Five-year review costs for LHAAP-002, 003, 056, 059, 060, 065, 068, and 069 are captured with LHAAP-35A(58). Five-year review costs because these sites fall within the boundary of LHAAP-35A(58). The RD was finalized in September 2011. The RAWP was finalized in 2013. RIP was achieved in September 2013. This site is in RA(O). The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

This site is being addressed under a PBA through September 2017. The remedy selected for this site is in situ bioremediation and MNA for groundwater. Tasks to be completed before September 2017 are accomplishment of RIP followed by RA(O)/LTM, which will involve MNA and LUC.

Site ID: LHAAP-059
Site Name: BUILDING 725

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE:

Phases	Start	End
PA	200705	200708
RI/FS	200805	200808
LTM	201201	204409

RIP Date: N/A

RC Date: 200808

SITE DESCRIPTION

Building 725 at LHAAP-59 was constructed in 1984 to support maintenance activities at the plant as a pesticide storage building. It was determined through site investigations that no significant release had occurred at this site. The NFA DD was finalized in August 2008. A notification (not a remedy or LUC) has been filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential is required. Five-year review costs are captured with LHAAP-35A(58) five-year review costs because this site falls within the boundary of LHAAP-35A(58).

CLEANUP/EXIT STRATEGY

The LTM in the form of five-year reviews is required.

Site ID: LHAAP-060
Site Name: FORMER STORAGE BUILDING #411 & #714

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: MEDIUM

Phases	Start	End
PA	199005	199008
SI	199506	199707
RI/FS	199801	200812
LTM	201201	204409

RIP Date: N/A

RC Date: 200812

SITE DESCRIPTION

This site consists of two buildings formerly used for storage of pesticides and herbicides. It is included in Group 4 for RD/RA efforts. An NFA DD was signed in December 2008. A notification (not a remedy or LUC) has been filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential is required. Five-year review costs are captured with LHAAP-35A(58). Five-year review costs because this site falls within the boundary of LHAAP-35A(58).

CLEANUP/EXIT STRATEGY

The LTM in the form of five-year reviews is required.

Site ID: LHAAP-061
Site Name: POTABLE WTP SEDIMENT POND

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: NOT EVALUATED

Phases	Start	End
PA	199005	199008
RI/FS	199008	201412

RIP Date: N/A

RC Date: 201412

SITE DESCRIPTION

LHAAP-061 is closed under RCRA guidelines. A DD is scheduled to be finalized in 2014. This site was classified as a CERFA Category 1 site which describes areas where no release or disposal of hazardous substance has occurred, no further action is required for this site.

CLEANUP/EXIT STRATEGY

Site ID: LHAAP-063
Site Name: BURIAL PITS

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: LOW

Phases	Start	End
PA	199005	199008
SI	199506	199804
RI/FS	199804	201409
LTM	201409	204409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

LHAAP-063 was used in late 50s for the detonation of Plant 3 reject material of unknown composition. NFA DD to be finalized in 2014. Limited monitoring in the form of certification of proper land use every five years is required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

Post-PBA activities will be limited to five-year review reports in the form of a letter stating the use of the site remains non-residential.

Site ID: LHAAP-064
Site Name: TRANSFORMER STORAGE

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE:

Phases	Start	End
PA	199005	199008
SI	199502	199506
RI/FS	199506	200812
LTM	201201	204409

RIP Date: N/A

RC Date: 200812

SITE DESCRIPTION

LHAAP-064 was used for storage of non-PCB transformers. An NFA was required and an NFA DD was signed in December 2008. A notification (not a remedy or LUC) has been filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential is required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

The LTM in the form of five-year reviews is required.

Site ID: LHAAP-065
Site Name: BUILDING 209

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: NOT EVALUATED

Phases	Start	End
PA	201103	201106
RI/FS	201201	201401
LTM	201401	204409

RIP Date: N/A

RC Date: 201401

SITE DESCRIPTION

Building 209 was used for chemical storage for items such as paint and solvents. This building has a concrete floor with floor drains connected to sumps. The site is located just off of 11th street near the fire station. A DD was finalized in early 2014. A notification will be filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. Because LHAAP-065 is entirely contained within the LHAAP-35A(58) land use control boundary, this requirement is being met under LHAAP-35A(58). A five-year review report in the form of a letter stating the use of the site remains non- residential will be required. Five-year review costs are captured with LHAAP-35A(58) five-year review costs because this site falls within the boundary of LHAAP-35A(58).

CLEANUP/EXIT STRATEGY

This is a zero cost site. An NFA DD was funded in 2012.

Site ID: LHAAP-066
Site Name: TRANSFORMER AT BLDG 401

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE:

Phases	Start	End
PA	199005	199008
SI	199502	199506
RI/FS	199506	200812
LTM	201201	204409

RIP Date: N/A

RC Date: 200812

SITE DESCRIPTION

A transformer at Building 401 dripped oil for approximately one year. The transformer did not contain PCBs, so an NFA was required. An NFA DD was signed in December 2008. A notification (not a remedy or LUC) has been filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non- residential is required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

The LTM in the form of five-year reviews is required.

Site ID: LHAAP-067
Site Name: ABOVE GROUND STORAGE TANK

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
PA	199005	199008
SI	199809	199906
RI/FS	200110	201006
RD	201105	201108
RA(C)	201201	201304
RA(O)	201201	204409

RIP Date: 201304

RC Date: 204409

SITE DESCRIPTION

This site consisted of seven aboveground storage tanks (AST) containing No. 2 fuel oil, kerosene or solvents. The ASTs had earthen dikes sufficient to contain a potential spill. Motor fuel tanks were registered with the state and have been removed. Central Creek runs to the south of this site.

In 2001, VOCs (TCE, 1,1-dichloroethene, 1,2-dichloroethane, 1,1,2-trichloroethane) were detected in the groundwater. The data indicates that the impact is limited.

In 2002, the RI was completed and in 2004 additional sampling was conducted, with the final FS completed in August 2005. The ROD was finalized in August 2010 and included MNA and LUCs (groundwater use restriction) for the site. A notification (not a remedy or LUC) will be filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential will be required. The RD was finalized in August 2011. The RAWP was finalized in 2013 and RIP was achieved in April 2013. This site is in RA(O). The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

This site is being addressed under a PBA through September 2017. Actions to be completed before the PBA ends are accomplishment of RIP followed by RA(O)/LTM. The ROD complete in 2010 selected the following remedies for this site: MNA for groundwater, and RA(O). At this time, it is expected that the post-PBA long-term RA(O) will involve MNA and LUC.

Site ID: LHAAP-068
Site Name: MOBILE STORAGE TANK PARKING AREA

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE:

Phases	Start	End
PA	199005	199008
RI/FS	199008	200812
LTM	201201	204409

RIP Date: N/A

RC Date: 200812

SITE DESCRIPTION

This site was corrected under RCRA guidelines in 1993. An NFA DD was signed in December 2008. A notification (not a remedy or LUC) has been filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential is required. Five-year review costs are captured with LHAAP-35A(58) five-year review costs because this site falls within the boundary of LHAAP-35A(58).

CLEANUP/EXIT STRATEGY

The LTM in the form of five-year reviews is required.

Site ID: LHAAP-069
Site Name: SERVICE STATION UST'S

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE:

Phases	Start	End
PA	199005	199008
RI/FS	199008	201401
LTM	201401	204409

RIP Date: N/A

RC Date: 201401

SITE DESCRIPTION

LHAAP-069 was corrected under RCRA guidelines in 1993. A NFA DD was finalized in early 2014. A notification will be filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. Because LHAAP-069 is entirely contained within the LHAAP-35A(58) land use control boundary, this requirement is being met under LHAAP-35A(58). A five-year review report in the form of a letter stating the use of the site remains non-residential will be required. Five-year review costs are captured with LHAAP-35A(58) five-year review costs because this site falls within the boundary of LHAAP-35A(58).

CLEANUP/EXIT STRATEGY

Post-PBA activities will be limited to five-year review reports in the form of a letter stating the use of the site remains non-residential.

Site ID: LHAAP-070
Site Name: LOADING DOCK-MAGAZINE AREA

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE:

Phases	Start	End
PA	197906	198705
SI	199502	199506
RI/FS	199506	201409
LTM	201409	204409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

There was a report of spill of boxes of TNT at LHAAP-070; however, site inspections revealed no visual evidence of TNT contamination. NFA is required. A DD is scheduled to be finalized at the end 2014. Limited monitoring in the form of certification of proper land use every five years is required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

Post-PBA activities will be limited to five-year review reports in the form of a letter stating the use of the site remains non-residential.

Site ID: LHAAP-071
Site Name: OIL SPILL, BLDG 813

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE:

Phases	Start	End
PA	197906	198705
SI	199502	199506
RI/FS	199506	201409
LTM	201409	204409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

An oil tank spill occurred at Building (Bldg) 813 in 1978. The spill was contained before it could reach Central Creek. An NFA. DD is scheduled to be finalized at the end of 2014. Limited monitoring in the form of certification of proper land use every five years is required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

Post-PBA activities will be limited to five-year review reports in the form of a letter stating the use of the site remains non-residential.

Site ID: PBC Longhorn
Site Name: PBC at Longhorn

STATUS

Parcel: Pistol Range (FWS) (1 acres),East FIA II(FWS) (175 acres),Production Area II (467 acres),Production Area Ib (FWS) (107.59 acres),Production Area Ia (FWS) (456.72 acres)

Regulatory Driver: CERCLA

RRSE: LOW

Phases	Start	End
PA	200501	200503
RD	201203	201507
RA(C)	201203	201603
RA(O)	201203	201709

RIP Date: 201603

RC Date: 201709

Contaminants of Concern: Explosives, Metals, Perchlorate, Volatiles (VOC)

Media of Concern: Groundwater

SITE DESCRIPTION

The PBC was awarded in March 2012. The goal is to achieve RIP by September 2013 for the following sites and RA(O)/LTM upon achievement:
- LHAAP-03: Building 722 paint shop
- LHAAP-04: Pilot WWTP
- LHAAP-16: Old landfill (solid waste management unit (SWMU) 16)
- LHAAP-17: No. 2 flashing area/burning ground (SWMU 17)
- LHAAP-18: Burning ground/washout pond (SWMU 18)
- LHAAP-24: Former UEP (SWMU 24)
- LHAAP-29: Former TNT production area (SWMU 29)
- LHAAP-37: Chemical laboratory
- LHAAP-46: Plant 2/pyrotechnic operation
- LHAAP-47: Plant 3 Area, solid rocket fuel motor production
- LHAAP-50: Former waste disposal facility
- LHAAP-58: Maintenance complex
- LHAAP-67: AST farm

The RIP is delayed for several sites until dispute is resolved with EPA.

The PBC also covers LTM and LUC maintenance for:
- LHAAP-12: Active landfill
- LHAAP-001-R-01: South test area
- LHAAP-003-R-01: Ground signal test area

The PBC also covers a CERCLA 121 (c) review in 2013 for all sites with RIP. The costs for the outyear installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

These sites are being addressed under a PBA through September 2017. Any follow-on actions will be funded under a separate contract mechanism.

IRP Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
LHAAP-013	SUS TNT BET ACTIVE&OLD LANDFILL(SWMU 13)	199512	ROD for NFA signed in 1996.
LHAAP-014	AREA 54 BURIAL GRND (SWMU 14)	199512	ROD for NFA signed in 1996.
LHAAP-023	BUILDING 707-STORAGE AREA PCBS	200601	Decision Documentation for NFA in 2006, including a letter from TNRCC signed in September 2000 releasing the site from deed recordation and post-closure requirements.
LHAAP-027	SOUTH TEST AREA/BOMB TEST AREA(SWMU 27)	199801	ROD for NFA signed in 1998
LHAAP-032	FORMER TNT WASTEWATER PLT(SWMU 32)	200809	ROD for NFA - signed September 2008
LHAAP-039	25X WASHOUT PAD	199008	PP - September 1994; Combined with LHAAP-18/24 IRA - Capping Site 18 1986; IRA - Soil Removal and Capping 1986; LTM - Groundwater Monitoring System Installed 1989;
LHAAP-053	STATIC TEST AREA	200811	A no action decision document signed in 2008.
LHAAP-054	GRD SIGNAL TEST AREA (LHAAP-XX)	199801	ROD for NFA signed in 1998.

IRP Schedule

Date of IRP Inception: 197906

Past Phase Completion Milestones

1984	
SI	(LHAAP-001 - INERT BURNING GROUNDS (SWMU 1))
PA	(LHAAP-001 - INERT BURNING GROUNDS (SWMU 1))
1987	
SI	(LHAAP-034 - BUILDING 701 PCB STORAGE, LHAAP-035 - SUMPS (145) VARIOUS, LHAAP-036 - EXPLOSIVE WASTE PADS (27), LHAAP-011 - SUS TNT BURIAL SITE AT AVE P&Q(SWMU 11), LHAAP-012 - ACTIVE LANDFILL (SWMU 12), LHAAP-013 - SUS TNT BET ACTIVE&OLD LANDFILL(SWMU 13), LHAAP-014 - AREA 54 BURIAL GRND (SWMU 14), LHAAP-016 - OLD LANDFILL (SWMU 16), LHAAP-017 - NO 2 FLASHING AREA BRN GROUND(SWMU 17), LHAAP-018 - BURNING GROUND/WASHOUT POND(SWMU 18), LHAAP-019 - CONSTRUCTION MATERIALS LANDFILL, LHAAP-023 - BUILDING 707-STORAGE AREA PCBS, LHAAP-027 - SOUTH TEST AREA/BOMB TEST AREA(SWMU 27), LHAAP-029 - FORMER TNT PRODUCTION AREA(SWMU 29), LHAAP-032 - FORMER TNT WASTEWATER PLT(SWMU 32))
PA	(LHAAP-034 - BUILDING 701 PCB STORAGE, LHAAP-035 - SUMPS (145) VARIOUS, LHAAP-036 - EXPLOSIVE WASTE PADS (27), LHAAP-047 - PLANT 3 AREA, LHAAP-070 - LOADING DOCK-MAGAZINE AREA, LHAAP-071 - OIL SPILL, BLDG 813, LHAAP-002 - VACCUM TRUCK OVERNITE PARKING LOT, LHAAP-003 - BUILDING 722-PAINT SHOP, LHAAP-004 - LHAAP PILOT WASTEWATER TREATMENT PLANT, LHAAP-005 - POWER HOUSE BOILER POND, LHAAP-006 - BUILDING 54F SOLVENT, LHAAP-007 - BUILDING 50G DRUM PROCESSING, LHAAP-008 - SEWAGE TREATMENT PLANT, LHAAP-009 - BUILDING 31-W DRUM STORAGE, LHAAP-011 - SUS TNT BURIAL SITE AT AVE P&Q(SWMU 11), LHAAP-012 - ACTIVE LANDFILL (SWMU 12), LHAAP-013 - SUS TNT BET ACTIVE&OLD LANDFILL(SWMU 13), LHAAP-014 - AREA 54 BURIAL GRND (SWMU 14), LHAAP-015 - AREA 49W DRUM STORAGE, LHAAP-016 - OLD LANDFILL (SWMU 16), LHAAP-017 - NO 2 FLASHING AREA BRN GROUND(SWMU 17), LHAAP-018 - BURNING GROUND/WASHOUT POND(SWMU 18), LHAAP-019 - CONSTRUCTION MATERIALS LANDFILL, LHAAP-023 - BUILDING 707-STORAGE AREA PCBS, LHAAP-027 - SOUTH TEST AREA/BOMB TEST AREA(SWMU 27), LHAAP-029 - FORMER TNT PRODUCTION AREA(SWMU 29), LHAAP-032 - FORMER TNT WASTEWATER PLT(SWMU 32))
1990	
SI	(LHAAP-054 - GRD SIGNAL TEST AREA (LHAAP-XX), LHAAP-024 - FORMER UNLINED EVAP POND (SWMU 24))
RFA	(LHAAP-039 - 25X WASHOUT PAD)
PA	(LHAAP-037 - CHEMICAL LABORATORY WASTE PAD, LHAAP-045 - MAGAZINE AREA, LHAAP-050 - FORMER WASTE DISPOSAL FACILITY, LHAAP-051 - PHOTOGRAPHIC LABORATORY/BLDG #60B, LHAAP-052 - MAGAZINE AREA WASHOUT, LHAAP-053 - STATIC TEST AREA, LHAAP-054 - GRD SIGNAL TEST AREA (LHAAP-XX), LHAAP-055 - SEPTIC TANK (10), LHAAP-057 - RUBBLE BURIAL SITE, LHAAP-058 - MAINTENANCE COMPLEX, LHAAP-060 - FORMER STORAGE BUILDING #411 & #714, LHAAP-061 - POTABLE WTP SEDIMENT POND, LHAAP-063 - BURIAL PITS, LHAAP-064 - TRANSFORMER STORAGE, LHAAP-066 - TRANSFORMER AT BLDG 401, LHAAP-067 - ABOVE GROUND STORAGE TANK, LHAAP-068 - MOBILE STORAGE TANK PARKING AREA, LHAAP-069 - SERVICE STATION UST'S, LHAAP-024 - FORMER UNLINED EVAP POND (SWMU 24))
1995	
SI	(LHAAP-058 - MAINTENANCE COMPLEX, LHAAP-064 - TRANSFORMER STORAGE, LHAAP-066 - TRANSFORMER AT BLDG 401, LHAAP-070 - LOADING DOCK-MAGAZINE AREA, LHAAP-071 - OIL SPILL, BLDG 813)
1996	
RI/FS	(LHAAP-013 - SUS TNT BET ACTIVE&OLD LANDFILL(SWMU 13), LHAAP-014 - AREA 54 BURIAL GRND (SWMU 14))
1997	

IRP Schedule

1997	
SI	(LHAAP-050 - FORMER WASTE DISPOSAL FACILITY, LHAAP-060 - FORMER STORAGE BUILDING #411 & #714)
1998	
RI/FS	(LHAAP-054 - GRD SIGNAL TEST AREA (LHAAP-XX), LHAAP-001 - INERT BURNING GROUNDS (SWMU 1), LHAAP-011 - SUS TNT BURIAL SITE AT AVE P&Q(SWMU 11), LHAAP-027 - SOUTH TEST AREA/BOMB TEST AREA(SWMU 27))
SI	(LHAAP-052 - MAGAZINE AREA WASHOUT, LHAAP-063 - BURIAL PITS)
1999	
SI	(LHAAP-067 - ABOVE GROUND STORAGE TANK)
2002	
PA	(LHAAP-046 - PLANT 2 AREA)
2004	
SI	(LHAAP-045 - MAGAZINE AREA)
RI/FS	(LHAAP-045 - MAGAZINE AREA)
2005	
IRA	(LHAAP-012 - ACTIVE LANDFILL (SWMU 12), LHAAP-016 - OLD LANDFILL (SWMU 16))
PA	(PBC Longhorn - PBC at Longhorn)
2006	
RI/FS	(LHAAP-012 - ACTIVE LANDFILL (SWMU 12), LHAAP-023 - BUILDING 707-STORAGE AREA PCBS)
2007	
RD	(LHAAP-012 - ACTIVE LANDFILL (SWMU 12))
PA	(LHAAP-059 - BUILDING 725)
RA(C)	(LHAAP-012 - ACTIVE LANDFILL (SWMU 12))
RI/FS	(LHAAP-032 - FORMER TNT WASTEWATER PLT(SWMU 32))
2008	
RI/FS	(LHAAP-059 - BUILDING 725)
PA	(LHAAP-056 - VEHICLE WASH RACK AND OIL/WATER SEP)
LTM	(LHAAP-032 - FORMER TNT WASTEWATER PLT(SWMU 32))
2009	
PA	(LHAAP-049 - FORMER ACID STORAGE AREA)
SI	(LHAAP-003 - BUILDING 722-PAINT SHOP)
RI/FS	(LHAAP-051 - PHOTOGRAPHIC LABORATORY/BLDG #60B, LHAAP-053 - STATIC TEST AREA, LHAAP-055 - SEPTIC TANK (10), LHAAP-060 - FORMER STORAGE BUILDING #411 & #714, LHAAP-064 - TRANSFORMER STORAGE, LHAAP-066 - TRANSFORMER AT BLDG 401, LHAAP-068 - MOBILE STORAGE TANK PARKING AREA, LHAAP-006 - BUILDING 54F SOLVENT, LHAAP-007 - BUILDING 50G DRUM PROCESSING, LHAAP-008 - SEWAGE TREATMENT PLANT)
2010	
RI/FS	(LHAAP-037 - CHEMICAL LABORATORY WASTE PAD, LHAAP-046 - PLANT 2 AREA, LHAAP-049 - FORMER ACID STORAGE AREA, LHAAP-050 - FORMER WASTE DISPOSAL FACILITY, LHAAP-058 - MAINTENANCE COMPLEX, LHAAP-067 - ABOVE GROUND STORAGE TANK, LHAAP-002 - VACCUM TRUCK OVERNITE PARKING LOT)

IRP Schedule

2011

RA(C)	(LHAAP-035 - SUMPS (145) VARIOUS)
IRA	(LHAAP-004 - LHAAP PILOT WASTEWATER TREATMENT PLANT, LHAAP-018 - BURNING GROUND/WASHOUT POND(SWMU 18), LHAAP-024 - FORMER UNLINED EVAP POND (SWMU 24))
RD	(LHAAP-035 - SUMPS (145) VARIOUS, LHAAP-037 - CHEMICAL LABORATORY WASTE PAD, LHAAP-046 - PLANT 2 AREA, LHAAP-050 - FORMER WASTE DISPOSAL FACILITY, LHAAP-058 - MAINTENANCE COMPLEX, LHAAP-067 - ABOVE GROUND STORAGE TANK)
RI/FS	(LHAAP-035 - SUMPS (145) VARIOUS, LHAAP-036 - EXPLOSIVE WASTE PADS (27))
PA	(LHAAP-065 - BUILDING 209)

2013

RA(C)	(LHAAP-037 - CHEMICAL LABORATORY WASTE PAD, LHAAP-046 - PLANT 2 AREA, LHAAP-050 - FORMER WASTE DISPOSAL FACILITY, LHAAP-058 - MAINTENANCE COMPLEX, LHAAP-067 - ABOVE GROUND STORAGE TANK)

Projected Phase Completion Milestones

See attached schedule

Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates

Site ID	Site Name	ROD/DD Title	ROD/DD Date
LHAAP-017	NO 2 FLASHING AREA BRN GROUND(SWMU 17)	Flashing Area/Burning Grnd No 2:LHAAP-17	20150930

Final RA(C) Completion Date: 201610

Schedule for Next Five-Year Review: N/A

Estimated Completion Date of IRP at Installation (including LTM phase): 204409

LONGHORN ARMY AMMUNITION PLANT IRP Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-001	INERT BURNING GROUNDS (SWMU 1)	LTM						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-002	VACCUM TRUCK OVERNITE PARKING LOT	LTM						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-003	BUILDING 722-PAINT SHOP	RI/FS						
		RD						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-004	LHAAP PILOT WASTEWATER TREATMENT PLANT	RI/FS						
		RD						
		RA(C)						
		RA(O)						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-005	POWER HOUSE BOILER POND	RI/FS						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-006	BUILDING 54F SOLVENT	LTM						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-007	BUILDING 50G DRUM PROCESSING	LTM						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-008	SEWAGE TREATMENT PLANT	LTM						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-009	BUILDING 31-W DRUM STORAGE	RI/FS						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-011	SUS TNT BURIAL SITE AT AVE P&Q(SWMU 11)	LTM						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-012	ACTIVE LANDFILL (SWMU 12)	RA(O)						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-015	AREA 49W DRUM STORAGE	RI/FS						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-016	OLD LANDFILL (SWMU 16)	RI/FS						
		RD						
		RA(C)						
		RA(O)						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-017	NO 2 FLASHING AREA BRN GROUND(SWMU 17)	RI/FS						
		RD						
		RA(C)						
		RA(O)						

LONGHORN ARMY AMMUNITION PLANT IRP Schedule

SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-018	BURNING GROUND/WASHOUT POND(SWMU 18)	RI/FS						
		RD						
		RA(C)						
		RA(O)						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-019	CONSTRUCTION MATERIALS LANDFILL	LTM						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-024	FORMER UNLINED EVAP POND (SWMU 24)	RI/FS						
		RD						
		RA(C)						
		RA(O)						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-029	FORMER TNT PRODUCTION AREA(SWMU 29)	RI/FS						
		RD						
		RA(C)						
		RA(O)						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-034	BUILDING 701 PCB STORAGE	RI/FS						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-035	SUMPS (145) VARIOUS	LTM						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-036	EXPLOSIVE WASTE PADS (27)	LTM						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-037	CHEMICAL LABORATORY WASTE PAD	RA(O)						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-045	MAGAZINE AREA	LTM						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-046	PLANT 2 AREA	RA(O)						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-047	PLANT 3 AREA	RI/FS						
		RD						
		RA(C)						
		RA(O)						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-049	FORMER ACID STORAGE AREA	LTM						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-050	FORMER WASTE DISPOSAL FACILITY	RA(O)						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-051	PHOTOGRAPHIC LABORATORY/BLDG #60B	LTM						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-052	MAGAZINE AREA WASHOUT	LTM						
SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-055	SEPTIC TANK (10)	LTM						

LONGHORN ARMY AMMUNITION PLANT IRP Schedule

SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-056	VEHICLE WASH RACK AND OIL/WATER SEP	LTM						
LHAAP-057	RUBBLE BURIAL SITE	RI/FS						
LHAAP-058	MAINTENANCE COMPLEX	RA(O)						
LHAAP-059	BUILDING 725	LTM						
LHAAP-060	FORMER STORAGE BUILDING #411 & #714	LTM						
LHAAP-061	POTABLE WTP SEDIMENT POND	RI/FS						
LHAAP-063	BURIAL PITS	LTM						
LHAAP-064	TRANSFORMER STORAGE	LTM						
LHAAP-065	BUILDING 209	LTM						
LHAAP-066	TRANSFORMER AT BLDG 401	LTM						
LHAAP-067	ABOVE GROUND STORAGE TANK	RA(O)						
LHAAP-068	MOBILE STORAGE TANK PARKING AREA	LTM						
LHAAP-069	SERVICE STATION UST'S	LTM						
LHAAP-070	LOADING DOCK-MAGAZINE AREA	LTM						
LHAAP-071	OIL SPILL, BLDG 813	LTM						
PBC Longhorn	PBC at Longhorn	RD						
		RA(C)						
		RA(O)						

LONGHORN ARMY AMMUNITION PLANT

Non-BRAC Excess
Military Munitions Response Program

MMRP Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 4/1

Installation Site Types with Future and/or Underway Phases

1 Explosive Ordnance Disposal Area
(LHAAP-003-R-01)
1 Pistol Range
(LHAAP-004-R-01)
1 Unexploded Munitions/Ordnance
(LHAAP-001-R-01)

Most Widespread Contaminants of Concern

Explosives

Media of Concern

Groundwater, Soil

Completed Remedial Actions (Interim Remedial Actions / Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY	Cost
LHAAP-001-R-01	SOUTH TEST AREA / BOMB TEST AREA	IRA	UXO CLEARANCE	2009	TBD
LHAAP-001-R-01	SOUTH TEST AREA / BOMB TEST AREA	IRA	INSTITUTIONAL CONTROLS	2009	TBD
LHAAP-004-R-01	PISTOL RANGE	IRA	WASTE REMOVAL - SOILS	2010	TBD

Duration of MMRP

Year of MMRP Inception: 200202

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 201512/201512

Date of MMRP completion including Long Term Management (LTM): 204409

MMRP Contamination Assessment

Contamination Assessment Overview

In May 2003 the Phase 3 Army range inventory was completed at LHAAP. The inventory identified three sites as eligible for the Military Munitions Response Program (MMRP). The Phase 3 inventory serves as the preliminary assessment (PA) under CERCLA. In June 2005 an SI was completed. An EE/CA was finalized on the three sites in October 2007. The EE/CA indicated that no Department of Defense (DoD) action was required for LHAAP-002-R-01. An interim removal action was funded for the two other sites and was completed in 2009. In March 2008 an explosives safety submission (ESS) was finalized for the three sites. The final MC summary report was completed in 2011 for LHAAP-001-R-01 and LHAAP-003-R-01. In 2012 the Pistol Range (LHAAP-004-R-01) was added to the MMRP. A soil removal action was completed at LHAAP-004-R-01 and an NFA ROD was signed in September 2010.

Cleanup Exit Strategy

Limited groundwater monitoring for perchlorate and five-year reviews are planned for LHAAP-001-R-01 and LHAAP-003-R-01. Five-year reviews are planned for LHAAP-004-R-01. The five-year reviews will ensure that the site is inspected, LUCs are still in place and that any new data regarding the condition of the site is reviewed.

MMRP Previous Studies

	Title	Author	Date
2001			
	U.S. Army Active/Inactive Range Inventory, Longhorn AAP	Army Materiel Command	AUG-2001
2002			
	CTT Range Inventory		JAN-2002
2003			
	Phase 3 Army Range Inventory at Longhorn Army Ammunition Plant	e2M	MAY-2003
2005			
	Final Site Inspection Report, Military Munitions Response Program Site Inspection, Munitions Response Sites	e2M	JUN-2005
2006			
	Final Work Plan Engineering Evaluation/Cost Analysis at the Longhorn Army Ammunition Plant	CAPE	MAR-2006
	Draft Operational Range Inventory Sustainment (ORIS) for Longhorn AAP	US Army	NOV-2006
2007			
	Final Engineering Evaluation/Cost Analysis at the Longhorn Army Ammunition Plant	CAPE	OCT-2007
2008			
	Final Explosives Safety Submission - Munitions and Explosives of Concern Removal Action	USACE, Huntsville	FEB-2008
	Final Work Plan for MEC Removal Action at Former LHAAP LHAAP-001-R(Site 27) and LHAAP-003-R(Site 54)	EOD Technology, Inc.	JUL-2008
2009			
	Final EE/CA Former Pistol Range	Shaw Environmental, Inc.	FEB-2009
	Final Site-specific Final Report for MEC Removal Action, LHAAP-001-R(Site 27) and LHAAP-003-R(Site 54)	EOD Technology, Inc.	SEP-2009
2010			
	Final Completion Report Non-Time Critical Removal Action at the Former Pistol Range	Shaw Environmental, Inc.	JAN-2010
	Final Proposed Plan for the Former Pistol Range	Shaw Environmental, Inc.	JAN-2010
	Final ROD, Former Pistol Range	Shaw Environmental, Inc.	SEP-2010
2011			
	Final Proposed Plan for South Test Area/Bomb Test Area, LHAAP-001-R and Ground Signal Test Area, LHAAP-003-R	Shaw Environmental Inc.	JUN-2011

LONGHORN ARMY AMMUNITION PLANT

Non-BRAC Excess

Military Munitions Response Program

Site Descriptions

Site ID: LHAAP-001-R-01
Site Name: SOUTH TEST AREA / BOMB TEST AREA

STATUS

Parcel: South Test/Bomb (FWS) (72 acres)

Regulatory Driver: CERCLA

MRSPP Score: 04

Contaminants of Concern: Explosives

Media of Concern: Groundwater, Soil

Phases	Start	End
PA	200202	200305
SI	200402	200506
RI/FS	200503	201512
IRA	200710	200904
LTM	201512	204409

RIP Date: N/A

RC Date: 201512

SITE DESCRIPTION

This site of approximately 79 acres is also known as environmental site LHAAP-027 and is located southeast of Avenue P and the magazine area, at the end of 70th street, near the southern boundary of LHAAP. The site was constructed in 1954 and used by Universal Match Corporation to test photoflash bombs that were produced at the facility until about 1956. The bombs were tested by exploding them in the air over an elevated, semi-elliptical earthen test pad. Bombs awaiting testing were apparently stored in three earth-covered concrete bunkers. The bombs tested were 150-pound M120/M120A photoflash bombs, filled with photoflash powder and containing a black powder booster charge for bursting the bomb with a timed nose fuse.

The location of the site, for this purpose, was not ideally suited to the task, as fragments from this testing landed beyond the installation boundary. By June 1954, static testing of photoflash bombs had been discontinued because of the possibility of damage and injuries beyond the installation boundary. During the late-1950s, illuminating signal devices were also demilitarized within pits at this site. During the early-1960s, leaking production items were demilitarized in the area. The May 1997 final RI report for Group I sites indicates approximately 52,000 one-half and one-pound photoflash cartridges were demilitarized at the site in the early-1980s.

In 1982, investigations included installation and sampling of two wells and three shallow soil samples. Explosives, metals, chloride and sulfate were detected above background levels in the soil samples. In January 1998, an NFA ROD was signed by the USEPA, based upon the site-specific risk analysis for human and ecological exposure to the contaminants of potential concern for the site.

In 2004, the Explosive Ordnance Disposal (EOD) unit at Fort Polk blew in place (BIP) one 155 mm white phosphorous (WP) round. The identification of this round as a live 155 mm WP round is suspect. Plexus, in the 2005 environmental baseline survey (EBS) (page 46), states that "confirmatory sampling (CS) WP operations at LHAAP were assembly and packout operations only; no loading of these materials was conducted at the site. The WP rounds were stored and worked in the east line area of Plant 2 [US Army Toxic and Hazardous Materials Agency (USATHAMA), 1980]." Testing of the payload at LHAAP would not be part of the mission, since it was not manufactured at Longhorn. Others indicate that it was a 105 or 81 mm smoke round.

A reported demolition site was identified on the northwest perimeter of this site. This was added to the investigation. In FY2008 an EE/CA report was completed, approved and signed. In October 2007 the report was finalized. An IRA has been funded with the final ESS completed in March 2008. The removal action was completed in 2009. The ROD is delayed until dispute is resolved with EPA. The ROD will include limited groundwater monitoring for perchlorate and LUCs of restrictions against digging and residential use and sign maintenance. The costs for the ROD and RD are captured under the PBA. Five-year reviews are required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

Site ID: LHAAP-001-R-01
Site Name: SOUTH TEST AREA / BOMB TEST AREA

CLEANUP/EXIT STRATEGY

Five-year reviews are planned for this site. These five-year reviews will ensure that the site is inspected and that any new data regarding the condition of the site is reviewed. The LUCs are in place and will be formally enforced upon ROD signature.

Site ID: LHAAP-003-R-01
Site Name: GROUND SIGNAL TEST AREA

STATUS

Parcel: Ground Signal Test (FWS) (80 acres)

Regulatory Driver: CERCLA
MRSPP Score: 04

Contaminants of Concern: Explosives

Media of Concern: Groundwater, Soil

Phases	Start	End
PA	200202	200305
SI	200402	200506
RI/FS	200503	201512
IRA	200710	200904
LTM	201512	204409

RIP Date: N/A

RC Date: 201512

SITE DESCRIPTION

This site, also known as environmental site LHAAP-054, encompasses approximately 80 acres and is located in the southeastern portion of LHAAP. Starting in April 1963 the site was used intermittently for aerial and on-ground testing and destruction of a variety of devices, including red phosphorus smoke wedges, infrared flares, illuminating 60 and 81 mm mortar shells, illuminating 40 to 155 mm cartridges, button bombs, and various types of explosive simulators. The site was also used intermittently over a 20-year period for testing and burnout of rocket motors from Nike-Hercules, Pershing, and Sergeant missiles. Around 1970, one of the Sergeant rocket motors exploded in an excavated pit near the center of the site. Debris was reportedly placed in the resulting crater and backfilled. From late-1988 through 1991, the site was also used for burnout of rocket motors in Pershing missiles destroyed in accordance with the INF Treaty between the United States (US) and the former Soviet Union. In January 1998 an NFA ROD for hazardous, toxic and radioactive waste (HTRW) under CERCLA was signed. The site is currently undeveloped.

In December 2004, the EOD unit at Fort Polk BIP 105 mm and 81 mm rounds. In FY2008 an EE/CA report was completed, approved and signed. In October 2007 the report was finalized. An IRA has been funded with the final ESS completed in March 2008. The removal action was completed in 2009. The ROD is delayed until dispute is resolved with EPA. The ROD will include limited groundwater monitoring for perchlorate LUCs of restrictions against digging and residential use and sign maintenance. The costs for the ROD and RD are captured under the PBA. Five-year reviews are required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

Five-year reviews are planned for this site. These five-year reviews will ensure that the site is inspected and that any new data regarding the condition of the site is reviewed. The LUCs are in place and will be formally enforced upon ROD signature.

Site ID: LHAAP-004-R-01
Site Name: PISTOL RANGE

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

MRSPP Score: No longer required

Phases	Start	End
PA	200809	200902
RI/FS	201005	201008
IRA	200912	201001
LTM	201201	204409

RIP Date: N/A

RC Date: 201008

SITE DESCRIPTION

The former pistol range was known to have been used by LHAAP security personnel for small arms target qualification and recertification. The pistol range was established in the 1950s and used intermittently through 2004. Site investigation results identified areas where the surface and near surface soil was contaminated with lead at concentrations that exceeded the TCEQ soil MSCC for industrial use. A non-time critical removal action was completed. An NFA ROD was finalized in August 2010. A notification (not a remedy or LUC) has been filed in Harrison County, TX stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. A five-year review report in the form of a letter stating the use of the site remains non-residential is required. The costs for the installation-wide Five-year reviews are captured under LHAAP-058.

CLEANUP/EXIT STRATEGY

The LTM in the form of five-year reviews is required.

MMRP Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
LHAAP-002-R-01	STATIC TEST AREA	200811	A no action decision document signed in 2008.

MMRP Schedule

Date of MMRP Inception 200202

Past Phase Completion Milestones

2003	
PA	(LHAAP-001-R-01 - SOUTH TEST AREA / BOMB TEST AREA, LHAAP-002-R-01 - STATIC TEST AREA, LHAAP-003-R-01 - GROUND SIGNAL TEST AREA)
2005	
SI	(LHAAP-001-R-01 - SOUTH TEST AREA / BOMB TEST AREA, LHAAP-002-R-01 - STATIC TEST AREA, LHAAP-003-R-01 - GROUND SIGNAL TEST AREA)
2008	
RI/FS	(LHAAP-002-R-01 - STATIC TEST AREA)
2009	
PA	(LHAAP-004-R-01 - PISTOL RANGE)
IRA	(LHAAP-001-R-01 - SOUTH TEST AREA / BOMB TEST AREA, LHAAP-003-R-01 - GROUND SIGNAL TEST AREA)
2010	
IRA	(LHAAP-004-R-01 - PISTOL RANGE)
RI/FS	(LHAAP-004-R-01 - PISTOL RANGE)

Projected Phase Completion Milestones

See attached schedule

Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates

To Be Determined

Final RA(C) Completion Date:

Schedule for Next Five-Year Review: N/A

Estimated Completion Date of MMRP at Installation (including LTM phase): 204409

LONGHORN ARMY AMMUNITION PLANT MMRP Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY15	FY16	FY17	FY18	FY19	FY20+
LHAAP-001-R-0	SOUTH TEST AREA / BOMB TEST AREA	RI/FS						
		LTM						
SITE ID	**SITE NAME**	**PHASE**	**FY15**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20+**
LHAAP-003-R-0	GROUND SIGNAL TEST AREA	RI/FS						
		LTM						
SITE ID	**SITE NAME**	**PHASE**	**FY15**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20+**
LHAAP-004-R-0	PISTOL RANGE	LTM						

Community Involvement

Technical Review Committee (TRC): 199203

Community Involvement Plan (Date Published): 201311

Restoration Advisory Board (RAB): RAB established 2004

RAB Adjournment Date:

RAB Adjournment Reason:

Additional Community Involvement Information

While the Army leads the Installation Restoration Program (IRP) at LHAAP, a close working relationship with the regulatory community has been developed. The local public community has been involved in the past through the TRC process.

In April 1996 and in 1998 formation of a RAB was attempted; however, community involvement in the TRC process was determined to be sufficient for community needs. In September 2004, in response to public notices and private mailings, a group of citizens attended a RAB-interest meeting. Enthusiastic support resulted in the first RAB meeting in December 2004. It was well attended. The RAB has created its own symbol, finalized its charter, and elected a co-chair. The RAB meets quarterly and public meetings are held for each PP. These will continue as needed.

An update to the Community Involvement Plan has been finalized in 2013.

Administrative Record is located at

Longhorn Army Trailer
Groundwater Treatment Plant Compound
Highway 134 and Spur 449
Karnack, TX 75661

Information Repository is located at

Marshall Texas Library
300 South Alamo
Marshall, TX 756

Current Technical Assistance for Public Participation (TAPP): 199909

TAPP Title: Grnd/surf water migration

Current Technical Assistance for Public Participation (TAPP): 200103

TAPP Title: TAPP2

Potential TAPP: N/A

Subject:	**Final Minutes, Monthly Managers' Meeting, Longhorn Army Ammunition Plant (LHAAP)**
Location of Meeting:	**LHAAP Army Trailer and Teleconference – 866-203-6896, passcode 8603914725**
Date of Meeting:	**January 20, 2015 – 10:00 AM**

Attendees:

Army BRAC:	Rose Zeiler
EPA:	Rich Mayer, Janetta Coats, Kent Becher (USGS Liaison)
TCEQ:	April Palmie, Dale Vodak
USACE:	Aaron Williams
AECOM:	Mark Heaston, Gretchen McDonnell, Marwan Salameh
AEC:	
USFWS:	Paul Bruckwicki

Welcome **AECOM**

Action Items
AECOM

- Examine the level of effort required to develop a comprehensive geospatial database of all information for LHAAP (lab data, boring logs, well construction reports, etc.) that will make review easier. **Pending.**
- Develop revised 1,4-dioxane sampling memo and sampling plan for next event. **Pending.** Drafted, should go to Army in the next couple days.
- Provide results from groundwater split sampling event with EPA sampling, to include 1,4-dioxane results. **Complete.**
- Provide 1,4-dioxane split sampling results for GWTP effluent sample and analysis of whether this is an issue for surface application. **Army split sampling results provided on 12/15/14. Remainder replaced with a revised action.**
- Provide the 2007 GWTP sampling and analysis plan, including any approved subsequent modifications, to the participants. **Complete.**
- Develop with Army the path forward for submitting proposed changes to GWTP sampling requirements. (Contingent on evaluation of the current 2007 GWTP sampling plan and subsequent modifications identified.) **Action item replaced with a revised action.** Army should see proposed modifications before the next Monthly Managers' Meeting.
- AECOM will provide instructions for excluding the MMM group's hits from the counter (so only hits from the general public are counted) will be provided. **Complete.**
- On the Document and Issue Tracker, add the permanent comment under "Remarks": "Website updates will be completed at least quarterly (after RAB meetings)." **Complete.**
- Plan to take photos at the next RAB meeting and secure releases for posting of those photos on the LHAAP website. **Complete.**
- Surface Water/Perimeter Well Quarterly Update – AECOM will provide a date for providing the surface water/perimeter well quarterly update on this data, and plan to send this to the RAB members after review by FFA parties. **Pending.**
- Per Mr. Tzhone's request, modify November 2014 MMM minutes to indicate the EPA Administrator's decision on the dispute requires submittal of revised RODs. **Complete.**

Army

- Forward "data dump" to AECOM for evaluation for potential update/merge with current data. **Complete.**

EPA

- Mr. Tzhone will provide the contact/address information for EPA Division Director Carl Edlund to Dr. Zeiler. **Pending.**

TCEQ

AEC

- Review proposals for comprehensive geospatial database of all information for LHAAP (lab data, boring logs, well construction reports, etc.) that will make review easier. **Pending AECOM action.**

USFWS

Defense Environmental Restoration Program (DERP) PBR Update **AECOM**

- Upcoming document submissions to regulators (see Document and Issue Tracking table)

Item 1 (GWTP Quarterly Report) – TCEQ comments have been received on the Q2 and Q3 2014 quarterly reports.

Item 2 (LHAAP-18/24 Revised FS) – Draft Revised FS scheduled for submittal to agencies on 2/27/15.

Item 3 (LHAAP-37 RACR) – The Draft RACR was submitted for agency comment on 11/18/14. Agency comments have been received and RTCs are being prepared.

Item 4 (LHAAP-37 LUC) – LUC survey has been completed. Awaiting survey plat and description for filing with Harrison County.

Item 5 (LHAAP-46 RACR) – The Draft RACR was submitted for agency comment on 11/18/14. RTCs for agency comments are under Army review and should be transmitted to the agencies soon.

Item 6 (LHAAP-46 LUC) – LUC survey and notification has been recorded with Harrison County. A copy of the recorded documents was transmitted to Army for use in update of the Land Use Control Management Plan.

Item 7 (LHAAP-50 RACR) – Agencies will likely see this near the end of January. An additional appendix is being added to provide more robust information on the surface water sampling rationale for GPW-1 and GPW-1A, which is designed to monitor the effectiveness of the excavation remedy for perchlorate-impacted surface soils.

Item 8 (LHAAP-50 LUC) - Proposed LUC boundaries support package was transmitted for agency concurrence in November. TCEQ requested additional supporting documentation (additional well data and screened intervals of the wells). Review of the LUC boundary will be conducted upon agency receipt of the RACR to provide that information.

Item 9 (LHAAP-58 RACR) – EPA comments on the RTCs for the Draft RACR were received on 1/12/15. Army response is being prepared.

Item 10 (LHAAP-58 LUC) – LUC survey has been completed. Awaiting survey plat and description for filing with Harrison County.

Item 11 (LHAAP-67 RACR) – Both agencies have commented on the draft RACR. TCEQ comments have been resolved. EPA comments were responded to, with failure to achieve concurrence on some comments. Response is being prepared to address EPA's latest comment response and should be submitted to the agencies shortly.

Item 12 (LHAAP-67 LUC) – LUC survey and notification has been recorded with Harrison County. A copy of the recorded documents was transmitted to Army for use in update of the Land Use Control Management Plan.

Item 13 (LHAAP-46 RAO Report) – Projected for submittal to agencies in mid-February.

Item 14 (LHAAP-67 RAO Report) – Projected for submittal to agencies in mid-February.

Item 15 (LHAAP-50 RAO Report) – Projected for submittal to agencies near the end of March.

Item 16 (LHAAP-58 RAO Report) – Projected for submittal to agencies near the end of March.

Item 17 (Monthly Managers' Meeting) – Next MMM scheduled for 10AM, Thursday, February 19th at the LHAAP Army Trailer and by teleconference. Draft minutes for the December 2014 meeting were transmitted to the group this morning, and any comments will be provided by January 30th. Draft January minutes will be expedited for review well in advance of the February MMM.

Item 18 (LHAAP-29 Amended RI/FS) – Draft documents scheduled for agency submittal in mid-March. Bio-Traps are being retrieved today for submittal to the laboratory. Another 6 weeks is required for the laboratory analysis to be conducted and data to be received. Mr. Mayer and Ms. McDonnell discussed that both EPA's soil gas results and the intermediate zone groundwater plume extended southwest from 29WW16.

Item 19 (LHAAP-17 PDI WP, LHAAP-16 RD WP, LHAAP-03 RD/RAWP, LHAAP-04 RD, LHAAP-47 RD) – Placeholder for sites on hold due to dispute. Army has elevated the dispute to the Office of Management and Budget. Mr. Mayer stated that EPA and Army upper management may be trying to schedule another meeting to discuss the dispute, but no confirmation or details were available.

Item 20 (RAB/Website) – Next RAB meeting scheduled for Thursday, February 19th at 6PM. A permanent note has been added to the Document and Issue Tracking spreadsheet to reflect the website will be updated at least quarterly. RAB minutes for both August 2014 and November 2014 meetings will be approved during the February 2015 RAB meeting, as approval of the August 2014 minutes was deferred during the last meeting.

Item 21 (GWTP O&M) – Weather forecasts are being monitored and winter operations mode initiated (draining all lines and pumps after daily operations) to minimize damage to the system from freezing temperatures when needed. Additional insulation has been applied to the ICT wells. Significant maintenance has been performed on the ICTs to optimize extraction flow, including

replacing low-level probes. Mr. Salameh remarked that the ICTs are being very actively maintained to allow greater extraction rates.

Item 22 (Admin Record Update) – AR Update for the 3rd quarter is under Army review and should be submitted to agencies shortly.

Item 23 (CRP/CIP) – RAO fact sheets for LHAAP-37, LHAAP-50 and LHAAP-58 will be provided at the next RAB meeting. The group discussed that there is not sufficient additional data available to provide any significant update on LHAAP-29, so that will be deferred to the following RAB meeting.

Item 24 (1,4-Dioxane Sampling) – Discussed earlier in meeting under AECOM action items.

Defense Environmental Restoration Program (DERP) PBR Update (continued) AECOM

- Upcoming field work – Routine RAO sampling at LHAAP-58. Retrieval of LHAAP-29 bio-traps occurring today. February will be a more active month for MNA site RAO sampling.
- Dave Wacker Furlough – Mr. Heaston advised that Mr. Wacker has been furloughed by AECOM. Mr. Heaston will be acting as the project manager for the foreseeable future, assisted by the existing AECOM LHAAP technical team.
- Monthly data – Monthly data validation package covering analyses validated in the month of December 2014 was supplied as an attachment to the meeting agenda.
- Groundwater Treatment Plant – discussed earlier in meeting

MMRP Update Army

- Update – no update expected until summer when annual inspections will be conducted

Other Environmental Restoration Army

- Site 37 Bioplug Update
  - Ms. McDonnell advised that AECOM staff have observed subcontract drillers (ETTL) conducting bioplug abandonment work last week. Dr. Zeiler stated that Mr. Bruckwicki was aware of the work being conducted and has provided some feedback to Army.
  - Dr. Zeiler noted that Mr. Fabian, ATC is scheduled to inspect the decommissioning work on January 21st, and that will be followed by a final report that will be submitted to the group for review.
- Quarterly Reporting and Requirements
  - Quarterly Evaluation Reports – discussed earlier in the meeting.
  - Surface Water/Perimeter Well Quarterly Update – AECOM is finalizing the update and will provide for FFA parties' review prior to transmittal to RAB members (prior to the February 2015 RAB meeting)
  - Administrative Record Update – discussed earlier in the meeting.
  - Website Update (quarterly) – update will be performed after each RAB meeting. Also discussed earlier in the meeting.
- Annual Reporting
  - LUC Management Plan Update (due September 2014) – Dr. Zeiler is currently reviewing the draft updated LUC Management Plan, which includes new land use control areas at LHAAP-46 and LHAAP-67.

- CRP/CIP Revision (Biennial) and questionnaire October 2015 – Dr. Zeiler reminded the group that the next CRP/CIP action date is October 2015 when the biennial review questionnaires will be sent out, so Army likely needs to provide for EPA review the questions proposed for use in the questionnaire by the Q2 RAB. Expect more communication on this item in coming months.

Programmatic Issues **RMZ/RM/AP**

- Status of Dispute – Army disagrees with the EPA Administrator decision and has elevated the dispute to Office of Management and Budget. Mr. Mayer indicated earlier in the meeting that EPA and Army upper management may be working on a meeting to discuss the dispute.

  Prior to the EPA Administrator's decision, the Army had asked EPA and TCEQ to consider a path forward for implementation of undisputed remedy components. Because timing of such a path forward subsequent to Army's appeal to OMB after the EPA Administrator's decision, Mr. Tzhone identified that the appropriate personnel for that consideration would be at the senior management level and presented an option during the December MMM where Army BRAC's Tom Lederlewould submit to EPA Division Director Carl Edlund a formal request letter describing in detail the remedial activities Army proposes to conduct prior to signed RODs. As a follow-up, Mr. Mayer inquired whether Army would be taking that approach. Dr. Zeiler stated the option has been presented to Mr. Lederle and Army is evaluating, and an update will be provided when more information becomes available.

- Interim Path Forward –See additional discussion under Item 19 of the Document and Issue Tracker review above.

USFWS Update **RMZ/PB**

- Environmental Restoration Issues with Transfer Schedule Impact – no update
- USFWS Comments on Documents – no update

Schedule Next Managers' Meeting – 10AM, Thursday, February 19th at the LHAAP Army Trailer and by teleconference. Dr. Zeiler asked the agencies to advise if they have any particular request for site visits or other on-site review and offered core inspection if any is available. Some interest was indicated and Mr. Vodak expressed interest in examining the LHAAP-37 bioplug demonstration area after decommissioning.

New Action Items

AECOM

- Develop with Army the path forward for submitting proposed changes to GWTP sampling requirements.
  - Prepare an Army Draft comparison of the 2007 GWTP SAP revision to current operations prior to the next MMM.
  - Propose a revision to the 2007 GWTP SAP to reflect the desired sampling and analysis plan at this time.
- Evaluate GWTP discharge with respect to potential 1,4-dioxane content. (Replaces the pending portion of a previous action item.)

Adjourn

Attachments: LHAAP Data Validated December 2014
-GWTP Influent and Effluent
-LHAAP-29 RI/FS Addendum Work Plan Investigation Sampling
-LHAAP-50 Quarterly MNA Groundwater Monitoring Event
-LHAAP-58 Quarterly MNA Groundwater Monitoring Event
-Quarterly Perimeter Well Sampling

ACRONYM LIST

AEC	**United States Army Environmental Command**
AECOM	**AECOM Technology Services, Inc.**
AP	**April Palmie**
AR	**Administrative Record**
ATC	**Aberdeen Test Center**
BRAC	**Base Realignment and Closure**
CRP/CIP	**Community Relations Plan/Community Involvement Plan**
DERP	**Defense Environmental Restoration Program**
EPA	**United States Environmental Protection Agency**
FFA	**Federal Facility Agreement**
FS	**Feasibility Study**
GWTP	**Ground Water Treatment Plant**
ICT	**Interceptor-Collector Trench**
LHAAP	**Longhorn Army Ammunition Plant**
LUC	**Land Use Control**
MMM	**Monthly Managers' Meeting**
MMRP	**Military Munitions Response Program**
MNA	**Monitored Natural Attenuation**
O&M	**Operation and Maintenance**
OMB	**Office of Management and Budget**
PB	**Paul Bruckwicki**
PBR	**Performance-Based Remediation**
PDI	**Pre-Design Investigation**
RAB	**Restoration Advisory Board**
RACR	**Remedial Action Completion Report**
RAO	**Remedial Action Operation**
RAWP	**Remedial Action Work Plan**
RD	**Remedial Design**
RI/FS	**Remedial Investigation / Feasibility Study**
RM	**Rich Mayer**
RMZ	**Rose M. Zeiler**
ROD	**Record of Decision**
RTC	**Response to Comments**
SAP	**Sampling and Analysis Plan**
TCEQ	**Texas Commission on Environmental Quality**
USACE	**United States Army Corps of Engineers**
USFWS	**United States Fish and Wildlife Service**
USGS	**United States Geological Service**
WP	**Work Plan**

LHAAP Data Validated
December 2014

GWTP Influent and Effluent

Weekly, Biweekly, and Monthly - October through December 2014

- Ammonia (350.1)
- VOC (8260B)
- Ortho-Phosphate (365.2)
- Inorganic Anions (9056)
- Total Organic Carbon (415.1)
- Metals (6010C)
- Metals (6020A)
- Perchlorate (6850)
- Hexavalent Chromium (7196A)

Surface Water

Quarterly Sampling - November 2014

- Perchlorate (6850)

Site 18/24

PSI Work Plan Field Work - August and September 2014

- Perchlorate (6850)

Site 29

RI/FS Addendum Work Plan Field Work - September and October 2014

- VOC (8260B)

Site 50

Quarterly MNA Sampling - November 2014

- Alkalinity (310.2)
- Phosphorus (365.4)
- Total Organic Carbon (415.1)
- Metals (6010C)
- Metals (6020A)
- Perchlorate (6850)
- VOC (8260B)
- Inorganic Anions (9056)
- Dissolved Gases (RSK-175)
- Sulfide (SM4500-S)

Site 58

Quarterly MNA Sampling - October 2014

- Alkalinity (310.2)
- Phosphorus (365.4)
- Total Organic Carbon (415.1)
- Metals (6010C)
- Metals (6020A)
- Volatile Fatty Acids (830-MBA)
- Inorganic Anions (9056)
- Dissolved Gases (RSK-175)
- Ferrous Iron (SM3500FE)
- Sulfide (SM4500-S)
- VOC (8260B)

GWTP Influent Monthly Sampling - November/December 2014

Sample ID: / Sample Date:	Units	LH18/24-SP140-7224-GRAB 11/10/2014	LH18/24-SP140-7232-GRAB 12/8/2014
Location Description:		GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly.	GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly.
Ammonia (350.1)			
AMMONIA AS N	mg/L	N/A	N/A
Ortho-Phosphate (365.2)			
ORTHO-PHOSPHATE	mg/L	N/A	N/A
Total Organic Carbon (415.1)			
TOTAL ORGANIC CARBON (TOC)	mg/L	N/A	N/A
Metals (6010C)			
ALUMINUM	mg/L	N/A	N/A
IRON	mg/L	N/A	N/A
SELENIUM	mg/L	N/A	N/A
Metals (6020A)			
ANTIMONY	mg/L	N/A	N/A
ARSENIC	mg/L	N/A	N/A
BARIUM	mg/L	N/A	N/A
CADMIUM	mg/L	N/A	N/A
CHROMIUM	mg/L	N/A	N/A
COBALT	mg/L	N/A	N/A
LEAD	mg/L	N/A	N/A
MANGANESE	mg/L	N/A	N/A
NICKEL	mg/L	N/A	N/A
SILVER	mg/L	N/A	N/A
THALLIUM	mg/L	N/A	N/A
VANADIUM	mg/L	N/A	N/A
ZINC	mg/L	N/A	N/A
Perchlorate (6850)			
PERCHLORATE	ug/L	14000	18400
Hexavalent Chromium (7196A)			
HEXAVALENT CHROMIUM	mg/L	N/A	N/A
Volatile Organic Compounds (8260B)			
1,1,1,2-TETRACHLOROETHANE	ug/L	<25 U	<25 U
1,1,1-TRICHLOROETHANE	ug/L	<25 U	<25 U
1,1,2,2-TETRACHLOROETHANE	ug/L	<20 U	<20 U
1,1,2-TRICHLOROETHANE	ug/L	<25 U	<25 U
1,1-DICHLOROETHANE	ug/L	<12.5 U	14.1 J
1,1-DICHLOROETHENE	ug/L	77.7 J	111
1,1-DICHLOROPROPENE	ug/L	<25 U	<25 U
1,2,3-TRICHLOROBENZENE	ug/L	<15 U	<15 U

GWTP Influent Monthly Sampling - November/December 2014

Sample ID: / Sample Date:	Units	LH18/24-SP140-7224-GRAB 11/10/2014	LH18/24-SP140-7232-GRAB 12/8/2014
1,2,3-TRICHLOROPROPANE	ug/L	<50 U	<50 U
1,2,4-TRICHLOROBENZENE	ug/L	<20 U	<20 U
1,2,4-TRIMETHYLBENZENE	ug/L	<25 U	<25 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	<100 U	<100 U
1,2-DIBROMOETHANE	ug/L	<25 U	<25 U
1,2-DICHLOROBENZENE	ug/L	<12.5 U	<12.5 U
1,2-DICHLOROETHANE	ug/L	55.4	72.3
1,2-DICHLOROPROPANE	ug/L	<20 U	<20 U
1,3,5-TRIMETHYLBENZENE	ug/L	<25 U	<25 U
1,3-DICHLOROBENZENE	ug/L	<25 U	<25 U
1,3-DICHLOROPROPANE	ug/L	<20 U	<20 U
1,4-DICHLOROBENZENE	ug/L	<12.5 U	<12.5 U
2,2-DICHLOROPROPANE	ug/L	<25 U	<25 U
2-BUTANONE	ug/L	<250 U	<250 U
2-CHLOROTOLUENE	ug/L	<12.5 U	<12.5 U
2-HEXANONE	ug/L	<250 U	<250 U
4-CHLOROTOLUENE	ug/L	<25 U	<25 U
4-METHYL-2-PENTANONE	ug/L	<250 U	<250 U
ACETONE	ug/L	<250 U	<250 U
BENZENE	ug/L	<12.5 U	<12.5 U
BROMOBENZENE	ug/L	<12.5 U	<12.5 U
BROMOCHLOROMETHANE	ug/L	<20 U	<20 U
BROMODICHLOROMETHANE	ug/L	<25 U	<25 U
BROMOFORM	ug/L	<50 UJ	<50 U
BROMOMETHANE	ug/L	<50 U	<50 U
CARBON DISULFIDE	ug/L	<50 U	<50 U
CARBON TETRACHLORIDE	ug/L	<25 U	<25 U
CHLOROBENZENE	ug/L	<12.5 U	<12.5 U
CHLOROETHANE	ug/L	<50 U	<50 U
CHLOROFORM	ug/L	17 J	22.6 J
CHLOROMETHANE	ug/L	<50 U	<50 U
CIS-1,2-DICHLOROETHENE	ug/L	5590	5090
CIS-1,3-DICHLOROPROPENE	ug/L	<25 U	<25 U
DIBROMOCHLOROMETHANE	ug/L	<25 U	<25 U
DIBROMOMETHANE	ug/L	<25 U	<25 U
DICHLORODIFLUOROMETHANE	ug/L	<25 U	<25 U
ETHYLBENZENE	ug/L	<25 U	<25 U
HEXACHLOROBUTADIENE	ug/L	<25 U	<25 U
ISOPROPYLBENZENE	ug/L	<25 U	<25 U
M,P-XYLENE	ug/L	<50 U	<50 U
METHYLENE CHLORIDE	ug/L	392	1090
NAPHTHALENE	ug/L	<20 U	38 J
N-BUTYLBENZENE	ug/L	<25 U	<25 U
N-PROPYLBENZENE	ug/L	<12.5 U	<12.5 U
O-XYLENE	ug/L	<25 U	<25 U
P-ISOPROPYLTOLUENE	ug/L	<25 U	<25 U
SEC-BUTYLBENZENE	ug/L	<25 U	<25 U
STYRENE	ug/L	<12.5 U	<12.5 U
TERT-BUTYLBENZENE	ug/L	<25 U	<25 U
TETRACHLOROETHENE	ug/L	26.4 J	49.4 J
TOLUENE	ug/L	<25 U	<25 U

GWTP Influent Monthly Sampling - November/December 2014

Sample ID: Sample Date:	Units	LH18/24-SP140-7224-GRAB 11/10/2014	LH18/24-SP140-7232-GRAB 12/8/2014
TRANS-1,2-DICHLOROETHENE	ug/L	12.8 J	19.6 J
TRANS-1,3-DICHLOROPROPENE	ug/L	<50 U	<50 U
TRICHLOROETHENE	ug/L	10100	11100
TRICHLOROFLUOROMETHANE	ug/L	<25 U	<25 U
VINYL CHLORIDE	ug/L	64.4	95.1
Anions (9056)			
CHLORIDE	mg/L	N/A	N/A
SULFATE	mg/L	N/A	N/A

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

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

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

GWTP Effluent Weekly Sampling - October/November 2014

Location ID: Sample Date:	Units	Daily Maximum Conc	LH18/24-SP650-6219-COMP 10/20/2014	LH18/24-SP650-6219-GRAB 10/20/2014	LH18/24-SP650-6220-GRAB 10/20/2014	LH18/24-SP650-6221-GRAB 10/27/2014	LH18/24-SP650-6222-COMP 11/3/2014	LH18/24-SP650-6222-GRAB 11/3/2014	LH18/24-SP650-6223-GRAB 11/3/2014	LH18/24-SP650-6224-GRAB 11/10/2014	LH18/24-SP650-6225-GRAB 11/10/2014	LH18/24-SP650-6227-COMP 11/17/2014	LH18/24-SP650-6227-GRAB 11/17/2014
Location Description:			GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Quarterly	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Monthly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.
Ammonia (350.1)													
AMMONIA AS N	mg/L		N/A	N/A	4.58	5.99	N/A	N/A	4.62	N/A	7.36	N/A	N/A
Ortho-Phosphate (365.2)													
ORTHO-PHOSPHATE	mg/L		N/A	N/A	0.679	1.07	N/A	N/A	0.903	N/A	0.717	N/A	N/A
Total Organic Carbon (415.1)													
TOTAL ORGANIC CARBON (TOC)	mg/L		N/A	N/A	109	43.6	N/A	N/A	62.7	N/A	64.3	N/A	N/A
Metals (6010C)													
ALUMINUM	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.1 U	N/A	N/A	N/A
IRON	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0744 J	N/A	N/A	N/A
SELENIUM	mg/L	0.012	<0.01 U	<0.01 U	N/A	N/A	<0.01 U	<0.01 U	N/A	<0.01 U	N/A	<0.01 U	<0.01 U
Metals (6020A)													
ANTIMONY	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001 U	N/A	N/A	N/A
ARSENIC	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00305	N/A	N/A	N/A
BARIUM	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.218	N/A	N/A	N/A
CADMIUM	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.0006 U	N/A	N/A	N/A
CHROMIUM	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0026 J	N/A	N/A	N/A
COBALT	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000789 J	N/A	N/A	N/A
LEAD	mg/L	0.0046	<0.001 U	<0.001 U	N/A	N/A	<0.001 U	<0.001 U	N/A	<0.001 U	N/A	<0.001 U	<0.001 U
MANGANESE	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0865	N/A	N/A	N/A
NICKEL	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00274 J	N/A	N/A	N/A
SILVER	mg/L	0.003	<0.001 U	<0.001 U	N/A	N/A	<0.001 U	<0.001 U	N/A	<0.001 U	N/A	<0.001 U	<0.001 U
THALLIUM	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.0002 U	N/A	N/A	N/A
VANADIUM	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001 U	N/A	N/A	N/A
ZINC	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0183 J	N/A	N/A	N/A
Perchlorate (6850)													
PERCHLORATE	ug/L	13	<0.2 U	<0.2 U	<0.2 U	<0.2 U	3.43	2.12	<0.2 U	N/A	0.182 J	0.389 J	<0.2 U
Hexavalent Chromium (7196A)													
HEXAVALENT CHROMIUM	mg/L	0.124	<0.01 U	<0.01 U	N/A	N/A	<0.01 UJ	<0.01 UJ	N/A	N/A	N/A	<0.01 UJ	<0.01 UJ
Volatile Organic Compounds (8260B)													
1,1,1,2-TETRACHLOROETHANE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
1,1,1-TRICHLOROETHANE	ug/L	7230	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L		N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A	N/A	N/A	N/A	<0.4 U

GWTP Effluent Weekly Sampling - October/November 2014

Location ID: Sample Date:	Units	Daily Maximum Conc	LH18/24-SP650-6219-COMP 10/20/2014	LH18/24-SP650-6219-GRAB 10/20/2014	LH18/24-SP650-6220-GRAB 10/20/2014	LH18/24-SP650-6221-GRAB 10/27/2014	LH18/24-SP650-6222-COMP 11/3/2014	LH18/24-SP650-6222-GRAB 11/3/2014	LH18/24-SP650-6223-GRAB 11/3/2014	LH18/24-SP650-6224-GRAB 11/10/2014	LH18/24-SP650-6225-GRAB 11/10/2014	LH18/24-SP650-6227-COMP 11/17/2014	LH18/24-SP650-6227-GRAB 11/17/2014
Location Description:			GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Quarterly	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Monthly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.
1,1,2-TRICHLOROETHANE	ug/L	216.9	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
1,1-DICHLOROETHANE	ug/L	14032	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A	N/A	<0.25 U
1,1-DICHLOROETHENE	ug/L	253	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A	N/A	N/A	<1 U
1,1-DICHLOROPROPENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
1,2,3-TRICHLOROBENZENE	ug/L		N/A	<0.3 U	N/A	N/A	N/A	<0.3 U	N/A	N/A	N/A	N/A	<0.3 U
1,2,3-TRICHLOROPROPANE	ug/L		N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A	N/A	N/A	<1 U
1,2,4-TRICHLOROBENZENE	ug/L		N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A	N/A	N/A	N/A	<0.4 U
1,2,4-TRIMETHYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L		N/A	<2 U	N/A	N/A	N/A	<2 U	N/A	N/A	N/A	N/A	<2 U
1,2-DIBROMOETHANE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
1,2-DICHLOROBENZENE	ug/L		N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A	N/A	<0.25 U
1,2-DICHLOROETHANE	ug/L	181	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
1,2-DICHLOROPROPANE	ug/L	5	N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A	N/A	N/A	N/A	<0.4 U
1,3,5-TRIMETHYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
1,3-DICHLOROBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
1,3-DICHLOROPROPANE	ug/L		N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A	N/A	N/A	N/A	<0.4 U
1,4-DICHLOROBENZENE	ug/L		N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A	N/A	<0.25 U
2,2-DICHLOROPROPANE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
2-BUTANONE	ug/L		N/A	<5 U	N/A	N/A	N/A	<5 U	N/A	N/A	N/A	N/A	<5 U
2-CHLOROTOLUENE	ug/L		N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A	N/A	<0.25 U
2-HEXANONE	ug/L		N/A	<5 UJ	N/A	N/A	N/A	<5 UJ	N/A	N/A	N/A	N/A	<5 U
4-CHLOROTOLUENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
4-METHYL-2-PENTANONE	ug/L		N/A	<5 U	N/A	N/A	N/A	<5 U	N/A	N/A	N/A	N/A	<5 U
ACETONE	ug/L	2395	N/A	<5 U	N/A	N/A	N/A	<5 UJ	N/A	N/A	N/A	N/A	<5 U
BENZENE	ug/L	181	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A	N/A	<0.25 U
BROMOBENZENE	ug/L		N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A	N/A	<0.25 U
BROMOCHLOROMETHANE	ug/L		N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A	N/A	N/A	N/A	<0.4 U
BROMODICHLOROMETHANE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
BROMOFORM	ug/L		N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A	N/A	N/A	<1 U
BROMOMETHANE	ug/L		N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A	N/A	N/A	<1 U
CARBON DISULFIDE	ug/L		N/A	<1 U	N/A	N/A	N/A	24.9	N/A	N/A	N/A	N/A	<1 U
CARBON TETRACHLORIDE	ug/L	181	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
CHLOROBENZENE	ug/L	47180	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A	N/A	<0.25 U
CHLOROETHANE	ug/L		N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A	N/A	N/A	<1 U
CHLOROFORM	ug/L	3615	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A	N/A	<0.25 U
CHLOROMETHANE	ug/L		N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A	N/A	N/A	<1 U
CIS-1,2-DICHLOROETHENE	ug/L		N/A	1.46	N/A	N/A	N/A	1.42	N/A	N/A	N/A	N/A	1.16
CIS-1,3-DICHLOROPROPENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
DIBROMOCHLOROMETHANE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
DIBROMOMETHANE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U

GWTP Effluent Weekly Sampling - October/November 2014

Location ID: Sample Date:	Units	Daily Maximum Conc	LH18/24-SP650-6219-COMP 10/20/2014	LH18/24-SP650-6219-GRAB 10/20/2014	LH18/24-SP650-6220-GRAB 10/20/2014	LH18/24-SP650-6221-GRAB 10/27/2014	LH18/24-SP650-6222-COMP 11/3/2014	LH18/24-SP650-6222-GRAB 11/3/2014	LH18/24-SP650-6223-GRAB 11/3/2014	LH18/24-SP650-6224-GRAB 11/10/2014	LH18/24-SP650-6225-GRAB 11/10/2014	LH18/24-SP650-6227-COMP 11/17/2014	LH18/24-SP650-6227-GRAB 11/17/2014
Location Description:			GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Quarterly	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Monthly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.
DICHLORODIFLUOROMETHANE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
ETHYLBENZENE	ug/L	57025	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
HEXACHLOROBUTADIENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
ISOPROPYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
M,P-XYLENE	ug/L	83.6	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A	N/A	N/A	<1 U
METHYLENE CHLORIDE	ug/L	1699	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
NAPHTHALENE	ug/L		N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A	N/A	N/A	N/A	<0.4 U
N-BUTYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
N-PROPYLBENZENE	ug/L		N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A	N/A	<0.25 U
O-XYLENE	ug/L	83.6	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
P-ISOPROPYLTOLUENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
SEC-BUTYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
STYRENE	ug/L	5987	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A	N/A	<0.25 U
TERT-BUTYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
TETRACHLOROETHENE	ug/L	180.7	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
TOLUENE	ug/L	4189	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
TRANS-1,2-DICHLOROETHENE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
TRANS-1,3-DICHLOROPROPENE	ug/L		N/A	<1 U	N/A	N/A	N/A	<1 U	N/A	N/A	N/A	N/A	<1 U
TRICHLOROETHENE	ug/L	181	N/A	1.05	N/A	N/A	N/A	1.02	N/A	N/A	N/A	N/A	1.01
TRICHLOROFLUOROMETHANE	ug/L		N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	<0.5 U
VINYL CHLORIDE	ug/L	72	N/A	0.353 J	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A	N/A	0.381 J
Anions (9056)													
CHLORIDE	mg/L		617	616	N/A	N/A	N/A	N/A	N/A	N/A	N/A	627	668
SULFATE	mg/L		65.7	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	129	128

Blue Highlighting Indicates concentrations above Daily Maximum Concentration

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

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

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

GWTP Effluent Weekly Sampling - October/November 2014

Location ID: Sample Date:	Units	Daily Maximum Conc	LH18/24-SP650-6228-GRAB 11/17/2014	LH18/24-SP650-6229-GRAB 11/24/2014	LH18/24-SP650-6230-COMP 12/1/2014	LH18/24-SP650-6230-GRAB 12/1/2014	LH18/24-SP650-6231-GRAB 12/1/2014	LH18/24-SP650-6232-GRAB 12/8/2014	LH18/24-SP650-6233-GRAB 12/8/2014
Location Description:			GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Monthly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.
Ammonia (350.1)									
AMMONIA AS N	mg/L		4.85	3.85	N/A	N/A	5.44	N/A	5.66
Ortho-Phosphate (365.2)									
ORTHO-PHOSPHATE	mg/L		0.821	0.463	N/A	N/A	1.03	N/A	0.901
Total Organic Carbon (415.1)									
TOTAL ORGANIC CARBON (TOC)	mg/L		61.5	65.8	N/A	N/A	57.1	N/A	61.1
Metals (6010C)									
ALUMINUM	mg/L		N/A	N/A	N/A	N/A	N/A	0.0586 J	N/A
IRON	mg/L		N/A	N/A	N/A	N/A	N/A	0.335	N/A
SELENIUM	mg/L	0.012	N/A	N/A	<0.01 U	<0.01 U	N/A	<0.01 U	N/A
Metals (6020A)									
ANTIMONY	mg/L		N/A	N/A	N/A	N/A	N/A	<0.001 U	N/A
ARSENIC	mg/L		N/A	N/A	N/A	N/A	N/A	0.00403	N/A
BARIUM	mg/L		N/A	N/A	N/A	N/A	N/A	0.439	N/A
CADMIUM	mg/L		N/A	N/A	N/A	N/A	N/A	<0.0006 U	N/A
CHROMIUM	mg/L		N/A	N/A	N/A	N/A	N/A	0.00502	N/A
COBALT	mg/L		N/A	N/A	N/A	N/A	N/A	0.00248	N/A
LEAD	mg/L	0.0046	N/A	N/A	<0.001 U	<0.001 U	N/A	<0.001 UJ	N/A
MANGANESE	mg/L		N/A	N/A	N/A	N/A	N/A	0.207 J	N/A
NICKEL	mg/L		N/A	N/A	N/A	N/A	N/A	0.00623 J	N/A
SILVER	mg/L	0.003	N/A	N/A	<0.001 U	<0.001 U	N/A	<0.001 UJ	N/A
THALLIUM	mg/L		N/A	N/A	N/A	N/A	N/A	0.000153 J	N/A
VANADIUM	mg/L		N/A	N/A	N/A	N/A	N/A	0.00125 J	N/A
ZINC	mg/L		N/A	N/A	N/A	N/A	N/A	0.0264 J	N/A
Perchlorate (6850)									
PERCHLORATE	ug/L	13	<0.2 U	0.2	<0.2 U	<0.2 U	<0.2 U	N/A	0.688
Hexavalent Chromium (7196A)									
HEXAVALENT CHROMIUM	mg/L	0.124	N/A	N/A	<0.01 U	<0.01 U	N/A	N/A	N/A
Volatile Organic Compounds (8260B)									
1,1,1,2-TETRACHLOROETHANE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
1,1,1-TRICHLOROETHANE	ug/L	7230	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
1,1,2,2-TETRACHLOROETHANE	ug/L		N/A	N/A	N/A	<0.4 U	N/A	N/A	N/A

GWTP Effluent Weekly Sampling - October/November 2014

Location ID: Sample Date:	Units	Daily Maximum Conc	LH18/24-SP650-6228-GRAB 11/17/2014	LH18/24-SP650-6229-GRAB 11/24/2014	LH18/24-SP650-6230-COMP 12/1/2014	LH18/24-SP650-6230-GRAB 12/1/2014	LH18/24-SP650-6231-GRAB 12/1/2014	LH18/24-SP650-6232-GRAB 12/8/2014	LH18/24-SP650-6233-GRAB 12/8/2014
Location Description:			GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Monthly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.
1,1,2-TRICHLOROETHANE	ug/L	216.9	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
1,1-DICHLOROETHANE	ug/L	14032	N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A
1,1-DICHLOROETHENE	ug/L	253	N/A	N/A	N/A	<1 U	N/A	N/A	N/A
1,1-DICHLOROPROPENE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
1,2,3-TRICHLOROBENZENE	ug/L		N/A	N/A	N/A	<0.3 U	N/A	N/A	N/A
1,2,3-TRICHLOROPROPANE	ug/L		N/A	N/A	N/A	<1 U	N/A	N/A	N/A
1,2,4-TRICHLOROBENZENE	ug/L		N/A	N/A	N/A	<0.4 U	N/A	N/A	N/A
1,2,4-TRIMETHYLBENZENE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
1,2-DIBROMO-3-CHLOROPROPANE	ug/L		N/A	N/A	N/A	<2 U	N/A	N/A	N/A
1,2-DIBROMOETHANE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
1,2-DICHLOROBENZENE	ug/L		N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A
1,2-DICHLOROETHANE	ug/L	181	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
1,2-DICHLOROPROPANE	ug/L	5	N/A	N/A	N/A	<0.4 U	N/A	N/A	N/A
1,3,5-TRIMETHYLBENZENE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
1,3-DICHLOROBENZENE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
1,3-DICHLOROPROPANE	ug/L		N/A	N/A	N/A	<0.4 U	N/A	N/A	N/A
1,4-DICHLOROBENZENE	ug/L		N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A
2,2-DICHLOROPROPANE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
2-BUTANONE	ug/L		N/A	N/A	N/A	<5 U	N/A	N/A	N/A
2-CHLOROTOLUENE	ug/L		N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A
2-HEXANONE	ug/L		N/A	N/A	N/A	<5 U	N/A	N/A	N/A
4-CHLOROTOLUENE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
4-METHYL-2-PENTANONE	ug/L		N/A	N/A	N/A	<5 U	N/A	N/A	N/A
ACETONE	ug/L	2395	N/A	N/A	N/A	<5 U	N/A	N/A	N/A
BENZENE	ug/L	181	N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A
BROMOBENZENE	ug/L		N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A
BROMOCHLOROMETHANE	ug/L		N/A	N/A	N/A	<0.4 U	N/A	N/A	N/A
BROMODICHLOROMETHANE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
BROMOFORM	ug/L		N/A	N/A	N/A	<1 U	N/A	N/A	N/A
BROMOMETHANE	ug/L		N/A	N/A	N/A	<1 U	N/A	N/A	N/A
CARBON DISULFIDE	ug/L		N/A	N/A	N/A	3.28	N/A	N/A	N/A
CARBON TETRACHLORIDE	ug/L	181	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
CHLOROBENZENE	ug/L	47180	N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A
CHLOROETHANE	ug/L		N/A	N/A	N/A	<1 U	N/A	N/A	N/A
CHLOROFORM	ug/L	3615	N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A
CHLOROMETHANE	ug/L		N/A	N/A	N/A	<1 U	N/A	N/A	N/A
CIS-1,2-DICHLOROETHENE	ug/L		N/A	N/A	N/A	1.34	N/A	N/A	N/A
CIS-1,3-DICHLOROPROPENE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
DIBROMOCHLOROMETHANE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
DIBROMOMETHANE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A

GWTP Effluent Weekly Sampling - October/November 2014

Location ID: Sample Date:	Units	Daily Maximum Conc	LH18/24-SP650-6228-GRAB 11/17/2014	LH18/24-SP650-6229-GRAB 11/24/2014	LH18/24-SP650-6230-COMP 12/1/2014	LH18/24-SP650-6230-GRAB 12/1/2014	LH18/24-SP650-6231-GRAB 12/1/2014	LH18/24-SP650-6232-GRAB 12/8/2014	LH18/24-SP650-6233-GRAB 12/8/2014
Location Description:			GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Monthly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.
DICHLORODIFLUOROMETHANE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
ETHYLBENZENE	ug/L	57025	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
HEXACHLOROBUTADIENE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
ISOPROPYLBENZENE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
M,P-XYLENE	ug/L	83.6	N/A	N/A	N/A	<1 U	N/A	N/A	N/A
METHYLENE CHLORIDE	ug/L	1699	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
NAPHTHALENE	ug/L		N/A	N/A	N/A	<0.4 U	N/A	N/A	N/A
N-BUTYLBENZENE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
N-PROPYLBENZENE	ug/L		N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A
O-XYLENE	ug/L	83.6	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
P-ISOPROPYLTOLUENE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
SEC-BUTYLBENZENE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
STYRENE	ug/L	5987	N/A	N/A	N/A	<0.25 U	N/A	N/A	N/A
TERT-BUTYLBENZENE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
TETRACHLOROETHENE	ug/L	180.7	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
TOLUENE	ug/L	4189	N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
TRANS-1,2-DICHLOROETHENE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
TRANS-1,3-DICHLOROPROPENE	ug/L		N/A	N/A	N/A	<1 U	N/A	N/A	N/A
TRICHLOROETHENE	ug/L	181	N/A	N/A	N/A	1.12	N/A	N/A	N/A
TRICHLOROFLUOROMETHANE	ug/L		N/A	N/A	N/A	<0.5 U	N/A	N/A	N/A
VINYL CHLORIDE	ug/L	72	N/A	N/A	N/A	0.316 J	N/A	N/A	N/A
Anions (9056)									
CHLORIDE	mg/L		N/A	N/A	616	777	N/A	N/A	N/A
SULFATE	mg/L		N/A	N/A	95.1	108	N/A	N/A	N/A

Blue Highlighting Indicates concentrations above Daily Maximum Concentration

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

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

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

LHAAP Surface Water Quarterly Sampling - November 2014

Sample ID: Sample Date:	Units	MCL/ MSC	GPW1-112514 11/25/2014	GPW3-112514 11/25/2014	HBW10-112514 11/25/2014	HBW1-112514 11/25/2014	HBW7-112514 11/25/2014
Location Description:			Goose Prairie Creek - Grab sample, collected off a bridge on the north side of LHAAP-50 Sampled Quarterly if the creek contains water	Goose Prairie Creek – Grab sample, collected near a bridge inside of LHAAP-47 Sampled Quarterly if the creek contains water	Harrison Bayou - Grab sample, collected near the GWTP creek discharge Sampled Quarterly if the creek contains water	Harrison Bayou - Grab sample, south of LHAAP-16, downhill, and below the pump house Sampled Quarterly if the creek contains water	Harrison Bayou - Grab sample, at the backside of the Well field, down in the woods Sampled Quarterly if the creek contains water
Perchlorate (6850)							
PERCHLORATE	ug/L	72	0.244 J	0.276 J	<0.2 U	<0.2 U	<0.2 U

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

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

ug/L - micrograms per liter

LHAAP-18/24 PSI Work Plan Field Work - August and September 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	18CPTMW03SW (70)060914 9/6/2014	18CPTMW22SW (13)240814 8/24/2014	18CPTMW22SW (14)240814 8/24/2014	18CPTMW22SW (16)240814 8/24/2014	18CPTMW22SW (18)240814 8/24/2014	18CPTMW22SW (20)240814 8/24/2014	18CPTMW22SW (22)240814 8/24/2014	18CPTMW22SW (24)240814 8/24/2014 4	18CPTMW22SW (26_5)240814 8/24/2014	18CPTMW22SW (29)240814 8/24/2014	18CPTMW22SW (31_5)240814 8/24/2014
Location Description:			Site 18/24 - Central, inside the fence line, Shallow Wilcox at 70' bgs. Soil sampled during well installation.	Site 18/24 - S, inside the fence line, Shallow zone at 13' bgs. Soil sampled during well installation.	Site 18/24 - S, inside the fence line, Shallow zone at 14' bgs. Soil sampled during well installation.	Site 18/24 - S, inside the fence line, Shallow zone at 16' bgs. Soil sampled during well installation.	Site 18/24 - S, inside the fence line, Shallow zone at 18' bgs. Soil sampled during well installation.	Site 18/24 - S, inside the fence line, Shallow zone at 20' bgs. Soil sampled during well installation.	Site 18/24 - S, inside the fence line, Shallow zone at 22' bgs. Soil sampled during well installation.	Site 18/24 - S, inside the fence line, Shallow zone at 24' bgs. Soil sampled during well installation.	Site 18/24 - S, inside the fence line, Shallow zone at 26.5' bgs. Soil sampled during well installation.	Site 18/24 - S, inside the fence line, Shallow zone at 29' bgs. Soil sampled during well installation.	Site 18/24 - S, inside the fence line, Shallow zone at 31.5' bgs. Soil sampled during well installation.
Perchlorate (6850)													
PERCHLORATE	ug/kg	7200	396	253	32.3	5.21	609	1410	2960	10600	10200	6500	8660

Blue Highlighting Indicates concentrations above the MCL/MSC

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

ug/kg - micrograms per kilogram

LHAAP-29 RI/FS Addendum Work Plan Field Work Groundwater - September and October 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	29WW16-101414 10/14/2014	29WW16 231014 10/23/2014	29WW42-102014 10/20/2014	29WW43-102014 10/20/2014	29WW44-102014 10/20/2014	29CPT1875 190914 9/19/2014
Location Description:			Site 29- Central, inside site boundary.	Site 29 - Central, inside site boundary.	Site 29 - Central, W of 29WW16, inside site boundary.	Site 29 - Central, W of 29WW16, inside site boundary.	Site 29 - Central, W of 29WW16, inside site boundary.	Site 29 - 115' SW of 29WW16. Intermediate zone grab groundwater sample.
Volatile Organic Compounds (8260B)								
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,1,1-TRICHLOROETHANE	ug/L	200	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<20000 U	<10000 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U
1,1,2-TRICHLOROETHANE	ug/L	5	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,1-DICHLOROETHANE	ug/L	10000	<12500 U	4320 J	1140	114	23.1	<0.25 U
1,1-DICHLOROETHENE	ug/L	7	<50000 U	<25000 U	68.2	<1 U	1.69 J	<1 U
1,1-DICHLOROPROPENE	ug/L	2.9	<25000 U	<12500 U	13.3	<0.5 U	<0.5 U	<0.5 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<15000 U	<7500 U	<0.3 U	<0.3 U	<0.3 U	<0.3 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<50000 U	<25000 U	<1 U	<1 U	<1 U	<1 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<20000 U	<10000 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<100000 U	<50000 U	<2 U	<2 U	<2 U	<2 U
1,2-DIBROMOETHANE	ug/L	0.005	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,2-DICHLOROBENZENE	ug/L	600	<12500 U	<6260 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U
1,2-DICHLOROETHANE	ug/L	5	<25000 U	<12500 U	4.81	0.439 J	<0.5 U	<0.5 U
1,2-DICHLOROPROPANE	ug/L	5	<20000 U	<10000 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,3-DICHLOROBENZENE	ug/L	3100	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,3-DICHLOROPROPANE	ug/L	29	<20000 U	<10000 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U
1,4-DICHLOROBENZENE	ug/L	75	<12500 U	<6260 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U
2,2-DICHLOROPROPANE	ug/L	42	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
2-BUTANONE	ug/L	61000	<250000 U	<125000 UJ	4.73 J	<5 U	<5 U	<5 U
2-CHLOROTOLUENE	ug/L	2000	<12500 U	<6260 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U
2-HEXANONE	ug/L	6100	<250000 U	<125000 U	<5 U	<5 U	<5 U	<5 U
4-CHLOROTOLUENE	ug/L	2000	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
4-METHYL-2-PENTANONE	ug/L	8200	<250000 U	<125000 U	<5 U	<5 U	<5 U	<5 U
ACETONE	ug/L	92000	<250000 UJ	<125000 UJ	<5 U	<5 U	<5 U	6.47 J
BENZENE	ug/L	5	<12500 U	<6260 U	0.191 J	<0.25 U	<0.25 U	<0.25 U
BROMOBENZENE	ug/L	2000	<12500 U	<6260 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U
BROMOCHLOROMETHANE	ug/L	4100	<20000 U	6330 J	100	12.5	1.24	<0.4 U
BROMODICHLOROMETHANE	ug/L	4.6	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
BROMOFORM	ug/L	36	<50000 U	<25000 U	<1 U	<1 U	<1 U	<1 U
BROMOMETHANE	ug/L	140	<50000 U	<25000 U	0.584 J	<1 U	<1 U	<1 U
CARBON DISULFIDE	ug/L	10000	<50000 U	<25000 U	<1 U	<1 U	4.17	<1 U
CARBON TETRACHLORIDE	ug/L	5	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
CHLOROBENZENE	ug/L	100	<12500 U	<6260 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U
CHLOROETHANE	ug/L	41000	<50000 U	<25000 U	26.6	<1 U	<1 U	<1 U
CHLOROFORM	ug/L	1000	<12500 U	<6260 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U

LHAAP-29 RI/FS Addendum Work Plan Field Work Groundwater - September and October 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	29WW16-101414 10/14/2014	29WW16 231014 10/23/2014	29WW42-102014 10/20/2014	29WW43-102014 10/20/2014	29WW44-102014 10/20/2014	29CPT1875 190914 9/19/2014
Location Description:			Site 29- Central, inside site boundary.	Site 29 - Central, inside site boundary.	Site 29 - Central, W of 29WW16, inside site boundary.	Site 29 - Central, W of 29WW16, inside site boundary.	Site 29 - Central, W of 29WW16, inside site boundary.	Site 29 - 115' SW of 29WW16. Intermediate zone grab groundwater sample.
CHLOROMETHANE	ug/L	220	<50000 U	<25000 U	333	10.2	8.73	<1 U
CIS-1,2-DICHLOROETHENE	ug/L	70	<25000 U	<12500 U	319 J	10.2	11.1	<0.5 U
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
DIBROMOCHLOROMETHANE	ug/L	34	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
DIBROMOMETHANE	ug/L	380	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<25000 U	<12500 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U
ETHYLBENZENE	ug/L	700	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
HEXACHLOROBUTADIENE	ug/L	20	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
ISOPROPYLBENZENE	ug/L	1000	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
M,P-XYLENE	ug/L	10000	<50000 U	<25000 U	<1 U	<1 U	<1 U	<1 U
METHYLENE CHLORIDE	ug/L	5	8260000	6730000	1380000	279000	11500	<0.5 U
NAPHTHALENE	ug/L	2000	<20000 U	<10000 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U
N-BUTYLBENZENE	ug/L	4100	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
N-PROPYLBENZENE	ug/L	4100	<12500 U	<6260 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U
O-XYLENE	ug/L	10000	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
P-ISOPROPYLTOLUENE	ug/L	10000	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
SEC-BUTYLBENZENE	ug/L	4100	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
STYRENE	ug/L	100	<12500 U	<6260 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U
TERT-BUTYLBENZENE	ug/L	4100	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	ug/L	5	<25000 U	<12500 U	0.4 J	<0.5 U	<0.5 U	<0.5 U
TOLUENE	ug/L	1000	<25000 U	<12500 U	8.93	<0.5 U	0.282 J	<0.5 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	<25000 U	<12500 U	23.5	1.47	0.943 J	<0.5 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<50000 U	<25000 U	<1 U	<1 U	<1 U	<1 U
TRICHLOROETHENE	ug/L	5	28100 J	26100	4300	34.1	135	<0.5 U
TRICHLOROFLUOROMETHANE	ug/L	31000	<25000 U	<12500 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	ug/L	2	<25000 U	<12500 U	18	0.991 J	0.388 J	<0.5 U

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

LHAAP-50 Quarterly MNA Sampling - November 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	47WW38-111214 11/12/2014	50WW05-111114 11/11/2014	50WW06-110414 11/4/2014	50WW06FF-110414 11/4/2014	50WW07-110714 11/7/2014	50WW08-110614 11/6/2014	50WW08FF-110614 11/6/2014	50WW09-111214 11/12/2014	50WW10-111214 11/12/2014	50WW11-110514 11/5/2014	50WW11FF-110514 11/5/2014
Location Description:			Site 47 - N, upper shallow, outside site boundary. Sampled quarterly	Site 50 - NE, lower shallow, outside site boundary. Sampled quarterly	Site 50 - ENE, outside site boundary. Sampled quarterly	Site 50 - ENE, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, inside site boundary. Sampled quarterly	Site 50 - E, upper shallow, inside site boundary. Sampled quarterly	Site 50 - E, lower shallow, inside site boundary. Sampled quarterly	Site 50 - E, intermediate, inside site boundary. Sampled quarterly	Site 50 - ENE, upper shallow, outside site boundary. Sampled quarterly	Site 50 - ENE, upper shallow, outside site boundary. Sampled quarterly
Alkalinity (310.2)													
ALKALINITY, TOTAL	mg/L		N/A	N/A	329	N/A	N/A	415	N/A	N/A	N/A	372	N/A
Phosphorus (365.4)													
PHOSPHORUS	mg/L		N/A	N/A	<0.2 U	N/A	N/A	<0.2 U	N/A	N/A	N/A	0.19 J	N/A
Total Organic Carbon (415.1)													
TOTAL ORGANIC CARBON (TOC)	mg/L		N/A	N/A	3.14	N/A	N/A	1.17 J	N/A	N/A	N/A	6.14	N/A
Metals (6010C)													
IRON, DISSOLVED	mg/L		N/A	N/A	N/A	0.0573 J	N/A	N/A	<0.1 U	N/A	N/A	N/A	0.216
Metals (6020A)													
MANGANESE, DISSOLVED	mg/L	14	N/A	N/A	N/A	0.0387	N/A	N/A	0.0523	N/A	N/A	N/A	0.144
Perchlorate (6850)													
PERCHLORATE	ug/L	72	860	<0.2 U	1510	N/A	<0.2 U	56.3	N/A	0.593	<0.2 U	22300	N/A
Volatile Organic Compounds (8260B)													
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 UJ	<1 U	N/A	<0.4 U	<0.4 U	2	N/A
1,1,2-TRICHLOROETHANE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
1,1-DICHLOROETHANE	ug/L	10000	<0.25 U	0.31 J	<0.25 U	N/A	<0.25 U	0.988 J	N/A	<0.25 U	<0.25 U	5.52	N/A
1,1-DICHLOROETHENE	ug/L	7	<1 U	2.68	<1 U	N/A	<1 U	<2.5 U	N/A	<1 U	<1 U	27.9	N/A
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
1,2,3-TRICHLOROBENZENE	ug/L	310	<0.3 U	<0.3 U	<0.3 U	N/A	<0.3 U	<0.75 U	N/A	<0.3 U	<0.3 U	1.5	N/A
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<1 U	<1 U	<1 U	N/A	<1 U	<2.5 U	N/A	<1 U	<1 U	5	N/A
1,2,4-TRICHLOROBENZENE	ug/L	70	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	<1 U	N/A	<0.4 U	<0.4 U	2	N/A
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 U	<2 U	<2 U	N/A	<2 UJ	<5 U	N/A	<2 U	<2 U	10	N/A
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
1,2-DICHLOROBENZENE	ug/L	600	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.626 U	N/A	<0.25 U	<0.25 U	1.25	N/A
1,2-DICHLOROETHANE	ug/L	5	<0.5 U	2.97	<0.5 U	N/A	<0.5 U	2.12 J	N/A	<0.5 U	<0.5 U	24.3	N/A
1,2-DICHLOROPROPANE	ug/L	5	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	<1 U	N/A	<0.4 U	<0.4 U	2	N/A
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
1,3-DICHLOROBENZENE	ug/L	3100	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	<1 U	N/A	<0.4 U	<0.4 U	2	N/A
1,4-DICHLOROBENZENE	ug/L	75	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.626 U	N/A	<0.25 U	<0.25 U	1.25	N/A
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
2-BUTANONE	ug/L	61000	<5 U	<5 U	<5 U	N/A	<5 UJ	<12.5 U	N/A	<5 U	<5 U	25	N/A
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.626 U	N/A	<0.25 U	<0.25 U	1.25	N/A
2-HEXANONE	ug/L	6100	<5 U	<5 U	<5 U	N/A	<5 UJ	<12.5 U	N/A	<5 U	<5 U	25	N/A

LHAAP-50 Quarterly MNA Sampling - November 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	47WW38-111214 11/12/2014	50WW05-111114 11/11/2014	50WW06-110414 11/4/2014	50WW06FF-110414 11/4/2014	50WW07-110714 11/7/2014	50WW08-110614 11/6/2014	50WW08FF-110614 11/6/2014	50WW09-111214 11/12/2014	50WW10-111214 11/12/2014	50WW11-110514 11/5/2014	50WW11FF-110514 11/5/2014
Location Description:			Site 47 - N, upper shallow, outside site boundary. Sampled quarterly	Site 50 - NE, lower shallow, outside site boundary. Sampled quarterly	Site 50 - ENE, outside site boundary. Sampled quarterly	Site 50 - ENE, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, inside site boundary. Sampled quarterly	Site 50 - E, upper shallow, inside site boundary. Sampled quarterly	Site 50 - E, lower shallow, inside site boundary. Sampled quarterly	Site 50 - E, intermediate, inside site boundary. Sampled quarterly	Site 50 - ENE, upper shallow, outside site boundary. Sampled quarterly	Site 50 - ENE, upper shallow, outside site boundary. Sampled quarterly
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	<5 U	<5 U	N/A	<5 UJ	<12.5 U	N/A	<5 U	<5 U	25	N/A
ACETONE	ug/L	92000	<5 U	<5 U	<5 U	N/A	<5 UJ	<12.5 U	N/A	<5 U	<5 U	25	N/A
BENZENE	ug/L	5	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.626 U	N/A	<0.25 U	<0.25 U	1.25	N/A
BROMOBENZENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.626 U	N/A	<0.25 U	<0.25 U	1.25	N/A
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	<1 U	N/A	<0.4 U	<0.4 U	2	N/A
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
BROMOFORM	ug/L	36	<1 U	<1 U	<1 U	N/A	<1 U	<2.5 U	N/A	<1 U	<1 U	5	N/A
BROMOMETHANE	ug/L	140	<1 U	<1 U	<1 U	N/A	<1 U	<2.5 UJ	N/A	<1 U	<1 U	5	N/A
CARBON DISULFIDE	ug/L	10000	<1 U	<1 U	<1 U	N/A	<1 U	<2.5 U	N/A	<1 U	2.07	5	N/A
CARBON TETRACHLORIDE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
CHLOROBENZENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.626 U	N/A	<0.25 U	<0.25 U	1.25	N/A
CHLOROETHANE	ug/L	41000	<1 U	<1 U	<1 U	N/A	<1 U	<2.5 U	N/A	<1 U	<1 U	5	N/A
CHLOROFORM	ug/L	1000	<0.25 U	0.129 J	<0.25 U	N/A	<0.25 U	0.318 J	N/A	<0.25 U	<0.25 U	0.737 J	N/A
CHLOROMETHANE	ug/L	220	<1 U	<1 U	<1 U	N/A	<1 U	<2.5 U	N/A	<1 U	<1 U	<5 UJ	N/A
CIS-1,2-DICHLOROETHENE	ug/L	70	<0.5 U	15.7	1.61	N/A	<0.5 U	48.5	N/A	0.36 J	<0.5 U	70.8	N/A
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
DIBROMOMETHANE	ug/L	380	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
ETHYLBENZENE	ug/L	700	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
M,P-XYLENE	ug/L	10000	<1 U	<1 U	<1 U	N/A	<1 U	<2.5 U	N/A	<1 U	<1 U	5	N/A
METHYLENE CHLORIDE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
NAPHTHALENE	ug/L	2000	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 UJ	<1 U	N/A	<0.4 U	<0.4 U	2	N/A
N-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
N-PROPYLBENZENE	ug/L	4100	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.626 U	N/A	<0.25 U	<0.25 U	1.25	N/A
O-XYLENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
STYRENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.626 U	N/A	<0.25 U	<0.25 U	1.25	N/A
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
TETRACHLOROETHENE	ug/L	5	<0.5 U	1.6	<0.5 U	N/A	<0.5 U	1.9 J	N/A	<0.5 U	<0.5 U	5.03	N/A
TOLUENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
TRANS-1,2-DICHLOROETHENE	ug/L	100	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	1.71 J	N/A
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	<1 U	<1 U	N/A	<1 U	<2.5 U	N/A	<1 U	<1 U	5	N/A
TRICHLOROETHENE	ug/L	5	<0.5 U	329	36.1	N/A	<0.5 U	685	N/A	19.8	<0.5 U	3550	N/A
TRICHLOROFLUOROMETHANE	ug/L	31000	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	2.5	N/A
VINYL CHLORIDE	ug/L	2	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<1.25 U	N/A	<0.5 U	<0.5 U	3.53 J	N/A

LHAAP-50 Quarterly MNA Sampling - November 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	47WW38-111214 11/12/2014	50WW05-111114 11/11/2014	50WW06-110414 11/4/2014	50WW06FF-110414 11/4/2014	50WW07-110714 11/7/2014	50WW08-110614 11/6/2014	50WW08FF-110614 11/6/2014	50WW09-111214 11/12/2014	50WW10-111214 11/12/2014	50WW11-110514 11/5/2014	50WW11FF-110514 11/5/2014
Location Description:			Site 47 - N, upper shallow, outside site boundary. Sampled quarterly	Site 50 - NE, lower shallow, outside site boundary. Sampled quarterly	Site 50 - ENE, outside site boundary. Sampled quarterly	Site 50 - ENE, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, inside site boundary. Sampled quarterly	Site 50 - E, upper shallow, inside site boundary. Sampled quarterly	Site 50 - E, lower shallow, inside site boundary. Sampled quarterly	Site 50 - E, intermediate, inside site boundary. Sampled quarterly	Site 50 - ENE, upper shallow, outside site boundary. Sampled quarterly	Site 50 - ENE, upper shallow, outside site boundary. Sampled quarterly
Anions (9056)													
CHLORIDE	mg/L		N/A	N/A	162	N/A	N/A	364	N/A	N/A	N/A	354	N/A
NITRATE	mg/L	10	N/A	N/A	<0.4 U	N/A	N/A	<0.6 U	N/A	N/A	N/A	0.4	N/A
NITRITE	mg/L	1	N/A	N/A	<0.4 U	N/A	N/A	<0.6 U	N/A	N/A	N/A	0.4	N/A
SULFATE	mg/L		N/A	N/A	105	N/A	N/A	334	N/A	N/A	N/A	361	N/A
Dissolved Gases (RSK-175)													
CARBON DIOXIDE	ug/L		N/A	N/A	49300	N/A	N/A	61800	N/A	N/A	N/A	340000	N/A
ETHANE	ug/L		N/A	N/A	<2 U	N/A	N/A	<2 U	N/A	N/A	N/A	2	N/A
ETHENE	ug/L		N/A	N/A	<2 U	N/A	N/A	<2 U	N/A	N/A	N/A	2	N/A
METHANE	ug/L		N/A	N/A	<2 U	N/A	N/A	7.54	N/A	N/A	N/A	10.1	N/A
Sulfide (SM4500-S-(-2)-F-2000)													
SULFIDE	mg/L		N/A	N/A	<1.00 U	N/A	N/A	<1.00 U	N/A	N/A	N/A	<1.00 U	N/A

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

LHAAP-50 Quarterly MNA Sampling - November 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	50WW12-110414 11/4/2014	50WW12FF-110414 11/4/2014	50WW13-110514 11/5/2014	50WW13FF-110514 11/5/2014	50WW14-110514 11/5/2014	50WW14FF-110514 11/5/2014	50WW15-110714 11/7/2014	50WW16-111214 11/12/2014	50WW17-111114 11/11/2014	50WW18-110414 11/4/2014	50WW18FF-110414 11/4/2014
Location Description:			Site 50 - ENE, upper shallow, outside site boundary. Sampled quarterly	Site 50 - ENE, upper shallow, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary. Sampled quarterly	Site 50 - E, lower shallow, outside site boundary, along S. Crockett Ave. Sampled quarterly	Site 50 - E, lower shallow, outside site boundary, along S. Crockett Ave. Sampled quarterly	Site 50 - NNE, upper shallow, outside site boundary, along Goose Prairie Creek bridge. Sampled quarterly	Site 50 - NE, upper shallow, outside site boundary, along Goose Prairie Creek. Sampled quarterly	Site 50 - NE, fully-penetrating shallow, outside site boundary, near Goose Prairie Creek.. Sampled quarterly	Site 50 - NE, upper shallow, outside site boundary, along Goose Prairie Creek. Sampled quarterly	Site 50 - NE, upper shallow, outside site boundary, along Goose Prairie Creek. Sampled quarterly
Alkalinity (310.2)													
ALKALINITY, TOTAL	mg/L		379	N/A	388	N/A	266	N/A	N/A	N/A	N/A	355	N/A
Phosphorus (365.4)													
PHOSPHORUS	mg/L		0.119 J	N/A	<0.2 UJ	N/A	<0.2 U	N/A	N/A	N/A	N/A	0.128 J	N/A
Total Organic Carbon (415.1)													
TOTAL ORGANIC CARBON (TOC)	mg/L		6.45	N/A	11.1	N/A	3.06	N/A	N/A	N/A	N/A	2.37	N/A
Metals (6010C)													
IRON, DISSOLVED	mg/L		N/A	0.055 J	N/A	<0.1 U	N/A	7.39	N/A	N/A	N/A	N/A	0.296
Metals (6020A)													
MANGANESE, DISSOLVED	mg/L	14	N/A	0.0962	N/A	0.158	N/A	0.625	N/A	N/A	N/A	N/A	0.0767
Perchlorate (6850)													
PERCHLORATE	ug/L	72	14300	N/A	11700	N/A	5.37	N/A	<0.2 U	<0.2 U	<0.2 U	<0.2 U	N/A
Volatile Organic Compounds (8260B)													
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	N/A	<4 U	N/A	<0.4 U	N/A	<0.4 UJ	<0.4 U	<0.4 U	<0.4 U	N/A
1,1,2-TRICHLOROETHANE	ug/L	5	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
1,1-DICHLOROETHANE	ug/L	10000	<0.25 U	N/A	8.85 J	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A
1,1-DICHLOROETHENE	ug/L	7	<1 U	N/A	20.6	N/A	<1 U	N/A	<1 U	<1 U	<1 U	<1 U	N/A
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
1,2,3-TRICHLOROBENZENE	ug/L	310	<0.3 U	N/A	<3 U	N/A	<0.3 U	N/A	<0.3 U	<0.3 U	<0.3 U	<0.3 U	N/A
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<1 U	N/A	<10 U	N/A	<1 U	N/A	<1 U	<1 U	<1 U	<1 U	N/A
1,2,4-TRICHLOROBENZENE	ug/L	70	<0.4 U	N/A	<4 U	N/A	<0.4 U	N/A	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 U	N/A	<20 U	N/A	<2 U	N/A	<2 UJ	<2 U	<2 U	<2 U	N/A
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
1,2-DICHLOROBENZENE	ug/L	600	<0.25 U	N/A	<2.5 U	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A
1,2-DICHLOROETHANE	ug/L	5	<0.5 U	N/A	42.4	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
1,2-DICHLOROPROPANE	ug/L	5	<0.4 U	N/A	<4 U	N/A	<0.4 U	N/A	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
1,3-DICHLOROBENZENE	ug/L	3100	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	N/A	<4 U	N/A	<0.4 U	N/A	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A
1,4-DICHLOROBENZENE	ug/L	75	<0.25 U	N/A	<2.5 U	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
2-BUTANONE	ug/L	61000	<5 U	N/A	<50 U	N/A	<5 U	N/A	<5 UJ	<5 U	<5 U	<5 U	N/A
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	N/A	<2.5 U	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A
2-HEXANONE	ug/L	6100	<5 U	N/A	<50 U	N/A	<5 U	N/A	<5 UJ	<5 U	<5 U	<5 UJ	N/A

LHAAP-50 Quarterly MNA Sampling - November 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	50WW12-110414 11/4/2014	50WW12FF-110414 11/4/2014	50WW13-110514 11/5/2014	50WW13FF-110514 11/5/2014	50WW14-110514 11/5/2014	50WW14FF-110514 11/5/2014	50WW15-110714 11/7/2014	50WW16-111214 11/12/2014	50WW17-111114 11/11/2014	50WW18-110414 11/4/2014	50WW18FF-110414 11/4/2014
Location Description:			Site 50 - ENE, upper shallow, outside site boundary. Sampled quarterly	Site 50 - ENE, upper shallow, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary. Sampled quarterly	Site 50 - E, lower shallow, outside site boundary, along S. Crockett Ave. Sampled quarterly	Site 50 - E, lower shallow, outside site boundary, along S. Crockett Ave. Sampled quarterly	Site 50 - NNE, upper shallow, outside site boundary, along Goose Prairie Creek bridge. Sampled quarterly	Site 50 - NE, upper shallow, outside site boundary, along Goose Prairie Creek. Sampled quarterly	Site 50 - NE, fully-penetrating shallow, outside site boundary, near Goose Prairie Creek.. Sampled quarterly	Site 50 - NE, upper shallow, outside site boundary, along Goose Prairie Creek. Sampled quarterly	Site 50 - NE, upper shallow, outside site boundary, along Goose Prairie Creek. Sampled quarterly
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	N/A	<50 U	N/A	<5 U	N/A	<5 UJ	<5 U	<5 U	<5 U	N/A
ACETONE	ug/L	92000	<5 U	N/A	<50 U	N/A	<5 U	N/A	<5 UJ	<5 U	<5 U	<5 UJ	N/A
BENZENE	ug/L	5	<0.25 U	N/A	<2.5 U	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A
BROMOBENZENE	ug/L	2000	<0.25 U	N/A	<2.5 U	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	N/A	<4 U	N/A	<0.4 U	N/A	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
BROMOFORM	ug/L	36	<1 U	N/A	<10 U	N/A	<1 U	N/A	<1 U	<1 U	<1 U	<1 U	N/A
BROMOMETHANE	ug/L	140	<1 U	N/A	<10 U	N/A	<1 U	N/A	<1 U	<1 U	<1 U	<1 U	N/A
CARBON DISULFIDE	ug/L	10000	<1 U	N/A	<10 U	N/A	<1 U	N/A	<1 U	<1 U	<1 U	<1 U	N/A
CARBON TETRACHLORIDE	ug/L	5	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
CHLOROBENZENE	ug/L	100	<0.25 U	N/A	<2.5 U	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A
CHLOROETHANE	ug/L	41000	<1 U	N/A	<10 U	N/A	<1 U	N/A	<1 U	<1 U	<1 U	<1 U	N/A
CHLOROFORM	ug/L	1000	<0.25 U	N/A	4.15 J	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A
CHLOROMETHANE	ug/L	220	<1 U	N/A	<10 U	N/A	<1 U	N/A	<1 U	<1 U	<1 U	<1 U	N/A
CIS-1,2-DICHLOROETHENE	ug/L	70	<0.5 U	N/A	239	N/A	2.39	N/A	14.3	<0.5 U	<0.5 U	<0.5 U	N/A
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
DIBROMOMETHANE	ug/L	380	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
ETHYLBENZENE	ug/L	700	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
M,P-XYLENE	ug/L	10000	<1 U	N/A	<10 U	N/A	<1 U	N/A	<1 U	<1 U	<1 U	<1 U	N/A
METHYLENE CHLORIDE	ug/L	5	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
NAPHTHALENE	ug/L	2000	<0.4 U	N/A	<4 U	N/A	<0.4 U	N/A	<0.4 UJ	<0.4 U	<0.4 U	<0.4 U	N/A
N-BUTYLBENZENE	ug/L	4100	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
N-PROPYLBENZENE	ug/L	4100	<0.25 U	N/A	<2.5 U	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A
O-XYLENE	ug/L	10000	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
STYRENE	ug/L	100	<0.25 U	N/A	<2.5 U	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
TETRACHLOROETHENE	ug/L	5	<0.5 U	N/A	7.05 J	N/A	<0.5 U	N/A	3.34	<0.5 U	<0.5 U	<0.5 U	N/A
TOLUENE	ug/L	1000	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
TRANS-1,2-DICHLOROETHENE	ug/L	100	<0.5 U	N/A	2.72 J	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	N/A	<10 U	N/A	<1 U	N/A	<1 U	<1 U	<1 U	<1 U	N/A
TRICHLOROETHENE	ug/L	5	<0.5 U	N/A	9150	N/A	26.7	N/A	35.4	1.05	<0.5 U	<0.5 U	N/A
TRICHLOROFLUOROMETHANE	ug/L	31000	<0.5 U	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
VINYL CHLORIDE	ug/L	2	<0.5 U	N/A	3.36 J	N/A	<0.5 U	N/A	2.69	<0.5 U	<0.5 U	<0.5 U	N/A

LHAAP-50 Quarterly MNA Sampling - November 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	50WW12-110414 11/4/2014	50WW12FF-110414 11/4/2014	50WW13-110514 11/5/2014	50WW13FF-110514 11/5/2014	50WW14-110514 11/5/2014	50WW14FF-110514 11/5/2014	50WW15-110714 11/7/2014	50WW16-111214 11/12/2014	50WW17-111114 11/11/2014	50WW18-110414 11/4/2014	50WW18FF-110414 11/4/2014
Location Description:			Site 50 - ENE, upper shallow, outside site boundary. Sampled quarterly	Site 50 - ENE, upper shallow, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary. Sampled quarterly	Site 50 - E, lower shallow, outside site boundary, along S. Crockett Ave. Sampled quarterly	Site 50 - E, lower shallow, outside site boundary, along S. Crockett Ave. Sampled quarterly	Site 50 - NNE, upper shallow, outside site boundary, along Goose Prairie Creek bridge. Sampled quarterly	Site 50 - NE, upper shallow, outside site boundary, along Goose Prairie Creek. Sampled quarterly	Site 50 - NE, fully-penetrating shallow, outside site boundary, near Goose Prairie Creek.. Sampled quarterly	Site 50 - NE, upper shallow, outside site boundary, along Goose Prairie Creek. Sampled quarterly	Site 50 - NE, upper shallow, outside site boundary, along Goose Prairie Creek. Sampled quarterly
Anions (9056)													
CHLORIDE	mg/L		1120	N/A	354	N/A	344	N/A	N/A	N/A	N/A	679	N/A
NITRATE	mg/L	10	<2 U	N/A	<0.4 U	N/A	<0.4 U	N/A	N/A	N/A	N/A	<1 U	N/A
NITRITE	mg/L	1	2.09 J	N/A	0.266 J	N/A	0.392 J	N/A	N/A	N/A	N/A	1.23 J	N/A
SULFATE	mg/L		512	N/A	332	N/A	255	N/A	N/A	N/A	N/A	147	N/A
Dissolved Gases (RSK-175)													
CARBON DIOXIDE	ug/L		175000	N/A	247000	N/A	183000	N/A	N/A	N/A	N/A	69300	N/A
ETHANE	ug/L		<2 U	N/A	<2 U	N/A	<2 U	N/A	N/A	N/A	N/A	<2 U	N/A
ETHENE	ug/L		<2 U	N/A	<2 U	N/A	<2 U	N/A	N/A	N/A	N/A	<2 U	N/A
METHANE	ug/L		<2 U	N/A	18.8	N/A	6.1 J	N/A	N/A	N/A	N/A	<2 U	N/A
Sulfide (SM4500-S-(-2)-F-2000)													
SULFIDE	mg/L		<1.00 U	N/A	<1.00 U	N/A	<1.00 U	N/A	N/A	N/A	N/A	<1.00 U	N/A

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

LHAAP-50 Quarterly MNA Sampling - November 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	50WW19-111114 11/11/2014	50WW20-111114 11/11/2014	50WW20FD-111114 11/11/2014	50WW21-111314 11/13/2014	50WW21FD-111314 11/13/2014	50WW22-110614 11/6/2014	50WW22FF-110614 11/6/2014	50WW23-110414 11/4/2014	50WW23FF-110414 11/4/2014	50WW24-110414 11/4/2014	50WW24FF-110414 11/4/2014
Location Description:			Site 50 - ENE, fully-penetrating shallow, outside site boundary, near Site 67. Sampled quarterly	Site 50 - E, fully-penetrating shallow, outside site boundary. Sampled quarterly	Site 50 - E, fully-penetrating shallow, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary, east side of S. Crockett Ave. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary, east side of S. Crockett Ave. Sampled quarterly	Site 50 - SE, upper shallow, outside site boundary. Sampled quarterly	Site 50 - SE, upper shallow, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary. Sampled quarterly	Site 50 - ENE, upper shallow, outside site boundary. Sampled quarterly	Site 50 - ENE, upper shallow, outside site boundary. Sampled quarterly
Alkalinity (310.2)													
ALKALINITY, TOTAL	mg/L		N/A	N/A	N/A	N/A	N/A	382	N/A	275	N/A	340	N/A
Phosphorus (365.4)													
PHOSPHORUS	mg/L		N/A	N/A	N/A	N/A	N/A	0.456 J	N/A	0.127 J	N/A	0.182 J	N/A
Total Organic Carbon (415.1)													
TOTAL ORGANIC CARBON (TOC)	mg/L		N/A	N/A	N/A	N/A	N/A	2.86 J	N/A	2.86	N/A	3	N/A
Metals (6010C)													
IRON, DISSOLVED	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	0.0629 J	N/A	<0.1 U	N/A	0.106 J
Metals (6020A)													
MANGANESE, DISSOLVED	mg/L	14	N/A	N/A	N/A	N/A	N/A	N/A	0.00625	N/A	0.0745	N/A	0.00259 J
Perchlorate (6850)													
PERCHLORATE	ug/L	72	<0.2 U	<0.2 U	<0.2 U	0.779	0.779	1.06	N/A	<0.2 U	N/A	<0.2 U	N/A
Volatile Organic Compounds (8260B)													
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	N/A	<0.4 U	N/A
1,1,2-TRICHLOROETHANE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
1,1-DICHLOROETHANE	ug/L	10000	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A
1,1-DICHLOROETHENE	ug/L	7	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A	<1 U	N/A	<1 U	N/A
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
1,2,3-TRICHLOROBENZENE	ug/L	310	<0.3 U	<0.3 U	<0.3 U	<0.3 U	<0.3 U	<0.3 U	N/A	<0.3 U	N/A	<0.3 U	N/A
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A	<1 U	N/A	<1 U	N/A
1,2,4-TRICHLOROBENZENE	ug/L	70	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	N/A	<0.4 U	N/A
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U	N/A	<2 U	N/A	<2 U	N/A
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
1,2-DICHLOROBENZENE	ug/L	600	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A
1,2-DICHLOROETHANE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
1,2-DICHLOROPROPANE	ug/L	5	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	N/A	<0.4 U	N/A
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
1,3-DICHLOROBENZENE	ug/L	3100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	N/A	<0.4 U	N/A
1,4-DICHLOROBENZENE	ug/L	75	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
2-BUTANONE	ug/L	61000	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	N/A	<5 U	N/A	<5 U	N/A
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A
2-HEXANONE	ug/L	6100	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	N/A	<5 U	N/A	<5 UJ	N/A

LHAAP-50 Quarterly MNA Sampling - November 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	50WW19-111114 11/11/2014	50WW20-111114 11/11/2014	50WW20FD-111114 11/11/2014	50WW21-111314 11/13/2014	50WW21FD-111314 11/13/2014	50WW22-110614 11/6/2014	50WW22FF-110614 11/6/2014	50WW23-110414 11/4/2014	50WW23FF-110414 11/4/2014	50WW24-110414 11/4/2014	50WW24FF-110414 11/4/2014
Location Description:			Site 50 - ENE, fully-penetrating shallow, outside site boundary, near Site 67. Sampled quarterly	Site 50 - E, fully-penetrating shallow, outside site boundary. Sampled quarterly	Site 50 - E, fully-penetrating shallow, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary, east side of S. Crockett Ave. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary, east side of S. Crockett Ave. Sampled quarterly	Site 50 - SE, upper shallow, outside site boundary. Sampled quarterly	Site 50 - SE, upper shallow, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary. Sampled quarterly	Site 50 - ENE, upper shallow, outside site boundary. Sampled quarterly	Site 50 - ENE, upper shallow, outside site boundary. Sampled quarterly
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	N/A	<5 U	N/A	<5 U	N/A
ACETONE	ug/L	92000	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	N/A	<5 U	N/A	<5 UJ	N/A
BENZENE	ug/L	5	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A
BROMOBENZENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	N/A	<0.4 U	N/A
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
BROMOFORM	ug/L	36	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A	<1 U	N/A	<1 U	N/A
BROMOMETHANE	ug/L	140	<1 U	<1 U	<1 U	<1 U	<1 U	<1 UJ	N/A	<1 U	N/A	<1 U	N/A
CARBON DISULFIDE	ug/L	10000	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A	<1 U	N/A	<1 U	N/A
CARBON TETRACHLORIDE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
CHLOROBENZENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A
CHLOROETHANE	ug/L	41000	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A	<1 U	N/A	<1 U	N/A
CHLOROFORM	ug/L	1000	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A
CHLOROMETHANE	ug/L	220	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A	<1 U	N/A	<1 U	N/A
CIS-1,2-DICHLOROETHENE	ug/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
DIBROMOMETHANE	ug/L	380	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
ETHYLBENZENE	ug/L	700	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
M,P-XYLENE	ug/L	10000	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A	<1 U	N/A	<1 U	N/A
METHYLENE CHLORIDE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
NAPHTHALENE	ug/L	2000	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	N/A	<0.4 U	N/A
N-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
N-PROPYLBENZENE	ug/L	4100	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A
O-XYLENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
STYRENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
TETRACHLOROETHENE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
TOLUENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
TRANS-1,2-DICHLOROETHENE	ug/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A	<1 U	N/A	<1 U	N/A
TRICHLOROETHENE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.339 J	N/A	<0.5 U	N/A	<0.5 U	N/A
TRICHLOROFLUOROMETHANE	ug/L	31000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A
VINYL CHLORIDE	ug/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A

LHAAP-50 Quarterly MNA Sampling - November 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	50WW19-111114 11/11/2014	50WW20-111114 11/11/2014	50WW20FD-111114 11/11/2014	50WW21-111314 11/13/2014	50WW21FD-111314 11/13/2014	50WW22-110614 11/6/2014	50WW22FF-110614 11/6/2014	50WW23-110414 11/4/2014	50WW23FF-110414 11/4/2014	50WW24-110414 11/4/2014	50WW24FF-110414 11/4/2014
Location Description:			Site 50 - ENE, fully-penetrating shallow, outside site boundary, near Site 67. Sampled quarterly	Site 50 - E, fully-penetrating shallow, outside site boundary. Sampled quarterly	Site 50 - E, fully-penetrating shallow, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary, east side of S. Crockett Ave. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary, east side of S. Crockett Ave. Sampled quarterly	Site 50 - SE, upper shallow, outside site boundary. Sampled quarterly	Site 50 - SE, upper shallow, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside site boundary. Sampled quarterly	Site 50 - ENE, upper shallow, outside site boundary. Sampled quarterly	Site 50 - ENE, upper shallow, outside site boundary. Sampled quarterly
Anions (9056)													
CHLORIDE	mg/L		N/A	N/A	N/A	N/A	N/A	1000	N/A	1780	N/A	391	N/A
NITRATE	mg/L	10	N/A	N/A	N/A	N/A	N/A	<1 U	N/A	<2 U	N/A	<0.6 U	N/A
NITRITE	mg/L	1	N/A	N/A	N/A	N/A	N/A	<1 U	N/A	2.97 J	N/A	0.543 J	N/A
SULFATE	mg/L		N/A	N/A	N/A	N/A	N/A	594	N/A	70.2	N/A	116	N/A
Dissolved Gases (RSK-175)													
CARBON DIOXIDE	ug/L		N/A	N/A	N/A	N/A	N/A	65000	N/A	129000	N/A	68900	N/A
ETHANE	ug/L		N/A	N/A	N/A	N/A	N/A	<2 U	N/A	<2 U	N/A	<2 U	N/A
ETHENE	ug/L		N/A	N/A	N/A	N/A	N/A	<2 U	N/A	<2 U	N/A	<2 U	N/A
METHANE	ug/L		N/A	N/A	N/A	N/A	N/A	<2 U	N/A	<2 U	N/A	<2 U	N/A
Sulfide (SM4500-S-(-2)-F-2000)													
SULFIDE	mg/L		N/A	N/A	N/A	N/A	N/A	<1.00 U	N/A	0.515 J	N/A	0.772 J	N/A

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

LHAAP-50 Quarterly MNA Sampling - November 2014

Sample ID: Sample Date:	Units	MCL/ MSC	50WW25-110614 11/6/2014	50WW25FF-110614 11/6/2014	50WW26-111314 11/13/2014	50WW27-110714 11/7/2014	50WW27FD-110714 11/7/2014	50WW28-111214 11/12/2014
Location Description:			Site 50 - N, intermediate, outside site boundary, along 52st Street. Sampled quarterly	Site 50 - N, intermediate, outside site boundary, along 52st Street. Sampled quarterly	Site 50 - E, lower shallow, outside site boundary, east side of S. Crockett Ave. Sampled quarterly	Site 50 - N, upper shallow, outside site boundary, east of S. Crockett Ave. Sampled quarterly	Site 50 - N, upper shallow, outside site boundary, east of S. Crockett Ave. Sampled quarterly	Site 50 - N, upper shallow, outside site boundary, south of 51st St. Sampled quarterly
Alkalinity (310.2)								
ALKALINITY, TOTAL	mg/L		237	N/A	N/A	N/A	N/A	N/A
Phosphorus (365.4)								
PHOSPHORUS	mg/L		<0.2 U	N/A	N/A	N/A	N/A	N/A
Total Organic Carbon (415.1)								
TOTAL ORGANIC CARBON (TOC)	mg/L		1.85 J	N/A	N/A	N/A	N/A	N/A
Metals (6010C)								
IRON, DISSOLVED	mg/L		N/A	0.182 J	N/A	N/A	N/A	N/A
Metals (6020A)								
MANGANESE, DISSOLVED	mg/L	14	N/A	0.0197	N/A	N/A	N/A	N/A
Perchlorate (6850)								
PERCHLORATE	ug/L	72	17.8	N/A	<0.2 U	<0.2 U	<0.2 U	2.01 J
Volatile Organic Compounds (8260B)								
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	N/A	<0.4 U	<0.4 UJ	<0.4 UJ	<0.4 U
1,1,2-TRICHLOROETHANE	ug/L	5	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,1-DICHLOROETHANE	ug/L	10000	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U
1,1-DICHLOROETHENE	ug/L	7	<1 U	N/A	<1 U	<1 U	<1 U	<1 U
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<0.3 U	N/A	<0.3 U	<0.3 U	<0.3 U	<0.3 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<1 U	N/A	<1 U	<1 U	<1 U	<1 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<0.4 U	N/A	<0.4 U	<0.4 U	<0.4 U	<0.4 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 U	N/A	<2 U	<2 UJ	<2 UJ	<2 U
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,2-DICHLOROBENZENE	ug/L	600	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U
1,2-DICHLOROETHANE	ug/L	5	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,2-DICHLOROPROPANE	ug/L	5	<0.4 U	N/A	<0.4 U	<0.4 U	<0.4 U	<0.4 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,3-DICHLOROBENZENE	ug/L	3100	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	N/A	<0.4 U	<0.4 U	<0.4 U	<0.4 U
1,4-DICHLOROBENZENE	ug/L	75	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
2-BUTANONE	ug/L	61000	<5 U	N/A	<5 U	<5 UJ	<5 UJ	<5 U
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U
2-HEXANONE	ug/L	6100	<5 U	N/A	<5 U	<5 UJ	<5 UJ	<5 U

LHAAP-50 Quarterly MNA Sampling - November 2014

Sample ID: Sample Date:	Units	MCL/ MSC	50WW25-110614 11/6/2014	50WW25FF-110614 11/6/2014	50WW26-111314 11/13/2014	50WW27-110714 11/7/2014	50WW27FD-110714 11/7/2014	50WW28-111214 11/12/2014
Location Description:			Site 50 - N, intermediate, outside site boundary, along 52st Street. Sampled quarterly	Site 50 - N, intermediate, outside site boundary, along 52st Street. Sampled quarterly	Site 50 - E, lower shallow, outside site boundary, east side of S. Crockett Ave. Sampled quarterly	Site 50 - N, upper shallow, outside site boundary, east of S. Crockett Ave. Sampled quarterly	Site 50 - N, upper shallow, outside site boundary, east of S. Crockett Ave. Sampled quarterly	Site 50 - N, upper shallow, outside site boundary, south of 51st St. Sampled quarterly
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	N/A	<5 U	<5 UJ	<5 UJ	<5 U
ACETONE	ug/L	92000	<5 U	N/A	<5 U	<5 UJ	<5 UJ	<5 U
BENZENE	ug/L	5	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U
BROMOBENZENE	ug/L	2000	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	N/A	<0.4 U	<0.4 U	<0.4 U	<0.4 U
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
BROMOFORM	ug/L	36	<1 U	N/A	<1 U	<1 U	<1 U	<1 U
BROMOMETHANE	ug/L	140	<1 UJ	N/A	<1 U	<1 U	<1 U	<1 U
CARBON DISULFIDE	ug/L	10000	1.87 J	N/A	<1 U	<1 U	<1 U	<1 U
CARBON TETRACHLORIDE	ug/L	5	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
CHLOROBENZENE	ug/L	100	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U
CHLOROETHANE	ug/L	41000	<1 U	N/A	<1 U	<1 U	<1 U	<1 U
CHLOROFORM	ug/L	1000	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U
CHLOROMETHANE	ug/L	220	<1 U	N/A	<1 U	<1 U	<1 U	<1 U
CIS-1,2-DICHLOROETHENE	ug/L	70	<0.5 U	N/A	<0.5 U	0.529 J	0.493 J	<0.5 U
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
DIBROMOMETHANE	ug/L	380	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
ETHYLBENZENE	ug/L	700	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
M,P-XYLENE	ug/L	10000	<1 U	N/A	<1 U	<1 U	<1 U	<1 U
METHYLENE CHLORIDE	ug/L	5	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
NAPHTHALENE	ug/L	2000	<0.4 U	N/A	<0.4 U	<0.4 UJ	<0.4 UJ	<0.4 U
N-BUTYLBENZENE	ug/L	4100	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
N-PROPYLBENZENE	ug/L	4100	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U
O-XYLENE	ug/L	10000	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
STYRENE	ug/L	100	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	ug/L	5	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TOLUENE	ug/L	1000	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	N/A	<1 U	<1 U	<1 U	<1 U
TRICHLOROETHENE	ug/L	5	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROFLUOROMETHANE	ug/L	31000	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	ug/L	2	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U

LHAAP-50 Quarterly MNA Sampling - November 2014

Sample ID: Sample Date:	Units	MCL/ MSC	50WW25-110614 11/6/2014	50WW25FF-110614 11/6/2014	50WW26-111314 11/13/2014	50WW27-110714 11/7/2014	50WW27FD-110714 11/7/2014	50WW28-111214 11/12/2014
Location Description:			Site 50 - N, intermediate, outside site boundary, along 52st Street. Sampled quarterly	Site 50 - N, intermediate, outside site boundary, along 52st Street. Sampled quarterly	Site 50 - E, lower shallow, outside site boundary, east side of S. Crockett Ave. Sampled quarterly	Site 50 - N, upper shallow, outside site boundary, east of S. Crockett Ave. Sampled quarterly	Site 50 - N, upper shallow, outside site boundary, east of S. Crockett Ave. Sampled quarterly	Site 50 - N, upper shallow, outside site boundary, south of 51st St. Sampled quarterly
Anions (9056)								
CHLORIDE	mg/L		36.4	N/A	N/A	N/A	N/A	N/A
NITRATE	mg/L	10	<0.2 U	N/A	N/A	N/A	N/A	N/A
NITRITE	mg/L	1	<0.2 U	N/A	N/A	N/A	N/A	N/A
SULFATE	mg/L		72.7	N/A	N/A	N/A	N/A	N/A
Dissolved Gases (RSK-175)								
CARBON DIOXIDE	ug/L		<5000 U	N/A	N/A	N/A	N/A	N/A
ETHANE	ug/L		<2 U	N/A	N/A	N/A	N/A	N/A
ETHENE	ug/L		1.68 J	N/A	N/A	N/A	N/A	N/A
METHANE	ug/L		110	N/A	N/A	N/A	N/A	N/A
Sulfide (SM4500-S-(-2)-F-2000)								
SULFIDE	mg/L		<1.00 U	N/A	N/A	N/A	N/A	N/A

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

LHAAP-58 Quarterly MNA Sampling - October 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	03WW01-102814 10/28/2014	03WW01F-102814 10/28/2014	03WW01FF-102814 10/28/2014	1004TW001-103114 10/31/2014	35AWW01-103114 10/31/2014	35AWW01F-103114 10/31/2014	35AWW05-102114 10/21/2014	35AWW06-102914 10/29/2014	35AWW06F-102914 10/29/2014	35AWW07RF-103014 10/30/2014	35AWW07RFFD-103014 10/30/2014
Location Description:			Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - SE, inside site boundary. Sampled quarterly, arsenic only.	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - SW, outside the site boundary. Sampled quarterly	Site 58 - SW, outside the site boundary. Sampled quarterly	Site 58 - SW, outside the site boundary. Sampled quarterly	Site 58 - ENE, outside site boundary. Replacement Well for 35AWW07. Sampled quarterly	Site 58 - ENE, outside site boundary. Replacement Well for 35AWW07. Sampled quarterly
Alkalinity (310.2)													
ALKALINITY, TOTAL	mg/L		12300 J	N/A	N/A	N/A	N/A	N/A	N/A	667	N/A	N/A	N/A
Phosphorus (365.4)													
PHOSPHORUS	mg/L		14.6	N/A	N/A	N/A	N/A	N/A	N/A	<0.2 U	N/A	N/A	N/A
Total Organic Carbon (415.1)													
TOTAL ORGANIC CARBON (TOC)	mg/L		8440	N/A	N/A	N/A	N/A	N/A	N/A	9.26	N/A	N/A	N/A
Metals (6010C)													
IRON	mg/L		N/A	99.7	N/A	N/A	N/A	N/A	N/A	0.103 J	N/A	N/A	N/A
Metals (6020A)													
ARSENIC	mg/L	0.01	N/A	0.056	N/A	0.0126	N/A	0.00148 J	N/A	0.00598	N/A	0.000748 J	0.000777 J
MANGANESE, DISSOLVED	mg/L	14	N/A	N/A	36.7	N/A	N/A	N/A	N/A	N/A	0.388	N/A	N/A
MANGANESE, TOTAL	mg/L	14	N/A	38	N/A	N/A	N/A	N/A	N/A	0.455	N/A	N/A	N/A
Volatile Organic Carbon (8260B)													
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
1,1,1-TRICHLOROETHANE	ug/L	200	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<40 U	N/A	N/A	N/A	<0.4 U	N/A	<0.4 U	<0.4 U	N/A	N/A	N/A
1,1,2-TRICHLOROETHANE	ug/L	5	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
1,1-DICHLOROETHANE	ug/L	10000	<25 U	N/A	N/A	N/A	<0.25 U	N/A	<0.25 U	2.35	N/A	N/A	N/A
1,1-DICHLOROETHENE	ug/L	7	<100 U	N/A	N/A	N/A	<1 U	N/A	<1 U	16	N/A	N/A	N/A
1,1-DICHLOROPROPENE	ug/L	2.9	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
1,2,3-TRICHLOROBENZENE	ug/L	310	<30 U	N/A	N/A	N/A	<0.3 U	N/A	<0.3 U	<0.3 U	N/A	N/A	N/A
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<100 U	N/A	N/A	N/A	<1 U	N/A	<1 U	<1 U	N/A	N/A	N/A
1,2,4-TRICHLOROBENZENE	ug/L	70	<40 U	N/A	N/A	N/A	<0.4 U	N/A	<0.4 U	<0.4 U	N/A	N/A	N/A
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<200 U	N/A	N/A	N/A	<2 U	N/A	<2 U	<2 U	N/A	N/A	N/A
1,2-DIBROMOETHANE	ug/L	0.005	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
1,2-DICHLOROBENZENE	ug/L	600	<25 U	N/A	N/A	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	N/A	N/A
1,2-DICHLOROETHANE	ug/L	5	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
1,2-DICHLOROPROPANE	ug/L	5	<40 U	N/A	N/A	N/A	<0.4 U	N/A	<0.4 U	<0.4 U	N/A	N/A	N/A
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
1,3-DICHLOROBENZENE	ug/L	3100	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
1,3-DICHLOROPROPANE	ug/L	29	<40 U	N/A	N/A	N/A	<0.4 U	N/A	<0.4 U	<0.4 U	N/A	N/A	N/A
1,4-DICHLOROBENZENE	ug/L	75	<25 U	N/A	N/A	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	N/A	N/A
2,2-DICHLOROPROPANE	ug/L	42	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
2-BUTANONE	ug/L	61000	14600	N/A	N/A	N/A	<5 U	N/A	<5 U	<5 U	N/A	N/A	N/A
2-CHLOROTOLUENE	ug/L	2000	<25 U	N/A	N/A	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	N/A	N/A
2-HEXANONE	ug/L	6100	<500 UJ	N/A	N/A	N/A	<5 UJ	N/A	<5 U	<5 U	N/A	N/A	N/A
4-CHLOROTOLUENE	ug/L	2000	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A

LHAAP-58 Quarterly MNA Sampling - October 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	03WW01-102814 10/28/2014	03WW01F-102814 10/28/2014	03WW01FF-102814 10/28/2014	1004TW001-103114 10/31/2014	35AWW01-103114 10/31/2014	35AWW01F-103114 10/31/2014	35AWW05-102114 10/21/2014	35AWW06-102914 10/29/2014	35AWW06F-102914 10/29/2014	35AWW07RF-103014 10/30/2014	35AWW07RFFD-103014 10/30/2014
Location Description:			Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - SE, inside site boundary. Sampled quarterly, arsenic only.	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - SW, outside the site boundary. Sampled quarterly	Site 58 - SW, outside the site boundary. Sampled quarterly	Site 58 - SW, outside the site boundary. Sampled quarterly	Site 58 - ENE, outside site boundary. Replacement Well for 35AWW07. Sampled quarterly	Site 58 - ENE, outside site boundary. Replacement Well for 35AWW07. Sampled quarterly
4-METHYL-2-PENTANONE	ug/L	8200	<500 U	N/A	N/A	N/A	<5 U	N/A	<5 U	<5 U	N/A	N/A	N/A
ACETONE	ug/L	92000	7800	N/A	N/A	N/A	<5 UJ	N/A	<5 U	<5 U	N/A	N/A	N/A
BENZENE	ug/L	5	<25 U	N/A	N/A	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	N/A	N/A
BROMOBENZENE	ug/L	2000	<25 U	N/A	N/A	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	N/A	N/A
BROMOCHLOROMETHANE	ug/L	4100	<40 U	N/A	N/A	N/A	<0.4 U	N/A	<0.4 U	<0.4 U	N/A	N/A	N/A
BROMODICHLOROMETHANE	ug/L	4.6	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
BROMOFORM	ug/L	36	<100 U	N/A	N/A	N/A	<1 U	N/A	<1 U	<1 U	N/A	N/A	N/A
BROMOMETHANE	ug/L	140	<100 U	N/A	N/A	N/A	<1 U	N/A	<1 U	<1 U	N/A	N/A	N/A
CARBON DISULFIDE	ug/L	10000	<100 U	N/A	N/A	N/A	<1 U	N/A	<1 U	<1 U	N/A	N/A	N/A
CARBON TETRACHLORIDE	ug/L	5	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
CHLOROBENZENE	ug/L	100	<25 U	N/A	N/A	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	N/A	N/A
CHLOROETHANE	ug/L	41000	<100 U	N/A	N/A	N/A	<1 U	N/A	<1 U	<1 U	N/A	N/A	N/A
CHLOROFORM	ug/L	1000	<25 U	N/A	N/A	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	N/A	N/A
CHLOROMETHANE	ug/L	220	<100 U	N/A	N/A	N/A	<1 U	N/A	<1 UJ	<1 U	N/A	N/A	N/A
CIS-1,2-DICHLOROETHENE	ug/L	70	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
DIBROMOCHLOROMETHANE	ug/L	34	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
DIBROMOMETHANE	ug/L	380	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
DICHLORODIFLUOROMETHANE	ug/L	20000	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
ETHYLBENZENE	ug/L	700	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
HEXACHLOROBUTADIENE	ug/L	20	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
ISOPROPYLBENZENE	ug/L	1000	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
M,P-XYLENE	ug/L	10000	<100 U	N/A	N/A	N/A	<1 U	N/A	<1 U	<1 U	N/A	N/A	N/A
METHYLENE CHLORIDE	ug/L	5	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
NAPHTHALENE	ug/L	2000	<40 U	N/A	N/A	N/A	<0.4 U	N/A	<0.4 U	<0.4 U	N/A	N/A	N/A
N-BUTYLBENZENE	ug/L	4100	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
N-PROPYLBENZENE	ug/L	4100	<25 U	N/A	N/A	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	N/A	N/A
O-XYLENE	ug/L	10000	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
P-ISOPROPYLTOLUENE	ug/L	10000	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
SEC-BUTYLBENZENE	ug/L	4100	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
STYRENE	ug/L	100	<25 U	N/A	N/A	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	N/A	N/A
TERT-BUTYLBENZENE	ug/L	4100	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
TETRACHLOROETHENE	ug/L	5	48.6 J	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
TOLUENE	ug/L	1000	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
TRANS-1,2-DICHLOROETHENE	ug/L	100	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<100 U	N/A	N/A	N/A	<1 U	N/A	<1 U	<1 U	N/A	N/A	N/A
TRICHLOROETHENE	ug/L	5	223	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
TRICHLOROFLUOROMETHANE	ug/L	31000	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
VINYL CHLORIDE	ug/L	2	<50 U	N/A	N/A	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	N/A	N/A
Volatile Fatty Acids (830-MBA)													
ACETIC ACID	mg/L		4940	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BUTYRIC ACID	mg/L		3970	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LACTIC ACID	mg/L		<1 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

LHAAP-58 Quarterly MNA Sampling - October 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	03WW01-102814 10/28/2014	03WW01F-102814 10/28/2014	03WW01FF-102814 10/28/2014	1004TW001-103114 10/31/2014	35AWW01-103114 10/31/2014	35AWW01F-103114 10/31/2014	35AWW05-102114 10/21/2014	35AWW06-102914 10/29/2014	35AWW06F-102914 10/29/2014	35AWW07RF-103014 10/30/2014	35AWW07RFFD-103014 10/30/2014
Location Description:			Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - SE, inside site boundary. Sampled quarterly, arsenic only.	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - SW, outside the site boundary. Sampled quarterly	Site 58 - SW, outside the site boundary. Sampled quarterly	Site 58 - SW, outside the site boundary. Sampled quarterly	Site 58 - ENE, outside site boundary. Replacement Well for 35AWW07. Sampled quarterly	Site 58 - ENE, outside site boundary. Replacement Well for 35AWW07. Sampled quarterly
PROPIONIC ACID	mg/L	51	1420 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PYRUVIC ACID	mg/L		<0.1 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Anions (9056)													
CHLORIDE	mg/L		940	N/A	N/A	N/A	N/A	N/A	N/A	1150	N/A	N/A	N/A
NITRATE	mg/L	10	<1 U	N/A	N/A	N/A	N/A	N/A	N/A	<4 U	N/A	N/A	N/A
NITRITE	mg/L	1	<1 U	N/A	N/A	N/A	N/A	N/A	N/A	<4 U	N/A	N/A	N/A
SULFATE	mg/L		11	N/A	N/A	N/A	N/A	N/A	N/A	1630	N/A	N/A	N/A
Dissolved Gases (RSK-175)													
CARBON DIOXIDE	ug/L		564000 J	N/A	N/A	N/A	N/A	N/A	N/A	243000 J	N/A	N/A	N/A
ETHANE	ug/L		<2 U	N/A	N/A	N/A	N/A	N/A	N/A	<2 U	N/A	N/A	N/A
ETHENE	ug/L		<2 U	N/A	N/A	N/A	N/A	N/A	N/A	<2 U	N/A	N/A	N/A
METHANE	ug/L		910	N/A	N/A	N/A	N/A	N/A	N/A	<2 U	N/A	N/A	N/A
Ferrous Iron (SM3500FE)													
FERROUS IRON	mg/L		107	N/A	N/A	N/A	N/A	N/A	N/A	<0.04 U	N/A	N/A	N/A
Sulfide (SM4500-S-(-2)-F-2000)													
SULFIDE	mg/L		4.35	N/A	N/A	N/A	N/A	N/A	N/A	<1.00 U	N/A	N/A	N/A

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

LHAAP-58 Quarterly MNA Sampling - October 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	35AWW08-102714 10/27/2014	35AWW08F-102714 10/27/2014	35AWW08FF-102714 10/27/2014	35AWW09-102714 10/27/2014	35AWW09F-102714 10/27/2014	35AWW10-102814 10/28/2014	35AWW10F-102814 10/28/2014	35AWW11-102914 10/29/2014	35AWW11F-102914 10/29/2014	35AWW11FF-102914 10/29/2014	35AWW12-103014 10/30/2014
Location Description:			Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - ESE, inside site boundary. Sampled quarterly	Site 58 - ESE, inside site boundary. Sampled quarterly	Site 58 - SE, inside site boundary. Sampled quarterly	Site 58 - SE, inside site boundary. Sampled quarterly	Site 58 - SE, inside site boundary. Sampled quarterly	Site 58 - E, outside site boundary. Sampled quarterly
Alkalinity (310.2)													
ALKALINITY, TOTAL	mg/L		11800 J	N/A	N/A	246	N/A	57.2	N/A	390	N/A	N/A	N/A
Phosphorus (365.4)													
PHOSPHORUS	mg/L		16.7	N/A	N/A	<0.2 U	N/A	0.308 J	N/A	<0.2 U	N/A	N/A	N/A
Total Organic Carbon (415.1)													
TOTAL ORGANIC CARBON (TOC)	mg/L		13900	N/A	N/A	8.85	N/A	13.1	N/A	11.2	N/A	N/A	N/A
Metals (6010C)													
IRON	mg/L		N/A	48	N/A	0.193 J	N/A	0.671	N/A	N/A	<0.1 U	N/A	N/A
Metals (6020A)													
ARSENIC	mg/L	0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MANGANESE, DISSOLVED	mg/L	14	N/A	N/A	36.8	N/A	0.12	N/A	0.0658	N/A	N/A	0.587	N/A
MANGANESE, TOTAL	mg/L	14	N/A	40.5	N/A	0.128	N/A	0.0824	N/A	N/A	0.699	N/A	N/A
Volatile Organic Carbon (8260B)													
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
1,1,1-TRICHLOROETHANE	ug/L	200	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<20 U	N/A	N/A	<0.4 U	N/A	<0.4 U	N/A	<0.4 U	N/A	N/A	<0.4 U
1,1,2-TRICHLOROETHANE	ug/L	5	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
1,1-DICHLOROETHANE	ug/L	10000	<12.5 U	N/A	N/A	1.03	N/A	<0.25 U	N/A	0.665 J	N/A	N/A	<0.25 U
1,1-DICHLOROETHENE	ug/L	7	<50 U	N/A	N/A	<1 U	N/A	<1 U	N/A	21.9	N/A	N/A	<1 U
1,1-DICHLOROPROPENE	ug/L	2.9	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<15 U	N/A	N/A	<0.3 U	N/A	<0.3 U	N/A	<0.3 U	N/A	N/A	<0.3 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<50 U	N/A	N/A	<1 U	N/A	<1 U	N/A	<1 U	N/A	N/A	<1 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<20 U	N/A	N/A	<0.4 U	N/A	<0.4 U	N/A	<0.4 U	N/A	N/A	<0.4 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<100 UJ	N/A	N/A	<2 UJ	N/A	<2 U	N/A	<2 U	N/A	N/A	<2 U
1,2-DIBROMOETHANE	ug/L	0.005	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
1,2-DICHLOROBENZENE	ug/L	600	<12.5 U	N/A	N/A	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A	N/A	<0.25 U
1,2-DICHLOROETHANE	ug/L	5	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
1,2-DICHLOROPROPANE	ug/L	5	<20 U	N/A	N/A	<0.4 U	N/A	<0.4 U	N/A	<0.4 U	N/A	N/A	<0.4 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
1,3-DICHLOROBENZENE	ug/L	3100	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
1,3-DICHLOROPROPANE	ug/L	29	<20 U	N/A	N/A	<0.4 U	N/A	<0.4 U	N/A	<0.4 U	N/A	N/A	<0.4 U
1,4-DICHLOROBENZENE	ug/L	75	<12.5 U	N/A	N/A	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A	N/A	<0.25 U
2,2-DICHLOROPROPANE	ug/L	42	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
2-BUTANONE	ug/L	61000	2770	N/A	N/A	<5 U	N/A	<5 U	N/A	<5 U	N/A	N/A	<5 U
2-CHLOROTOLUENE	ug/L	2000	<12.5 U	N/A	N/A	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A	N/A	<0.25 U
2-HEXANONE	ug/L	6100	<250 UJ	N/A	N/A	<5 UJ	N/A	<5 UJ	N/A	<5 U	N/A	N/A	<5 UJ
4-CHLOROTOLUENE	ug/L	2000	<25 UJ	N/A	N/A	<0.5 UJ	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U

LHAAP-58 Quarterly MNA Sampling - October 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	35AWW08-102714 10/27/2014	35AWW08F-102714 10/27/2014	35AWW08FF-102714 10/27/2014	35AWW09-102714 10/27/2014	35AWW09F-102714 10/27/2014	35AWW10-102814 10/28/2014	35AWW10F-102814 10/28/2014	35AWW11-102914 10/29/2014	35AWW11F-102914 10/29/2014	35AWW11FF-102914 10/29/2014	35AWW12-103014 10/30/2014
Location Description:			Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - ESE, inside site boundary. Sampled quarterly	Site 58 - ESE, inside site boundary. Sampled quarterly	Site 58 - SE, inside site boundary. Sampled quarterly	Site 58 - SE, inside site boundary. Sampled quarterly	Site 58 - SE, inside site boundary. Sampled quarterly	Site 58 - E, outside site boundary. Sampled quarterly
4-METHYL-2-PENTANONE	ug/L	8200	<250 U	N/A	N/A	<5 U	N/A	<5 U	N/A	<5 U	N/A	N/A	<5 U
ACETONE	ug/L	92000	11900	N/A	N/A	<5 U	N/A	<5 U	N/A	<5 U	N/A	N/A	<5 UJ
BENZENE	ug/L	5	<12.5 U	N/A	N/A	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A	N/A	<0.25 U
BROMOBENZENE	ug/L	2000	<12.5 U	N/A	N/A	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A	N/A	<0.25 U
BROMOCHLOROMETHANE	ug/L	4100	<20 U	N/A	N/A	<0.4 U	N/A	<0.4 U	N/A	<0.4 U	N/A	N/A	<0.4 U
BROMODICHLOROMETHANE	ug/L	4.6	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
BROMOFORM	ug/L	36	<50 U	N/A	N/A	<1 U	N/A	<1 U	N/A	<1 U	N/A	N/A	<1 U
BROMOMETHANE	ug/L	140	<50 U	N/A	N/A	<1 U	N/A	<1 U	N/A	<1 U	N/A	N/A	<1 U
CARBON DISULFIDE	ug/L	10000	<50 U	N/A	N/A	<1 U	N/A	<1 U	N/A	<1 U	N/A	N/A	<1 U
CARBON TETRACHLORIDE	ug/L	5	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
CHLOROBENZENE	ug/L	100	<12.5 U	N/A	N/A	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A	N/A	<0.25 U
CHLOROETHANE	ug/L	41000	<50 U	N/A	N/A	<1 U	N/A	<1 U	N/A	<1 U	N/A	N/A	<1 U
CHLOROFORM	ug/L	1000	<12.5 U	N/A	N/A	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A	N/A	<0.25 U
CHLOROMETHANE	ug/L	220	<50 U	N/A	N/A	<1 U	N/A	<1 U	N/A	<1 U	N/A	N/A	<1 U
CIS-1,2-DICHLOROETHENE	ug/L	70	38.6 J	N/A	N/A	0.703 J	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
DIBROMOCHLOROMETHANE	ug/L	34	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
DIBROMOMETHANE	ug/L	380	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
ETHYLBENZENE	ug/L	700	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
HEXACHLOROBUTADIENE	ug/L	20	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
ISOPROPYLBENZENE	ug/L	1000	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
M,P-XYLENE	ug/L	10000	<50 U	N/A	N/A	<1 U	N/A	<1 U	N/A	<1 U	N/A	N/A	<1 U
METHYLENE CHLORIDE	ug/L	5	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
NAPHTHALENE	ug/L	2000	<20 U	N/A	N/A	<0.4 U	N/A	<0.4 U	N/A	<0.4 U	N/A	N/A	<0.4 U
N-BUTYLBENZENE	ug/L	4100	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
N-PROPYLBENZENE	ug/L	4100	<12.5 U	N/A	N/A	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A	N/A	<0.25 U
O-XYLENE	ug/L	10000	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
P-ISOPROPYLTOLUENE	ug/L	10000	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
SEC-BUTYLBENZENE	ug/L	4100	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
STYRENE	ug/L	100	<12.5 U	N/A	N/A	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	N/A	N/A	<0.25 U
TERT-BUTYLBENZENE	ug/L	4100	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
TETRACHLOROETHENE	ug/L	5	112	N/A	N/A	254	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	0.343 J
TOLUENE	ug/L	1000	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<50 U	N/A	N/A	<1 U	N/A	<1 U	N/A	<1 U	N/A	N/A	<1 U
TRICHLOROETHENE	ug/L	5	653	N/A	N/A	93	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
TRICHLOROFLUOROMETHANE	ug/L	31000	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	<0.5 U
VINYL CHLORIDE	ug/L	2	<25 U	N/A	N/A	<0.5 U	N/A	<0.5 U	N/A	0.369 J	N/A	N/A	<0.5 U
Volatile Fatty Acids (830-MBA)													
ACETIC ACID	mg/L		5840	N/A	N/A	<1 U	N/A	<1 U	N/A	N/A	N/A	N/A	N/A
BUTYRIC ACID	mg/L		3080	N/A	N/A	<1 U	N/A	<1 U	N/A	N/A	N/A	N/A	N/A
LACTIC ACID	mg/L		<10 U	N/A	N/A	<1 U	N/A	<1 U	N/A	N/A	N/A	N/A	N/A

LHAAP-58 Quarterly MNA Sampling - October 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	35AWW08-102714 10/27/2014	35AWW08F-102714 10/27/2014	35AWW08FF-102714 10/27/2014	35AWW09-102714 10/27/2014	35AWW09F-102714 10/27/2014	35AWW10-102814 10/28/2014	35AWW10F-102814 10/28/2014	35AWW11-102914 10/29/2014	35AWW11F-102914 10/29/2014	35AWW11FF-102914 10/29/2014	35AWW12-103014 10/30/2014
Location Description:			Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - E, inside site boundary. Sampled quarterly	Site 58 - ESE, inside site boundary. Sampled quarterly	Site 58 - ESE, inside site boundary. Sampled quarterly	Site 58 - SE, inside site boundary. Sampled quarterly	Site 58 - SE, inside site boundary. Sampled quarterly	Site 58 - SE, inside site boundary. Sampled quarterly	Site 58 - E, outside site boundary. Sampled quarterly
PROPIONIC ACID	mg/L	51	816	N/A	N/A	<10 U	N/A	<10 U	N/A	N/A	N/A	N/A	N/A
PYRUVIC ACID	mg/L		<1 U	N/A	N/A	<0.1 U	N/A	<0.1 U	N/A	N/A	N/A	N/A	N/A
Anions (9056)													
CHLORIDE	mg/L		2020	N/A	N/A	1610	N/A	6.73	N/A	2640	N/A	N/A	N/A
NITRATE	mg/L	10	<20 U	N/A	N/A	<4 U	N/A	0.135 J	N/A	<4 U	N/A	N/A	N/A
NITRITE	mg/L	1	<20 U	N/A	N/A	<4 U	N/A	<0.2 U	N/A	<4 U	N/A	N/A	N/A
SULFATE	mg/L		<100 U	N/A	N/A	1040	N/A	58.1	N/A	1390	N/A	N/A	N/A
Dissolved Gases (RSK-175)													
CARBON DIOXIDE	ug/L		505000	N/A	N/A	216000	N/A	495000 J	N/A	175000 J	N/A	N/A	N/A
ETHANE	ug/L		<2 U	N/A	N/A	<2 U	N/A	<2 U	N/A	<2 U	N/A	N/A	N/A
ETHENE	ug/L		<2 U	N/A	N/A	<2 U	N/A	<2 U	N/A	<2 U	N/A	N/A	N/A
METHANE	ug/L		4420	N/A	N/A	1.97 J	N/A	<2 U	N/A	<2 U	N/A	N/A	N/A
Ferrous Iron (SM3500FE)													
FERROUS IRON	mg/L		478	N/A	N/A	<0.04 U	N/A	0.0311 J	N/A	<0.04 U	N/A	N/A	N/A
Sulfide (SM4500-S-(-2)-F-2000)													
SULFIDE	mg/L		12.4	N/A	N/A	1.34 J	N/A	<1.00 U	N/A	<1.00 U	N/A	N/A	N/A

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

LHAAP-58 Quarterly MNA Sampling - October 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	35AWW13-102114 10/21/2014	35AWW13FD-102114 10/21/2014	35AWW14-103014 10/30/2014	35AWW15-102114 10/21/2014	35AWW16-103014 10/30/2014	35AWW17-103114 10/31/2014	35AWW18-103114 10/31/2014	35AWW19-103014 10/30/2014	35AWW20-102914 10/29/2014	35AWW20F-102914 10/29/2014	35AWW21-102114 10/21/2014
Location Description:			Site 58 - NE, inside site boundary. Sampled quarterly	Site 58 - NE, inside site boundary. Sampled quarterly	Site 58 - SE, outside site boundary. Sampled quarterly	Site 58 - W, inside site boundary. Sampled quarterly	Site 58 - SW, outside site boundary, near Building 744-A. Sampled quarterly	Site 58 - SW, outside site boundary. Sampled quarterly	Site 58 - SSW, outside site boundary. Sampled quarterly	Site 58 - SSW, outside site boundary. Sampled quarterly	Site 58 - SW, inside site boundary, between Building 716 and 113. Sampled quarterly	Site 58 - SW, inside site boundary, between Building 716 and 113. Sampled quarterly	Site 58 - ESE, outside site boundary, beside Building 725. Sampled quarterly
Alkalinity (310.2)													
ALKALINITY, TOTAL	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	700	N/A	N/A
Phosphorus (365.4)													
PHOSPHORUS	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.2 U	N/A	N/A
Total Organic Carbon (415.1)													
TOTAL ORGANIC CARBON (TOC)	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	36.1	N/A	N/A
Metals (6010C)													
IRON	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.192 J	N/A	N/A
Metals (6020A)													
ARSENIC	mg/L	0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MANGANESE, DISSOLVED	mg/L	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.04	N/A
MANGANESE, TOTAL	mg/L	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5	N/A	N/A
Volatile Organic Carbon (8260B)													
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<8 U	N/A	<0.4 U
1,1,2-TRICHLOROETHANE	ug/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	55.8	N/A	<0.5 U
1,1-DICHLOROETHANE	ug/L	10000	<0.25 U	<0.25 U	3.18	<0.25 U	<0.25 U	<0.25 U	0.755 J	2.25	426	N/A	<0.25 U
1,1-DICHLOROETHENE	ug/L	7	<1 U	<1 U	1.57 J	<1 U	<1 U	<1 U	0.792 J	10.9	4910	N/A	<1 U
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<0.3 U	<0.3 U	<0.3 U	<0.3 U	<0.3 U	<0.3 U	<0.3 U	<0.3 U	<6 U	N/A	<0.3 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<20 U	N/A	<1 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<8 U	N/A	<0.4 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U	<40 U	N/A	<2 U
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
1,2-DICHLOROBENZENE	ug/L	600	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	6.17 J	N/A	<0.25 U
1,2-DICHLOROETHANE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	2.8	16.8 J	N/A	<0.5 U
1,2-DICHLOROPROPANE	ug/L	5	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<8 U	N/A	<0.4 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
1,3-DICHLOROBENZENE	ug/L	3100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<8 U	N/A	<0.4 U
1,4-DICHLOROBENZENE	ug/L	75	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<5 U	N/A	<0.25 U
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
2-BUTANONE	ug/L	61000	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<100 U	N/A	<5 U
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<5 U	N/A	<0.25 U
2-HEXANONE	ug/L	6100	<5 U	<5 U	<5 UJ	<5 U	<5 UJ	<5 UJ	<5 UJ	<5 UJ	<100 U	N/A	<5 U
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U

LHAAP-58 Quarterly MNA Sampling - October 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	35AWW13-102114 10/21/2014	35AWW13FD-102114 10/21/2014	35AWW14-103014 10/30/2014	35AWW15-102114 10/21/2014	35AWW16-103014 10/30/2014	35AWW17-103114 10/31/2014	35AWW18-103114 10/31/2014	35AWW19-103014 10/30/2014	35AWW20-102914 10/29/2014	35AWW20F-102914 10/29/2014	35AWW21-102114 10/21/2014
Location Description:			Site 58 - NE, inside site boundary. Sampled quarterly	Site 58 - NE, inside site boundary. Sampled quarterly	Site 58 - SE, outside site boundary. Sampled quarterly	Site 58 - W, inside site boundary. Sampled quarterly	Site 58 - SW, outside site boundary, near Building 744-A. Sampled quarterly	Site 58 - SW, outside site boundary. Sampled quarterly	Site 58 - SSW, outside site boundary. Sampled quarterly	Site 58 - SSW, outside site boundary. Sampled quarterly	Site 58 - SW, inside site boundary, between Building 716 and 113. Sampled quarterly	Site 58 - SW, inside site boundary, between Building 716 and 113. Sampled quarterly	Site 58 - ESE, outside site boundary, beside Building 725. Sampled quarterly
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<100 U	N/A	<5 U
ACETONE	ug/L	92000	<5 U	<5 U	<5 UJ	<5 U	<5 UJ	<5 UJ	<5 UJ	<5 UJ	<100 U	N/A	<5 U
BENZENE	ug/L	5	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	5.16 J	N/A	<0.25 U
BROMOBENZENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<5 U	N/A	<0.25 U
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<8 U	N/A	<0.4 U
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
BROMOFORM	ug/L	36	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<20 U	N/A	<1 U
BROMOMETHANE	ug/L	140	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<20 U	N/A	<1 U
CARBON DISULFIDE	ug/L	10000	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<20 U	N/A	<1 U
CARBON TETRACHLORIDE	ug/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	<10 U	N/A	<0.5 U
CHLOROBENZENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<5 U	N/A	<0.25 U
CHLOROETHANE	ug/L	41000	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<20 U	N/A	<1 U
CHLOROFORM	ug/L	1000	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<5 U	N/A	<0.25 U
CHLOROMETHANE	ug/L	220	<1 UJ	<1 UJ	<1 U	<1 UJ	<1 U	<1 U	<1 U	<1 U	<20 U	N/A	<1 UJ
CIS-1,2-DICHLOROETHENE	ug/L	70	<0.5 U	<0.5 U	1.94	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	119	N/A	<0.5 U
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
DIBROMOMETHANE	ug/L	380	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
ETHYLBENZENE	ug/L	700	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
M,P-XYLENE	ug/L	10000	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<20 U	N/A	<1 U
METHYLENE CHLORIDE	ug/L	5	0.293 J	0.275 J	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	1.99
NAPHTHALENE	ug/L	2000	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<8 U	N/A	<0.4 U
N-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
N-PROPYLBENZENE	ug/L	4100	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<5 U	N/A	<0.25 U
O-XYLENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
STYRENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<5 U	N/A	<0.25 U
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
TETRACHLOROETHENE	ug/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	<10 U	N/A	<0.5 U
TOLUENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
TRANS-1,2-DICHLOROETHENE	ug/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	<10 U	N/A	<0.5 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<20 U	N/A	<1 U
TRICHLOROETHENE	ug/L	5	<0.5 U	<0.5 U	0.806 J	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.81 J	843	N/A	<0.5 U
TRICHLOROFLUOROMETHANE	ug/L	31000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<10 U	N/A	<0.5 U
VINYL CHLORIDE	ug/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	102	N/A	<0.5 U
Volatile Fatty Acids (830-MBA)													
ACETIC ACID	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BUTYRIC ACID	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LACTIC ACID	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

LHAAP-58 Quarterly MNA Sampling - October 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	35AWW13-102114 10/21/2014	35AWW13FD-102114 10/21/2014	35AWW14-103014 10/30/2014	35AWW15-102114 10/21/2014	35AWW16-103014 10/30/2014	35AWW17-103114 10/31/2014	35AWW18-103114 10/31/2014	35AWW19-103014 10/30/2014	35AWW20-102914 10/29/2014	35AWW20F-102914 10/29/2014	35AWW21-102114 10/21/2014
Location Description:			Site 58 - NE, inside site boundary. Sampled quarterly	Site 58 - NE, inside site boundary. Sampled quarterly	Site 58 - SE, outside site boundary. Sampled quarterly	Site 58 - W, inside site boundary. Sampled quarterly	Site 58 - SW, outside site boundary, near Building 744-A. Sampled quarterly	Site 58 - SW, outside site boundary. Sampled quarterly	Site 58 - SSW, outside site boundary. Sampled quarterly	Site 58 - SSW, outside site boundary. Sampled quarterly	Site 58 - SW, inside site boundary, between Building 716 and 113. Sampled quarterly	Site 58 - SW, inside site boundary, between Building 716 and 113. Sampled quarterly	Site 58 - ESE, outside site boundary, beside Building 725. Sampled quarterly
PROPIONIC ACID	mg/L	51	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PYRUVIC ACID	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Anions (9056)													
CHLORIDE	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2050	N/A	N/A
NITRATE	mg/L	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<10 U	N/A	N/A
NITRITE	mg/L	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<10 U	N/A	N/A
SULFATE	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2230	N/A	N/A
Dissolved Gases (RSK-175)													
CARBON DIOXIDE	ug/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	152000 J	N/A	N/A
ETHANE	ug/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<2 U	N/A	N/A
ETHENE	ug/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.05 J	N/A	N/A
METHANE	ug/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	132	N/A	N/A
Ferrous Iron (SM3500FE)													
FERROUS IRON	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.04 U	N/A	N/A
Sulfide (SM4500-S-(-2)-F-2000)													
SULFIDE	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1.00 U	N/A	N/A

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

LHAAP-58 Quarterly MNA Sampling - October 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	35AWW22-103014 10/30/2014 8	35AWW22FD-103014 10/30/2014	LHSMW06-103014 10/30/2014	LHSMW07-102914 10/29/2014	LHSMW07F-102914 10/29/2014
Location Description:			Site 58 - ENE, outside site boundary. Sampled quarterly	Site 58 - ENE, outside site boundary. Sampled quarterly	Site 58 - SW, inside site boundary, beside Building 715. Sampled quarterly	Site 58 - SW, outside site boundary. Sampled quarterly	Site 58 - SW, outside site boundary. Sampled quarterly
Alkalinity (310.2)							
ALKALINITY, TOTAL	mg/L		N/A	N/A	N/A	665	N/A
Phosphorus (365.4)							
PHOSPHORUS	mg/L		N/A	N/A	N/A	<0.2 U	N/A
Total Organic Carbon (415.1)							
TOTAL ORGANIC CARBON (TOC)	mg/L		N/A	N/A	N/A	67	N/A
Metals (6010C)							
IRON	mg/L		N/A	N/A	N/A	1.08	N/A
Metals (6020A)							
ARSENIC	mg/L	0.01	N/A	N/A	0.00821	0.009	N/A
MANGANESE, DISSOLVED	mg/L	14	N/A	N/A	N/A	N/A	0.137
MANGANESE, TOTAL	mg/L	14	N/A	N/A	N/A	0.14	N/A
Volatile Organic Carbon (8260B)							
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	<0.4 U	<0.4 U	<0.8 U	N/A
1,1,2-TRICHLOROETHANE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	5.68	N/A
1,1-DICHLOROETHANE	ug/L	10000	<0.25 U	<0.25 U	2.89	117	N/A
1,1-DICHLOROETHENE	ug/L	7	<1 U	<1 U	4.03	1140	N/A
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
1,2,3-TRICHLOROBENZENE	ug/L	310	<0.3 U	<0.3 U	<0.3 U	<0.6 U	N/A
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<1 U	<1 U	<1 U	<2 U	N/A
1,2,4-TRICHLOROBENZENE	ug/L	70	<0.4 U	<0.4 U	<0.4 U	<0.8 U	N/A
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 U	<2 U	<2 U	<4 U	N/A
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
1,2-DICHLOROBENZENE	ug/L	600	<0.25 U	<0.25 U	<0.25 U	<0.5 U	N/A
1,2-DICHLOROETHANE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	2.01	N/A
1,2-DICHLOROPROPANE	ug/L	5	<0.4 U	<0.4 U	<0.4 U	<0.8 U	N/A
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
1,3-DICHLOROBENZENE	ug/L	3100	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	<0.4 U	<0.4 U	<0.8 U	N/A
1,4-DICHLOROBENZENE	ug/L	75	<0.25 U	<0.25 U	<0.25 U	<0.5 U	N/A
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
2-BUTANONE	ug/L	61000	<5 U	<5 U	<5 U	<10 U	N/A
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	<0.5 U	N/A
2-HEXANONE	ug/L	6100	<5 UJ	<5 UJ	<5 UJ	<10 U	N/A
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A

LHAAP-58 Quarterly MNA Sampling - October 2014

Sample ID: / Sample Date:	Units	MCL/ MSC	35AWW22-103014 10/30/2014 8	35AWW22FD-103014 10/30/2014	LHSMW06-103014 10/30/2014	LHSMW07-102914 10/29/2014	LHSMW07F-102914 10/29/2014
Location Description:			Site 58 - ENE, outside site boundary. Sampled quarterly	Site 58 - ENE, outside site boundary. Sampled quarterly	Site 58 - SW, inside site boundary, beside Building 715. Sampled quarterly	Site 58 - SW, outside site boundary. Sampled quarterly	Site 58 - SW, outside site boundary. Sampled quarterly
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	<5 U	<5 U	<10 U	N/A
ACETONE	ug/L	92000	<5 UJ	<5 UJ	<5 UJ	<10 U	N/A
BENZENE	ug/L	5	<0.25 U	<0.25 U	<0.25 U	1.03 J	N/A
BROMOBENZENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	<0.5 U	N/A
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	<0.4 U	<0.4 U	<0.8 U	N/A
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
BROMOFORM	ug/L	36	<1 U	<1 U	<1 U	<2 U	N/A
BROMOMETHANE	ug/L	140	<1 U	<1 U	<1 U	<2 U	N/A
CARBON DISULFIDE	ug/L	10000	<1 U	<1 U	<1 U	<2 U	N/A
CARBON TETRACHLORIDE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
CHLOROBENZENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	0.704 J	N/A
CHLOROETHANE	ug/L	41000	<1 U	<1 U	<1 U	<2 U	N/A
CHLOROFORM	ug/L	1000	<0.25 U	<0.25 U	<0.25 U	<0.5 U	N/A
CHLOROMETHANE	ug/L	220	<1 U	<1 U	<1 U	<2 U	N/A
CIS-1,2-DICHLOROETHENE	ug/L	70	<0.5 U	<0.5 U	5.2	21	N/A
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
DIBROMOMETHANE	ug/L	380	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
ETHYLBENZENE	ug/L	700	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
M,P-XYLENE	ug/L	10000	<1 U	<1 U	<1 U	<2 U	N/A
METHYLENE CHLORIDE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
NAPHTHALENE	ug/L	2000	<0.4 U	<0.4 U	<0.4 U	<0.8 U	N/A
N-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
N-PROPYLBENZENE	ug/L	4100	<0.25 U	<0.25 U	<0.25 U	<0.5 U	N/A
O-XYLENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
STYRENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	<0.5 U	N/A
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
TETRACHLOROETHENE	ug/L	5	<0.5 U	<0.5 U	0.381 J	<1 U	N/A
TOLUENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
TRANS-1,2-DICHLOROETHENE	ug/L	100	<0.5 U	<0.5 U	<0.5 U	1.06 J	N/A
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	<1 U	<1 U	<2 U	N/A
TRICHLOROETHENE	ug/L	5	<0.5 U	<0.5 U	2.77	78.1	N/A
TRICHLOROFLUOROMETHANE	ug/L	31000	<0.5 U	<0.5 U	<0.5 U	<1 U	N/A
VINYL CHLORIDE	ug/L	2	<0.5 U	<0.5 U	1.15	35.4	N/A
Volatile Fatty Acids (830-MBA)							
ACETIC ACID	mg/L		N/A	N/A	N/A	N/A	N/A
BUTYRIC ACID	mg/L		N/A	N/A	N/A	N/A	N/A
LACTIC ACID	mg/L		N/A	N/A	N/A	N/A	N/A

LHAAP-58 Quarterly MNA Sampling - October 2014

Sample ID: Sample Date:	Units	MCL/ MSC	35AWW22-103014 10/30/2014 8	35AWW22FD-103014 10/30/2014	LHSMW06-103014 10/30/2014	LHSMW07-102914 10/29/2014	LHSMW07F-102914 10/29/2014
Location Description:			Site 58 - ENE, outside site boundary. Sampled quarterly	Site 58 - ENE, outside site boundary. Sampled quarterly	Site 58 - SW, inside site boundary, beside Building 715. Sampled quarterly	Site 58 - SW, outside site boundary. Sampled quarterly	Site 58 - SW, outside site boundary. Sampled quarterly
PROPIONIC ACID	mg/L	51	N/A	N/A	N/A	N/A	N/A
PYRUVIC ACID	mg/L		N/A	N/A	N/A	N/A	N/A
Anions (9056)							
CHLORIDE	mg/L		N/A	N/A	N/A	2460	N/A
NITRATE	mg/L	10	N/A	N/A	N/A	<10 U	N/A
NITRITE	mg/L	1	N/A	N/A	N/A	<10 U	N/A
SULFATE	mg/L		N/A	N/A	N/A	2660	N/A
Dissolved Gases (RSK-175)							
CARBON DIOXIDE	ug/L		N/A	N/A	N/A	159000 J	N/A
ETHANE	ug/L		N/A	N/A	N/A	<2 U	N/A
ETHENE	ug/L		N/A	N/A	N/A	<2 U	N/A
METHANE	ug/L		N/A	N/A	N/A	185	N/A
Ferrous Iron (SM3500FE)							
FERROUS IRON	mg/L		N/A	N/A	N/A	<0.04 U	N/A
Sulfide (SM4500-S-(-2)-F-2000)							
SULFIDE	mg/L		N/A	N/A	N/A	0.627 J	N/A

Blue Highlighting Indicates concentrations above the MCL/MSC

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

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

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

Subject:	**Final Minutes, Monthly Managers' Meeting, Longhorn Army Ammunition Plant (LHAAP)**
Location of Meeting:	**LHAAP Army Trailer and Teleconference – 866-203-6896, passcode 8603914725**
Date of Meeting:	**February 19, 2015 – 10:00 AM**

Attendees:

Army BRAC:	Rose Zeiler
EPA:	Rich Mayer, Janetta Coats, Kent Becher (USGS Liaison)
TCEQ:	April Palmie, Dale Vodak
USACE:	Aaron Williams, Rick Smith
AECOM:	Mark Heaston, Gretchen McDonnell
AEC:	
USFWS:	Paul Bruckwicki

Welcome **AECOM**

Action Items
AECOM

- Examine the level of effort required to develop a comprehensive geospatial database of all information for LHAAP (lab data, boring logs, well construction reports, etc.) that will make review easier. **Pending.** Information will be presented to Army by the end of this week. Discussed further under "Other Environmental Restoration", below.
- Develop with Army the path forward for submitting proposed changes to GWTP sampling requirements.
  - Prepare an Army Draft comparison of the 2007 GWTP SAP revision to current operations prior to the next MMM. **Pending.** Tabular summary of current sampling versus current SAP has been prepared and supplied to Army.
  - Generate a redline of the 2007 GWTP SAP to reflect the desired sampling and analysis plan, in anticipation of generating a new SAP. **Pending.** Dr. Zeiler confirmed for Mr. Mayer that GWTP operation will be included in all alternatives presented in the LHAAP-18/24 Revised FS.
- Develop revised 1,4-dioxane sampling memo and sampling plan for next event. **Pending.** Mr. Williams stated that contractual options are being examined on how the Army contractor can move forward on this work. Dr. Zeiler stated that when EPA/TCEQ first made this request in the November 2012 MMM, EPA/TCEQ took an action item to provide a written request for this sampling. Mr. Mayer stated that EPA asked for 1,4-dioxane sampling within document comments, but did not provide a separate written request to his knowledge. Dr. Zeiler said she believes Ms. Duke, TCEQ provided a separate email request, but cannot find it in the correspondence. Dr. Zeiler asked if EPA/TCEQ could provide an email confirming that they did request Army to conduct limited 1,4-dioxane sampling at sites with VOC plumes so we can complete the documentation on this item.
- Evaluate GWTP discharge with respect to potential 1,4-dioxane content. **Pending.**
- Surface Water/Perimeter Well Quarterly Update – AECOM will provide a date for providing the dispute related surface water/perimeter well quarterly update on this data, and plan to send this to the RAB members after review by FFA parties. **Pending.** The draft memo was distributed to MMM participants. Army requested that lab reports be attached to

the memo prior to being issued to the MMM group. The memo, with the lab reports attached will constitute the submittal to the AR.

Army

EPA

- Mr. Tzhone will provide the contact/address information for EPA Division Director Carl Edlund to Dr. Zeiler. **Complete.**

TCEQ

AEC

- Review proposals for comprehensive geospatial database of all information for LHAAP (lab data, boring logs, well construction reports, etc.) that will make review easier. **Pending AECOM action.**

USFWS

Defense Environmental Restoration Program (DERP) PBR Update AECOM

- Upcoming document submissions to regulators (see Document and Issue Tracking table)

Item 1 (GWTP Quarterly Report) – EPA/TCEQ comments have been received on the Q2 and Q3 2014 quarterly reports, with EPA comments also being received on the Q1 report. TCEQ will not provide comment on the Q1 report. Q4 report is being prepared and comments received on the Q1, Q2 and Q3 reports will be incorporated.

Item 2 (LHAAP-18/24 Revised FS) – Draft Revised FS scheduled for submittal to agencies on 2/27/15.

Item 3 (LHAAP-37 RACR) – Agency comments have been submitted on the Draft RACR. LUC notification must be recorded, and recorded documents added to Appendix A, before a Draft Final document can be issued. Ms. McDonnell discussed that, in the absence of being able to deliver RTCs with a Draft Final report until the LUC notifications are filed, Army's plan is to return only the RTC table (but with specific citations of any changed language) with the Draft Final to follow. Agency comments have been received and RTCs are being prepared.

Item 4 (LHAAP-37 LUC) – LUC survey plat and description has been received from surveyor. The documents intended for filing with Harrison County will be forwarded for TCEQ concurrence and will be recorded upon receipt of concurrence. Dr. Zeiler will have the notification notarized while in Harrison County today, but the documents will not be filed until TCEQ concurrence is obtained.

Item 5 (LHAAP-46 RACR) – The Draft Final RACR was submitted to the agencies on 1/22/15, so would have gone Final on 2/22/15; however, additional EPA comments were received on the Draft Final submittal and associated RTCs. Ms. McDonnell provided responses to EPA's outstanding comments.

Comment #4, requested SOP specific to LHAAP-46. The MMM group had discussed the RACRs would be written to provide site-specific parameters within the RACR's surface water sampling section, but the actual details of procedure would refer back to the SOP already in the

IWWP (except for LHAAP-50, where surface water monitoring is more complex for two locations used to monitor the effectiveness of the perchlorate surface soil excavation action). Army feels the combination of the information provided in the surface water monitoring section of the RACR and the existing surface water sampling SOP in the IWWP is the combination of documents required to cover execution of surface water sampling at the site. A separate SOP for surface water monitoring here is not planned.

Mr. Becher asked what the SOP will be for taking the elevation of the bottom of the creek. Ms. McDonnell explained that the creek bottom elevation is simply a data point that will be established by survey, and is not a "procedure" that will be executed. Ms. McDonnell showed Mr. Becher the surface water sampling form designed to be completed during performance of the sampling events. The sampling forms contain the surveyed elevation of the sampling point, as well as the designated wells to comparison of groundwater table elevation, and the required survey information associated with the comparison well. Mr. Becher concurred that this makes sense. These forms will not be included in the RACRs (except for LHAAP-50 GPW-1 and GPW-1A, where a separate SOP has been developed), but are "tools" derived directly from the procedure and decision points provided in the RACR narrative; however, completed sampling forms will be included in the annual RAO reports to support the reported information.

Ms. Palmie asked whether appending the site-specific forms to the IWWP surface water SOP was an option. Dr. Zeiler stated that method was problematic because SOPs are not designed to be site-specific but to cover repetitive tasks that can be done the same way at multiple sites. With respect to surface water sampling in particular, different requirements have been established for different sites so only the actual act of physically acquiring the surface water sample is a repetitive task appropriate for an IWWP SOP. Mr. Williams also noted that modification of the very large IWWP to add site-specific materials could result in a long process, as the entire IWWP would require resubmittal and reapproval by the agencies each time site-specific information was added. Ms. Palmie expressed concern that the information required to manage the site be located in one place, instead of having to access multiple documents. Ms. McDonnell stated that the idea behind keeping all the site-specific information in the RACR allows someone to go to the RACR to know what is required to manage all aspects of the site (groundwater sampling, surface water sampling, land use control management, etc.), instead looking at multiple different documents. Dr. Zeiler suggested that, as the RAO reports address ongoing operations, modifications to the site management requirements should be documented in those reports (monitoring well network changes/optimization, changes to surface water monitoring protocols, etc.).

Ms. McDonnell addressed EPA comment #9 stating that Army agrees dissolved oxygen data obtained from bailed samples does not meet project data quality objectives. As such, the data has been removed from the database entries made by AECOM and the master groundwater sampling plan has been modified to indicate dissolved oxygen readings will not be collected for bailed samples.

Dr. Zeiler proposed that, if EPA is in agreement with these responses to their comments #4 and #9 submitted after the Draft Final LHAAP-46 RACR was issued, Army will prepare a revised RTC table including those additional EPA comments and Army's responses. Army will transmit the revised RTC table with an email stating that these responses do not require further revision to the RACR, allowing the Draft Final document submitted on 1/22/15 to move to Final status.

Item 6 (LHAAP-46 LUC) – LUC survey and notification recording with Harrison County has been complete for several months.

Item 7 (LHAAP-50 RACR) – Will be submitted to agencies on Monday, February 23rd. Ms. McDonnell guided the group through a preview of RACR Appendix J materials providing surface water sampling rationale for GPW-1 and GPW-1A, which is designed to monitor the effectiveness

of the excavation remedy for perchlorate-impacted surface soils. Ms. McDonnell explained that because the procedures needed to conduct the surface water sampling at GPW-1 and GPW-1A is more complex than can be appropriately captured by a combination of RACR narrative text and IWWP SOPs, a separate SOP was developed. This SOP will be followed by sampling personnel in collecting surface water samples at these two locations only. Attachments to the SOP include runoff curves and sampling forms that essentially lead the sampler through every step of the process to determine whether or not sampling is appropriate, and how long to wait after the start of the precipitation event to begin sampling when sampling is appropriate. Ms. McDonnell noted that the runoff curves were prepared by Mr. Zubin Sukheswalla, PE in AECOM's Dallas office, so any advanced questions the agencies might have related to that portion of the SOP will be addressed by him.

Mr. Becher volunteered to send directly to AECOM the storm alerts he receives as they seem fairly accurate. Ms. McDonnell noted that Army has been forwarding the alerts Mr. Becher has been providing. Only a trace of rain was observed at the GWTP associated with the most recent major precipitation alert. Mr. Bruckwicki noted that precipitation received varies around the 9,000 acres of the refuge.

Item 8 (LHAAP-50 LUC) - Proposed LUC boundaries support package was transmitted for agency concurrence in November. TCEQ requested additional supporting documentation (additional well data and screened intervals of the wells). Review of the LUC boundary will be conducted upon agency receipt of the RACR to provide that information.

Item 9 (LHAAP-58 RACR) – EPA comments on the RTCs for the Draft RACR were received on 1/12/15. LUC notification must be recorded, and recorded documents added to Appendix A, before a Draft Final document can be issued. Ms. McDonnell discussed that, in the absence of being able to deliver RTRTCs with a Draft Final report until the LUC notifications are filed, Army's plan is to return only the RTRTC table (but with specific citations of any changed language) with the Draft Final to follow. Agency comments have been received and RTCs are being prepared.

Item 10 (LHAAP-58 LUC) – LUC survey plat and description has been received from surveyor. The documents intended for filing with Harrison County will be forwarded for TCEQ concurrence and will be recorded upon receipt of concurrence. Dr. Zeiler will have the notification notarized while in Harrison County today, but the documents will not be filed until TCEQ concurrence is obtained.

Item 11 (LHAAP-67 RACR) – The Draft Final RACR was submitted to the agencies on 1/22/15, so would have gone Final on 2/22/15; however, follow-on EPA comments were received on the Draft Final submittal and associated RTRTCs. Ms. McDonnell provided responses to EPA's three outstanding comments.

EPA's first remaining comment questioned whether the existing wells monitored for MNA parameters provided adequate coverage of the "western" portion of the plume (associated with 67DPT13B). Ms. McDonnell explained that the remedial design specified monitoring of three plume wells for MNA parameters (67WW01, 67WW08, 67WW11). 67WW01 has not been reliable in producing adequate water to collect MNA parameters during every quarter as planned, so Army is examining replacement of 67WW01 with 67WW13 to ensure MNA parameters can be assessed at three points in the plume during every monitoring event. 67WW13 has reliably produced water historically and conditions there are similar to that at 67WW01, making it a good choice as a replacement. Army does not feel an additional well is necessary in the western portion

of the plume (near 67DPT13B) in order to assess MNA as aquifer and contaminant conditions in that area are not significantly different from that seen at the existing MNA monitoring wells.

Mr. Mayer stated that the western extent of the plume was not originally mapped to include the 67DPT13B area, so this is a newly found area of contamination that probably needs to be monitored, especially because the DPT provides only point in time information and did not provide information on MNA parameters. Ms. McDonnell explained that impacts in this area were discovered as Army stepped out to the west with DPT sampling to find a well to bound the plume in that direction, so the groundwater samples that were collected were grab samples and analyzed only for contaminants to facilitate the goal of finding the western edge of the plume; however, while this is additional plume area not included in the remedial investigation's estimate of the plume, the plume is fully monitored, being bounded by 67WW14 on the west, 67WW05 to the northwest and 67WW02 to the northeast. She further stated that the contaminant concentrations observed in the 67DPT13B grab groundwater sample were similar to that seen in other plume wells already included in the MNA monitoring network.

Mr. Mayer asked Dr. Zeiler if Army's position against adding an additional MNA well in the western part of the plume is that it was not contemplated in the remedial design. Dr. Zeiler responded that lack of a well in that area in the remedial design was part of it, as comments relating to modifications of the remedial design should be handled during the RAO report comment process, not in comments on the remedial action completion report. She stated that what Army did is consistent with what they said they'd do and, although 67WW01 does not appear to be working out, 67WW13 is there as a substitute.

Mr. Becher asked why the RACR showed water quality data for 67WW14 but water level data was not used in the potentiometric surface contouring. Ms. McDonnell stated that the potentiometric surface shown in the RACR reflects the baseline sampling event. 67WW14 was installed after the baseline event in order to provide a point to bound the plume to the west, so while contaminant data was used in constructing the plume maps, the water elevation data would not have been suitable for addition to that done during the earlier baseline round. For future potentiometric mapping in RAO reports, elevation data for 67WW14 will be included.

Mr. Mayer said he would take another look at it but was concerned about monitoring the western portion of the plume for MNA because 67DPT13B indicated significant concentrations of contaminants there. Ms. McDonnell noted that the 518 ug/L 1,1-DCE found in 67DPT13B is actually still less than the 940 ug/L found in 67WW08 which is being monitored for MNA, and stated that Army would likely be considering addition of a well at 67DPT13B if the concentrations observed had been an order of magnitude greater than what was already being monitored in other MNA wells, but that was not the case. Because the concentrations seen at 67DPT13B are of the same order of magnitude seen in the other MNA monitoring wells, monitoring another well with similar characteristics would appear to be of marginal value.

Mr. Mayer stated that MNA would have to be established to be working throughout the plume, and he doesn't believe EPA will be able to approve that MNA is working in this area of the plume without results from a monitoring well there. Mr. Mayer asked for information on the contaminant levels in the other wells being monitored for MNA parameters. Ms. McDonnell stated that the idea was to choose three plume wells that spanned the range of contaminant concentrations that were going to have to be attenuated, so 67WW08 was selected as the well with the highest 1,1-DCE concentration, 67WW01 was selected as a well with impacts in the middle of the range, and 67WW11 was selected because it had 1,1-DCE concentrations still exceeding the MCL, but an order of magnitude lower than the other two MNA wells. With the proposed replacement of 67WW01 (139 ug/L 1,1-DCE) with 67WW13 (565 ug/L 1,1-DCE), a well with higher concentrations than 67WW01 would be examined, but still less than the highest concentration found at 67WW08. Mr. Mayer offered verbal concurrence with substituting 67WW13 for 67WW01.

Dr. Zeiler summarized, and Mr. Mayer concurred, that the basis for EPA's comment is that the plume is larger than previously estimated, another MNA plume well is needed. She stated that Army's position is that the western portion of the plume is consistent with the rest in analyte suite and concentration and that data collected from the three wells will provide sufficient information to assess MNA in the whole plume. However, at some point in the future, when response complete is achieved, Army would be willing to collect additional data from the western portion to demonstrate it is also response complete to satisfy EPA's concern, if it is still an issue.

Ms. McDonnell asked, if this is the basis for the comment, whether EPA has concern about the eastern tip of the plume which is similarly not monitored for MNA between the center of the plume and the clean wells to the east. She said going down this path begs the question of how many wells EPA might want to see to prove the attenuation is happening "throughout" the plume? Mr. Mayer said that his attention was really on the area between the center of the plume and the western edge because there was a DPT out there that confirmed contaminant concentrations were present. For awareness, Dr. Zeiler noted that we have also had several situations on other sites where results from DPT grab groundwater were much higher than results from the actual monitoring actual wells installed at the same location.

Dr. Zeiler stated Army is hopeful EPA will consider this information and provide concurrence with the RACR, leaving these remaining concerns to be raised during review of the upcoming RAO report. Mr. Heaston noted that EPA's remaining comments are not related to implementation of the remedial action work plan (construction-based), but are operation-based so should be addressed as part of the RAO process. Mr. Mayer stated EPA staff would discuss acceptability of this approach to addressing their remaining concerns. Mr. Tzhone stated this approach doesn't disregard EPA's comments, but defers addressing them to a different point in the process, so may not be problematic.

EPA's second remaining comment was that the "intermediate" zone groundwater needed to be monitored at the site to ensure contamination was not migrating downward. Mr. Mayer noted that, while Army did install a DPT into the intermediate zone to confirm no impacts, it establishes conditions at only one point in time.

Ms. McDonnell stated that this is largely an issue related to the fact that the CSM for the site changed based on findings during the remedial action implementation. The remedial design designated shallow and intermediate zones were not, in fact, separate zones at all, but are one shallow zone with greater thickness. There was no lithological separation or hydraulic differences identified during remedial action implementation activities. So, when the remedial design and work plan called for wells in the "intermediate", it was targeting the lower portion of what is now correctly classified as "shallow" zone. The wells at LHAAP-67 are split between those monitoring the upper shallow (formerly called "shallow" zone) and the lower shallow (formerly called "intermediate" zone), so the intent of the remedial design has been met. Going beyond that, Army advanced a DPT beyond the bottom of the lower shallow (formerly called "intermediate") to the true "intermediate" zone. The lower shallow was underlain by approximately 20 feet of dry, laminated clay plus additional footage of other clay located before the water-bearing "intermediate" zone was encountered. A grab groundwater sample was collected and no impacts were found. Army feels the remedial design's intent for monitoring of the "intermediate" (now known to be "lower shallow") has been satisfied and does not plan to install additional wells into what would have been considered "deep" zone by the remedial design.

Ms. Palmie asked if the information on reclassification of the groundwater bearing zones at the site was captured in the RAO report. Ms. McDonnell answered that the changes to the CSM were actually addressed in the RACR, as they were discovered during remedial action implementation.

Dr. Zeiler said that Army will submit to the agencies an updated RTC table suggesting that these remaining comments should be addressed during the RAO process. Mr. Tzhone said he and

Mr. Mayer would have a conversation with Mr. Sanchez and EPA Legal regarding deferring these comments and those on the Draft Final LHAAP-46 RACR to the RAO process, and Mr. Mayer will provide a response to Army advising whether this will be acceptable to try to avoid another round of response.

Item 12 (LHAAP-67 LUC) – LUC survey and notification was recorded with Harrison County last year.

Item 13 (LHAAP-46 RAO Report) – Projected for submittal to agencies in March.

Item 14 (LHAAP-67 RAO Report) – Projected for submittal to agencies in March.

Item 15 (LHAAP-50 RAO Report) – Projected for submittal to agencies in April.

Item 16 (LHAAP-58 RAO Report) – Projected for submittal to agencies in May.

Item 17 (Monthly Managers' Meeting) – Next MMM scheduled for 10AM, Tuesday, March 17th by teleconference.

Item 18 (LHAAP-29 Amended RI/FS) – The draft document is planned for submittal to Army in mid-March. Lab-scale work with materials collected in Biotrap units is being conducted at this time. Mr. Mayer indicated he would forward results of EPA's soil gas study done at the site to Army.

Item 19 (LHAAP-17 PDI WP, LHAAP-16 RD WP, LHAAP-03 RD/RAWP, LHAAP-04 RD, LHAAP-47 RD) – Placeholder for sites on hold due to dispute. Army has elevated the dispute to the Office of Management and Budget.

Item 20 (RAB/Website) – The group reviewed fact sheets for sites LHAAP-37, LHAAP-46, LHAAP-50, LHAAP-58 and LHAAP-67 with limited update to include information on the status of the LUC boundary surveys. Mr. Mayer asked for more review time for RAB materials going forward. Army agreed RAB meeting materials will be provided for agency review at least a week in advance of the meeting.

Ms. McDonnell briefed that the LHAAP website had been updated to reflect tonight's RAB meeting on the home page banner, to include the agenda for tonight's meeting and to add a few more sets of historical meeting minutes. Photos will be taken during tonight's meeting for addition to the website. Army is updating the ECOP map and that will also be added to the website.

The RAB meeting will be held tonight at 6PM. A permanent note has been added to the Document and Issue Tracking table to reflect the website will be updated at least quarterly. RAB minutes for both August 2014 and November 2014 meetings will be approved during tonight's RAB meeting, as approval of the August 2014 minutes was deferred during the last meeting.

The next RAB meeting will be scheduled at tonight's meeting.

Item 21 (GWTP O&M) – There was a high level of activity in Q4 2014 to maintain the ICTs. Everything is functioning well with increased water extraction rates. A small increase in perchlorate in discharge was observed during a cold snap in January, but has returned to "non-detect" since.

Mr. Becher asked if the pump in ICT 13B would be replaced, and Mr. Salameh advised that he believed it was one that had been replaced during the recent work. Mr. Becher remarked that groundwater in that area tends to mound if that pump is not functioning.

Dr. Zeiler advised that all of the alternatives that will be presented in the LHAAP-18/24 Revised FS will include a component utilizing the GWTP.

Mr. Mayer asked whether there is anything more that can be done to mitigate the impacts of cold weather on FBR system effectiveness. Mr. Salameh stated that supplemental carbon substrate was added to the FBR to create additional surface area for bacterial growth. AECOM has also investigated infrastructure to heat the fluids prior to entry into the FBR, but has not implemented that. Dr. Zeiler noted that another option is to suspend discharge of treated water when cold temperatures occur. Mr. Becher stated that he didn't recall instances of perchlorate in the treated water, prior to the last few quarters; however, Dr. Zeiler and Mr. Salameh noted that there were several instances where perchlorate was detected in treated water historically.

Mr. Becher commented that the GWTP quarterly reports keep improving and are very helpful in seeing what is going on, while historical reports didn't contain much information to work with. Dr. Zeiler reminded the group that the GWTP began as a three-year treatability study that has ended up being an interim remedy because a ROD has not yet been achieved, so the initial reporting was not of the same level expected for an interim remedy.

Item 22 (Admin Record Update) – AR Update for the 3rd quarter went to agencies in early February. 4th quarter is under Army review and should be submitted to agencies soon. Dr. Zeiler noted that the CY 2014 dispute documentation package is located at the very end of the 4th quarter submittal.

Item 23 (CRP/CIP) – Ms. McDonnell suggested individual action items be added for development of questions leading to the survey scheduled for the Fall.

Defense Environmental Restoration Program (DERP) PBR Update (continued) AECOM

- Upcoming field work – Quarterly sampling at MNA sites continues per the master groundwater sampling schedule. New surface water sampling protocols developed for MNA sites will be implemented first in Q2 2015 (next quarter).
- Monthly data – Monthly data validation package covering analyses validated in the month of January 2015 was supplied as an attachment to the meeting agenda.
    - Mr. Mayer asked if analytical results have been obtained from 18WW24. Mr. Salameh stated results from December sampling were 0.4 ug/L for perchlorate and non-detect for VOCs. Dr. Zeiler noted that these results will be incorporated in the LHAAP-18/24 Revised FS. Ms. McDonnell confirmed that this data will be included in the next monthly validated data packet with the March MMM agenda.
- Groundwater Treatment Plant – discussed earlier in meeting

MMRP Update Army

- Update – no update expected until summer when annual inspections will be conducted

Other Environmental Restoration Army

- Comprehensive Geospatial Database Proposal
    - Mr. Heaston explained AECOM has developed three options for Army consideration to allow easier access data typically required to review project documents. The lowest-level option is PDF ("smart map") backed with metadata, where detail associated with elements of site maps can be pulled up by clicking on the element of interest. The other two options are more traditional GIS-based, with a lower-level option and a higher-level option. Rough order of magnitude level costs have been developed and will be presented to Army shortly. Dr. Zeiler stated that the information she would be looking for would be things like well logs, water level

data, analytical data. Mr. Becher asked if the 2007 Longhorn Access database had been thought of as a potential starting point. Mr. Heaston stated that could be a good starting point for whatever is done going forward.
  - Dr. Zeiler asked if anyone had any restrictions on what their computing power would allow them to work with. Ms. Palmie stated she had no restrictions. Dr. Zeiler stated she was likely the most limited with respect to what programs/systems that could be used.
  - Army will make a recommendation to AEC, and AEC will decide what funding will be provided. Upon selection of which system, it will be a matter of months until it would be functional (dependent upon data needing to be imported).
- Site 37 Bioplug Update
  - Mr. Fabian, ATC inspected decommissioning work on January 21st. All equipment has been removed and associated bioplug points and well installations abandoned.
  - The final report is scheduled for submittal to Army on February 24th. Submittal to the agencies is expected in March.
  - Mr, Williams explained that USACE is working on contract modification to allow AECOM to conduct three rounds of sampling, each separated by two months, to assess when aquifer conditions have returned to baseline. When conditions have returned to baseline, MNA monitoring will begin.
- Quarterly Reporting and Requirements
  - Quarterly Evaluation Reports – discussed earlier in the meeting.
  - Surface Water/Perimeter Well Quarterly Update
    - A draft data update memo was provided to the group for review during the meeting. Army has instructed AECOM to append the lab reports to the memo, and that will constitute the AR submittal to get this dispute-related surface water and perimeter well data into the record. The submittal will likely be transmitted by SendFiles due to large size.
    - Mr. Becher inquired as to the reason for variability in detection limits between wells for the September 2009 perimeter well sampling event. Ms. McDonnell stated that different detection limits could be associated with differing matrix interferences between the samples, but more research of historical documentation would be needed to give a definitive answer.
  - Mr. Becher and Mr. Mayer noted that charts within the memo appeared to plot non-detect results at high detection levels, making it appear there were high concentrations of perchlorate historically detected. AECOM took the action item to examine the charts (from RAB handouts) to identify charts plotting elevated detections levels that appear to be actual detections. Going forward charts should be revised to plot only actual detections, not detection levels.
  - Administrative Record Update – discussed earlier in the meeting.
  - Website Update (quarterly) – update will be performed after each RAB meeting. Mr. Tzhone indicated that he would provide a link to the next update of the EPA Longhorn site summary for placement on the website. Additional discussion on this topic occurred earlier in the meeting.
- Annual Reporting
  - LUC Management Plan Update (schedule for September 2014) – The draft updated LUC Management Plan, which includes new land use control areas at LHAAP-46 and LHAAP-67, in under Army review.
  - CRP/CIP Revision (Biennial) and questionnaire October 2015 – Next CRP/CIP action date is October 2015 when the biennial review questionnaires will be sent out,

so before the Q2 RAB meeting, FFA parties need to provide for EPA review the questions they would like to have included in the questionnaire.

As a result of issues at Louisiana Army Ammunition Plant (Camp Minden) EPA has directed that outreach meetings will be held by EPA representatives for all EPA sites regardless of what stage of work they are in. For Longhorn, Mr. Tzhone has utilized the quarterly RAB meetings and assignment of Ms. Coats as an EPA outreach representative as justification to not do additional separate outreach meetings. Mr. Tzhone asked that Dr. Zeiler and Mr. Bruckwicki continue to provide land transfer updates as they have been, as that is a prime concern for the community.

Programmatic Issues **RMZ/RM/AP**

- Status of Dispute – No update since last meeting.
- Interim Path Forward – No update since last meeting.

USFWS Update **RMZ/PB**

- Environmental Restoration Issues with Transfer Schedule Impact

  Dr. Zeiler stated that Steve misinformed the RAB during the December RAB meeting, about the impact of the dispute on transfer. The dispute has a significant impact on transfer because the MOA between USFWS and Army indicates that USFWS will accept transfer only of sites that have achieved OPS. Although there is not a statutory requirement to seek OPS, that is what USFWS has required before they will accept the sites. Paul Bruckwicki noted that OPS could take a very long time as a result of the dispute issues. Mr. Tzhone noted that some public education may be warranted on how the dispute may or may not impact property transfer for USFWS.

  Dr. Zeiler stated that Army has signed the GSA transfer letter and forwarded it to USFWS. Mr. Bruckwicki stated that transfer appears to have been assigned to specific USFWS staff for processing. When this transfer is complete, two of the five actions defined in Albuquerque in April 2013 will be complete. The next step is transfer of additional surface water rights to bring the total transferred to 85%.

  Another item is the surface permit to manage the remaining acreage as a refuge. Mr. Bruckwicki states that USFWS wanted an "until remediated" permit, while GSA will only do a five year permit, so that may be on hold.

- USFWS Comments on Documents – no update

Schedule Next Managers' Meeting – 10AM, Tuesday, March 17th by teleconference.

New Action Items

AECOM

- Examine RAB handouts to identify charts plotting elevated detections levels that appear to be actual detections. Revise charts to plot only actual detections, not detection levels.

Army

- Provide recommendation on in which document site-specific information (i.e., surface water sampling forms) is most appropriately included.

EPA

- Mr. Becher will supply a copy of the 2007 ArcView Access Database to AECOM.
- Provide a copy of the email request asking Army to perform 1,4-dioxane sampling, or provide an email request if the original request cannot be located.
- Mr. Mayer/Mr. Tzhone will confer with Mr. Sanchez and EPA Legal, then will provide response on whether EPA agrees that comments made on the Draft Final RACRs for LHAAP-46 and LHAAP-67 will be deferred to the RAO process.
- Mr. Mayer to provide guidance on how to reconcile FFA document requirements in cases where EPA does not accept all RTCs (i.e., Do RACRs stay in Draft Final form? If so, how are they made part of the Administrative Record?)
- Provide proposed schedule for upcoming EPA sampling (potential split sampling).
- Provide questions for the CRP/CIP questionnaire.

TCEQ

- Provide a copy of the email request asking Army to perform 1,4-dioxane sampling, or provide an email request if the original request cannot be located.
- Provide questions for the CRP/CIP questionnaire.

Adjourn

Attachments: LHAAP Data Validated January 2015
-GWTP Influent and Effluent
-LHAAP-46 Quarterly MNA Groundwater Monitoring Event
-LHAAP-67 Quarterly MNA Groundwater Monitoring Event
-Quarterly Perimeter Well Sampling

ACRONYM LIST

1,1-DCE	**1,1-Dichloroethene**
AEC	**United States Army Environmental Command**
AECOM	**AECOM Technology Services, Inc.**
AP	**April Palmie**
AR	**Administrative Record**
ATC	**Aberdeen Test Center**
BRAC	**Base Realignment and Closure**
CRP/CIP	**Community Relations Plan/Community Involvement Plan**
CY	**Calendar Year**
DERP	**Defense Environmental Restoration Program**
DPT	**Direct Push Technology**
ECOP	**Environment Condition of Property**
EPA	**United States Environmental Protection Agency**
FBR	**Fluidized Bed Reactor**
FFA	**Federal Facility Agreement**
FS	**Feasibility Study**
GSA	**General Services Administration**
GWTP	**Ground Water Treatment Plant**

ICT	**Interceptor-Collector Trench**
IWWP	**Installation Wide Work Plan**
LHAAP	**Longhorn Army Ammunition Plant**
LUC	**Land Use Control**
MCL	**Maximum Contaminant Level**
MMM	**Monthly Managers' Meeting**
MMRP	**Military Munitions Response Program**
MNA	**Monitored Natural Attenuation**
MOA	**Memorandum of Understanding**
O&M	**Operation and Maintenance**
OMB	**Office of Management and Budget**
OPS	**Operating Properly and Successfully**
PB	**Paul Bruckwicki**
PBR	**Performance-Based Remediation**
PDF	**Portable Document Format**
PDI	**Pre-Design Investigation**
RAB	**Restoration Advisory Board**
RACR	**Remedial Action Completion Report**
RAO	**Remedial Action Operation**
RAWP	**Remedial Action Work Plan**
RD	**Remedial Design**
RI/FS	**Remedial Investigation / Feasibility Study**
RM	**Rich Mayer**
RMZ	**Rose M. Zeiler**
ROD	**Record of Decision**
RTC	**Response to Comments**
RTRTC	**Response to Response to Comments**
SAP	**Sampling and Analysis Plan**
SOP	**Standard Operating Procedure**
TCEQ	**Texas Commission on Environmental Quality**
USACE	**United States Army Corps of Engineers**
USFWS	**United States Fish and Wildlife Service**
USGS	**United States Geological Service**
VOC	**Volatile Organic Compound**
WP	**Work Plan**

LHAAP Data Validated
January 2015

GWTP Influent and Effluent

Weekly, Biweekly, Monthly and Quarterly - November 2014 through January 2015

Ammonia (350.1)	Metals (6020A)
VOC (8260B)	Perchlorate (6850)
Ortho-Phosphate (365.2)	Hexavalent Chromium (7196A)
Inorganic Anions (9056)	Oil and Grease (1664A)
Total Organic Carbon (415.1)	Chemical Oxygen Demand (410.4)
Metals (6010C)	

Perimeter Wells *Annual Sampling - December 2014*

Perchlorate (6850)

Site 46 *Quarterly MNA Sampling - November 2014*

Alkalinity (310.2)	Inorganic Anions (9056)
Phosphorus (365.4)	Dissolved Gases (RSK-175)
Total Organic Carbon (415.1)	Sulfide (SM4500-S)
Metals (6010C)	VOC (8260B)
Metals (6020A)	

Site 67 *Quarterly MNA Sampling - December 2014*

Total Carbon (415.1)	Dissolved Gases (RSK-175)
VOC (8260B)	Ferrous Iron (SM3500FE)
Inorganic Anions (9056)	

GWTP Influent Monthly Sampling - January 2015

Location ID: / Sample Date:	Units	LH18/24-SP140-7240-GRAB 1/5/2015
Location Description:		GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly.
Perchlorate (6850)		
PERCHLORATE	ug/L	18600
Volatile Organic Compounds (8260B)		
1,1,1,2-TETRACHLOROETHANE	ug/L	<25 U
1,1,1-TRICHLOROETHANE	ug/L	<25 U
1,1,2,2-TETRACHLOROETHANE	ug/L	<20 U
1,1,2-TRICHLOROETHANE	ug/L	<25 U
1,1-DICHLOROETHANE	ug/L	6.57 J
1,1-DICHLOROETHENE	ug/L	44.5 J
1,1-DICHLOROPROPENE	ug/L	<25 U
1,2,3-TRICHLOROBENZENE	ug/L	<15 U
1,2,3-TRICHLOROPROPANE	ug/L	<50 U
1,2,4-TRICHLOROBENZENE	ug/L	<20 U
1,2,4-TRIMETHYLBENZENE	ug/L	<25 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	<100 U
1,2-DIBROMOETHANE	ug/L	<25 U
1,2-DICHLOROBENZENE	ug/L	<12.5 U
1,2-DICHLOROETHANE	ug/L	68.6
1,2-DICHLOROPROPANE	ug/L	<20 U
1,3,5-TRIMETHYLBENZENE	ug/L	<25 U
1,3-DICHLOROBENZENE	ug/L	<25 U
1,3-DICHLOROPROPANE	ug/L	<20 U
1,4-DICHLOROBENZENE	ug/L	<12.5 U
2,2-DICHLOROPROPANE	ug/L	<25 U
2-BUTANONE	ug/L	<250 U
2-CHLOROTOLUENE	ug/L	<12.5 U
2-HEXANONE	ug/L	<250 U
4-CHLOROTOLUENE	ug/L	<25 U
4-METHYL-2-PENTANONE	ug/L	<250 U
ACETONE	ug/L	<250 U
BENZENE	ug/L	<12.5 U
BROMOBENZENE	ug/L	<12.5 U
BROMOCHLOROMETHANE	ug/L	<20 U
BROMODICHLOROMETHANE	ug/L	<25 U
BROMOFORM	ug/L	<50 U
BROMOMETHANE	ug/L	<50 U
CARBON DISULFIDE	ug/L	<50 U
CARBON TETRACHLORIDE	ug/L	<25 U
CHLOROBENZENE	ug/L	<12.5 U
CHLOROETHANE	ug/L	<50 U
CHLOROFORM	ug/L	13.8 J
CHLOROMETHANE	ug/L	<50 U

GWTP Influent Monthly Sampling - January 2015

Location ID: Sample Date:	Units	LH18/24-SP140-7240-GRAB 1/5/2015
CIS-1,2-DICHLOROETHENE	ug/L	2490
CIS-1,3-DICHLOROPROPENE	ug/L	<25 U
DIBROMOCHLOROMETHANE	ug/L	<25 U
DIBROMOMETHANE	ug/L	<25 U
DICHLORODIFLUOROMETHANE	ug/L	<25 U
ETHYLBENZENE	ug/L	<25 U
HEXACHLOROBUTADIENE	ug/L	<25 U
ISOPROPYLBENZENE	ug/L	<25 U
M,P-XYLENE	ug/L	<50 U
METHYLENE CHLORIDE	ug/L	29.7 J
NAPHTHALENE	ug/L	<20 U
N-BUTYLBENZENE	ug/L	<25 U
N-PROPYLBENZENE	ug/L	<12.5 U
O-XYLENE	ug/L	<25 U
P-ISOPROPYLTOLUENE	ug/L	<25 U
SEC-BUTYLBENZENE	ug/L	<25 U
STYRENE	ug/L	<12.5 U
TERT-BUTYLBENZENE	ug/L	<25 U
TETRACHLOROETHENE	ug/L	<25 U
TOLUENE	ug/L	<25 U
TRANS-1,2-DICHLOROETHENE	ug/L	<25 U
TRANS-1,3-DICHLOROPROPENE	ug/L	<50 U
TRICHLOROETHENE	ug/L	9010
TRICHLOROFLUOROMETHANE	ug/L	<25 U
VINYL CHLORIDE	ug/L	48.8 J

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.

ug/L - micrograms per liter

GWTP Influent Quarterly Sampling - December 2014

Location ID: Sample Date:	Units	LH18/24-SP140-7235-COMP 12/15/2014	LH18/24-SP140-7235-GRAB 12/15/2014
Location Description:		GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Quarterly.	GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Quarterly.
Oil and Grease (1664A)			
OIL & GREASE	mg/L	<2.8 U	<2.8 U
Chemical Oxygen Demand (410.4)			
CHEMICAL OXYGEN DEMAND	mg/L	<20 U	<20 U
Metals (6010C)			
ALUMINUM	mg/L	<0.1 U	<0.1 U
IRON	mg/L	0.474	0.46
SELENIUM	mg/L	<0.01 U	<0.01 U
Metals (6020A)			
ANTIMONY	mg/L	0.000581 J	0.00067 J
ARSENIC	mg/L	0.00434	0.00433
BARIUM	mg/L	0.693 J	0.655 J
CADMIUM	mg/L	0.000506 J	0.000554 J
CHROMIUM	mg/L	0.00382 J	0.00378 J
COBALT	mg/L	0.0163	0.0161
LEAD	mg/L	<0.001 U	<0.001 U
MANGANESE	mg/L	0.793	0.791
NICKEL	mg/L	0.0196	0.0199
SILVER	mg/L	<0.001 U	<0.001 U
THALLIUM	mg/L	<0.0002 U	<0.0002 U
VANADIUM	mg/L	0.000857 J	0.00111 J
ZINC	mg/L	0.139	0.134
Perchlorate (6850)			
PERCHLORATE	ug/L	17600	18000
Hexavalent Chromium (7196A)			
HEXAVALENT CHROMIUM	mg/L	<0.01 U	<0.01 U
Volatile Organic Compounds (8260B)			
1,1,1,2-TETRACHLOROETHANE	ug/L	NA	<25 U
1,1,1-TRICHLOROETHANE	ug/L	NA	<25 U
1,1,2,2-TETRACHLOROETHANE	ug/L	NA	<20 U
1,1,2-TRICHLOROETHANE	ug/L	NA	<25 U
1,1-DICHLOROETHANE	ug/L	NA	9.28 J
1,1-DICHLOROETHENE	ug/L	NA	81.8 J
1,1-DICHLOROPROPENE	ug/L	NA	<25 U
1,2,3-TRICHLOROBENZENE	ug/L	NA	<15 U
1,2,3-TRICHLOROPROPANE	ug/L	NA	<50 U
1,2,4-TRICHLOROBENZENE	ug/L	NA	<20 U

GWTP Influent Quarterly Sampling - December 2014

Location ID: Sample Date:	Units	LH18/24-SP140-7235-COMP 12/15/2014	LH18/24-SP140-7235-GRAB 12/15/2014
1,2,4-TRIMETHYLBENZENE	ug/L	NA	<25 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	NA	<100 U
1,2-DIBROMOETHANE	ug/L	NA	<25 U
1,2-DICHLOROBENZENE	ug/L	NA	<12.5 U
1,2-DICHLOROETHANE	ug/L	NA	66.1
1,2-DICHLOROPROPANE	ug/L	NA	<20 U
1,3,5-TRIMETHYLBENZENE	ug/L	NA	<25 U
1,3-DICHLOROBENZENE	ug/L	NA	<25 U
1,3-DICHLOROPROPANE	ug/L	NA	<20 U
1,4-DICHLOROBENZENE	ug/L	NA	<12.5 U
2,2-DICHLOROPROPANE	ug/L	NA	<25 UJ
2-BUTANONE	ug/L	NA	<250 U
2-CHLOROTOLUENE	ug/L	NA	<12.5 U
2-HEXANONE	ug/L	NA	<250 U
4-CHLOROTOLUENE	ug/L	NA	<25 U
4-METHYL-2-PENTANONE	ug/L	NA	<250 U
ACETONE	ug/L	NA	<250 U
BENZENE	ug/L	NA	<12.5 U
BROMOBENZENE	ug/L	NA	<12.5 U
BROMOCHLOROMETHANE	ug/L	NA	<20 U
BROMODICHLOROMETHANE	ug/L	NA	<25 U
BROMOFORM	ug/L	NA	<50 U
BROMOMETHANE	ug/L	NA	<50 U
CARBON DISULFIDE	ug/L	NA	<50 U
CARBON TETRACHLORIDE	ug/L	NA	<25 U
CHLOROBENZENE	ug/L	NA	<12.5 U
CHLOROETHANE	ug/L	NA	<50 U
CHLOROFORM	ug/L	NA	17.2 J
CHLOROMETHANE	ug/L	NA	<50 UJ
CIS-1,2-DICHLOROETHENE	ug/L	NA	4240
CIS-1,3-DICHLOROPROPENE	ug/L	NA	<25 U
DIBROMOCHLOROMETHANE	ug/L	NA	<25 U
DIBROMOMETHANE	ug/L	NA	<25 U
DICHLORODIFLUOROMETHANE	ug/L	NA	<25 U
ETHYLBENZENE	ug/L	NA	<25 U
HEXACHLOROBUTADIENE	ug/L	NA	<25 U
ISOPROPYLBENZENE	ug/L	NA	<25 U
m,p-Xylene	ug/L	NA	<50 U
METHYLENE CHLORIDE	ug/L	NA	3340
NAPHTHALENE	ug/L	NA	<20 U
N-BUTYLBENZENE	ug/L	NA	<25 U
N-PROPYLBENZENE	ug/L	NA	<12.5 U
O-XYLENE	ug/L	NA	<25 U
P-ISOPROPYLTOLUENE	ug/L	NA	<25 U
SEC-BUTYLBENZENE	ug/L	NA	<25 U
STYRENE	ug/L	NA	<12.5 U
TERT-BUTYLBENZENE	ug/L	NA	<25 U
TETRACHLOROETHENE	ug/L	NA	30.6 J
TOLUENE	ug/L	NA	<25 U
TRANS-1,2-DICHLOROETHENE	ug/L	NA	16.4 J
TRANS-1,3-DICHLOROPROPENE	ug/L	NA	<50 U

GWTP Influent Quarterly Sampling - December 2014

Location ID: Sample Date:	Units	LH18/24-SP140-7235-COMP 12/15/2014	LH18/24-SP140-7235-GRAB 12/15/2014
TRICHLOROETHENE	ug/L	NA	9530
TRICHLOROFLUOROMETHANE	ug/L	NA	<25 U
VINYL CHLORIDE	ug/L	NA	45.8 J
Anions (9056)			
CHLORIDE	mg/L	583	572
SULFATE	mg/L	131	133

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

NA - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

GWTP Effluent Weekly Sampling - December 2014/January 2015

Locaiton ID: Sample Date:	Units	Daily Maximum Conc	LH18/24-SP650-6236-GRAB 12/15/2014	LH18/24-SP650-6237-GRAB 12/22/2014	LH18/24-SP650-6239-GRAB 12/29/2014	LH18/24-SP650-6241-GRAB 1/5/2015	LH18/24-SP650-6243-GRAB 1/12/2015
Location Description:			GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.
Ammonia-N (350.1)							
AMMONIA AS N	mg/L		3.95	9.01	4.52	3.35	1.68
Ortho-Phosphate (365.2)							
ORTHO-PHOSPHATE	mg/L		0.288	1.88	1.13	0.247 J	1.02
Total Organic Carbon (415.1)							
TOTAL ORGANIC CARBON (TOC)	mg/L		67	89.2	47.1	59.5	63.1
Perchlorate (6850)							
PERCHLORATE	ug/L	13	<0.2 U	<0.2 U	<0.2 U	13.4	0.987

Blue Highlighting Indicates concentrations above Daily Maximum Concentration

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

mg/L - milligrams per liter

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

ug/L - micrograms per liter

GWTP Effluent Biweekly Sampling - December 2014

Location ID: Sample Date:	Units	Daily Maximum Conc	LH18/24-SP650-6238-COMP 12/29/2014	LH18/24-SP650-6238-GRAB 12/29/2014
Location Description:			GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Biweekly.	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly.
Metals (6010C)				
SELENIUM	mg/L	0.012	<0.01 U	<0.01 U
Metals (6020A)				
LEAD	mg/L	0.0046	<0.001 U	<0.001 U
SILVER	mg/L	0.003	<0.001 U	<0.001 U
Perchlorate (6850)				
PERCHLORATE	ug/L	13	<0.2 U	<0.2 U
Hexavalent Chromium (7196A)				
HEXAVALENT CHROMIUM	mg/L	0.124	<0.01 U	<0.01 U
Volatile Organic Compounds (8260B)				
1,1,1,2-TETRACHLOROETHANE	ug/L		NA	<0.5 U
1,1,1-TRICHLOROETHANE	ug/L	7230	NA	<0.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L		NA	<0.4 U
1,1,2-TRICHLOROETHANE	ug/L	216.9	NA	<0.5 U
1,1-DICHLOROETHANE	ug/L	14032	NA	<0.25 U
1,1-DICHLOROETHENE	ug/L	253	NA	<1 U
1,1-DICHLOROPROPENE	ug/L		NA	<0.5 U
1,2,3-TRICHLOROBENZENE	ug/L		NA	<0.3 U
1,2,3-TRICHLOROPROPANE	ug/L		NA	<1 U
1,2,4-TRICHLOROBENZENE	ug/L		NA	<0.4 U
1,2,4-TRIMETHYLBENZENE	ug/L		NA	<0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L		NA	<2 U
1,2-DIBROMOETHANE	ug/L		NA	<0.5 U
1,2-DICHLOROBENZENE	ug/L		NA	<0.25 U
1,2-DICHLOROETHANE	ug/L	181	NA	<0.5 U
1,2-DICHLOROPROPANE	ug/L	5	NA	<0.4 U
1,3,5-TRIMETHYLBENZENE	ug/L		NA	<0.5 U
1,3-DICHLOROBENZENE	ug/L		NA	<0.5 U
1,3-DICHLOROPROPANE	ug/L		NA	<0.4 U
1,4-DICHLOROBENZENE	ug/L		NA	<0.25 U
2,2-DICHLOROPROPANE	ug/L		NA	<0.5 UJ
2-BUTANONE	ug/L		NA	<5 U
2-CHLOROTOLUENE	ug/L		NA	<0.25 U
2-HEXANONE	ug/L		NA	<5 U
4-CHLOROTOLUENE	ug/L		NA	<0.5 U
4-METHYL-2-PENTANONE	ug/L		NA	<5 U

GWTP Effluent Biweekly Sampling - December 2014

Location ID: Sample Date:	Units	Daily Maximum Conc	LH18/24-SP650-6238-COMP 12/29/2014	LH18/24-SP650-6238-GRAB 12/29/2014
ACETONE	ug/L	2395	NA	5.99 J
BENZENE	ug/L	181	NA	<0.25 U
BROMOBENZENE	ug/L		NA	<0.25 U
BROMOCHLOROMETHANE	ug/L		NA	<0.4 U
BROMODICHLOROMETHANE	ug/L		NA	<0.5 U
BROMOFORM	ug/L		NA	<1 U
BROMOMETHANE	ug/L		NA	<1 U
CARBON DISULFIDE	ug/L		NA	0.679 J
CARBON TETRACHLORIDE	ug/L	181	NA	<0.5 U
CHLOROBENZENE	ug/L	47180	NA	<0.25 U
CHLOROETHANE	ug/L		NA	<1 U
CHLOROFORM	ug/L	3615	NA	<0.25 U
CHLOROMETHANE	ug/L		NA	<1 U
CIS-1,2-DICHLOROETHENE	ug/L		NA	1.26
CIS-1,3-DICHLOROPROPENE	ug/L		NA	<0.5 U
DIBROMOCHLOROMETHANE	ug/L		NA	<0.5 U
DIBROMOMETHANE	ug/L		NA	<0.5 U
DICHLORODIFLUOROMETHANE	ug/L		NA	<0.5 U
ETHYLBENZENE	ug/L	57025	NA	<0.5 U
HEXACHLOROBUTADIENE	ug/L		NA	<0.5 U
ISOPROPYLBENZENE	ug/L		NA	<0.5 U
M,P-XYLENE	ug/L	83.6	NA	<1 U
METHYLENE CHLORIDE	ug/L	1699	NA	<0.5 U
NAPHTHALENE	ug/L		NA	<0.4 U
N-BUTYLBENZENE	ug/L		NA	<0.5 U
N-PROPYLBENZENE	ug/L		NA	<0.25 U
O-XYLENE	ug/L	83.6	NA	<0.5 U
P-ISOPROPYLTOLUENE	ug/L		NA	<0.5 U
SEC-BUTYLBENZENE	ug/L		NA	<0.5 U
STYRENE	ug/L	5987	NA	<0.25 U
TERT-BUTYLBENZENE	ug/L		NA	<0.5 U
TETRACHLOROETHENE	ug/L	180.7	NA	<0.5 U
TOLUENE	ug/L	4189	NA	<0.5 U
TRANS-1,2-DICHLOROETHENE	ug/L		NA	<0.5 U
TRANS-1,3-DICHLOROPROPENE	ug/L		NA	<1 U
TRICHLOROETHENE	ug/L	181	NA	1.16
TRICHLOROFLUOROMETHANE	ug/L		NA	<0.5 U
VINYL CHLORIDE	ug/L	72	NA	<0.5 U
Anions (9056)				
CHLORIDE	mg/L		719	720
SULFATE	mg/L		82.5	122

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

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

GWTP Effluent Monthly Sampling - January 2015

Location ID: Sample Date:	Units	Daily Maximum Conc	LH18/24-SP650-6240-GRAB 1/5/2015
Location Description:			GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Monthly.
Metals (6010C)			
ALUMINUM	mg/L		<0.1 U
IRON	mg/L		0.129 J
SELENIUM	mg/L	0.012	<0.01 U
Metals (6020A)			
ANTIMONY	mg/L		<0.001 U
ARSENIC	mg/L		0.00444
BARIUM	mg/L		0.287
CADMIUM	mg/L		<0.0006 U
CHROMIUM	mg/L		0.00407
COBALT	mg/L		0.00178 J
LEAD	mg/L	0.0046	<0.001 U
MANGANESE	mg/L		0.202
NICKEL	mg/L		0.00597 J
SILVER	mg/L	0.003	<0.001 U
THALLIUM	mg/L		<0.0002 U
VANADIUM	mg/L		<0.001 U
ZINC	mg/L		0.0193 J

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.

ug/L - micrograms per liter

GWTP Effluent Quarterly Sampling - December 2014

Location ID: Sample Date:	Units	Daily Maximum Conc	LH18/24-SP650-6234-COMP 12/15/2014	LH18/24-SP650-6234-GRAB 12/15/2014
Location Description:			GWTP – Collected from holding jar accumulating aliquots of discharge from a TK-650 effluent spigot every few hours. Sampled Quarterly	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Quarterly
Oil and Grease (1664A)				
OIL & GREASE	mg/L		11.1	3.9 J
Chemical Oxygen Demand (410.4)				
CHEMICAL OXYGEN DEMAND	mg/L		234	250
Metals (6010C)				
ALUMINUM	mg/L		<0.1 U	<0.1 U
IRON	mg/L		0.262	0.199 J
SELENIUM	mg/L	0.012	<0.01 U	<0.01 U
Metals (6020A)				
ANTIMONY	mg/L		<0.001 U	<0.001 U
ARSENIC	mg/L		0.00422	0.00532
BARIUM	mg/L		0.472	0.524
CADMIUM	mg/L		<0.0006 U	<0.0006 U
CHROMIUM	mg/L		0.00638	0.00465
COBALT	mg/L		0.00216	0.00208
LEAD	mg/L	0.0046	<0.001 U	<0.001 U
MANGANESE	mg/L		0.209	0.211
NICKEL	mg/L		0.00606 J	0.00514 J
SILVER	mg/L	0.003	<0.001 U	<0.001 U
THALLIUM	mg/L		<0.0002 U	<0.0002 U
VANADIUM	mg/L		0.00145 J	0.00142 J
ZINC	mg/L		0.0373 J	0.0251 J
Perchlorate (6850)				
PERCHLORATE	ug/L	13	<0.2 U	<0.2 U
Hexavalent Chromium (7196A)				
HEXAVALENT CHROMIUM	mg/L	0.124	<0.01 U	0.00547 J
Volatile Organic Compounds (8260B)				
1,1,1,2-TETRACHLOROETHANE	ug/L		NA	<0.5 U
1,1,1-TRICHLOROETHANE	ug/L	7230	NA	<0.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L		NA	<0.4 U
1,1,2-TRICHLOROETHANE	ug/L	216.9	NA	<0.5 U
1,1-DICHLOROETHANE	ug/L	14032	NA	<0.25 U
1,1-DICHLOROETHENE	ug/L	253	NA	<1 U
1,1-DICHLOROPROPENE	ug/L		NA	<0.5 U

GWTP Effluent Quarterly Sampling - December 2014

Location ID: Sample Date:	Units	Daily Maximum Conc	LH18/24-SP650-6234-COMP 12/15/2014	LH18/24-SP650-6234-GRAB 12/15/2014
1,2,3-TRICHLOROBENZENE	ug/L		NA	<0.3 U
1,2,3-TRICHLOROPROPANE	ug/L		NA	<1 U
1,2,4-TRICHLOROBENZENE	ug/L		NA	<0.4 U
1,2,4-TRIMETHYLBENZENE	ug/L		NA	<0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L		NA	<2 U
1,2-DIBROMOETHANE	ug/L		NA	<0.5 U
1,2-DICHLOROBENZENE	ug/L		NA	<0.25 U
1,2-DICHLOROETHANE	ug/L	181	NA	<0.5 U
1,2-DICHLOROPROPANE	ug/L	5	NA	<0.4 U
1,3,5-TRIMETHYLBENZENE	ug/L		NA	<0.5 U
1,3-DICHLOROBENZENE	ug/L		NA	<0.5 U
1,3-DICHLOROPROPANE	ug/L		NA	<0.4 U
1,4-DICHLOROBENZENE	ug/L		NA	<0.25 U
2,2-DICHLOROPROPANE	ug/L		NA	<0.5 UJ
2-BUTANONE	ug/L		NA	<5 U
2-CHLOROTOLUENE	ug/L		NA	<0.25 U
2-HEXANONE	ug/L		NA	<5 U
4-CHLOROTOLUENE	ug/L		NA	<0.5 U
4-METHYL-2-PENTANONE	ug/L		NA	<5 U
ACETONE	ug/L	2395	NA	<5 U
BENZENE	ug/L	181	NA	<0.25 U
BROMOBENZENE	ug/L		NA	<0.25 U
BROMOCHLOROMETHANE	ug/L		NA	<0.4 U
BROMODICHLOROMETHANE	ug/L		NA	<0.5 U
BROMOFORM	ug/L		NA	<1 U
BROMOMETHANE	ug/L		NA	<1 U
CARBON DISULFIDE	ug/L		NA	0.811 J
CARBON TETRACHLORIDE	ug/L	181	NA	<0.5 U
CHLOROBENZENE	ug/L	47180	NA	<0.25 U
CHLOROETHANE	ug/L		NA	<1 U
CHLOROFORM	ug/L	3615	NA	<0.25 U
CHLOROMETHANE	ug/L		NA	<1 U
CIS-1,2-DICHLOROETHENE	ug/L		NA	1.48
CIS-1,3-DICHLOROPROPENE	ug/L		NA	<0.5 U
DIBROMOCHLOROMETHANE	ug/L		NA	<0.5 U
DIBROMOMETHANE	ug/L		NA	<0.5 U
DICHLORODIFLUOROMETHANE	ug/L		NA	<0.5 U
ETHYLBENZENE	ug/L	57025	NA	<0.5 U
HEXACHLOROBUTADIENE	ug/L		NA	<0.5 U
ISOPROPYLBENZENE	ug/L		NA	<0.5 U
M,P-XYLENE	ug/L	83.6	NA	<1 U
METHYLENE CHLORIDE	ug/L	1699	NA	<0.5 U
NAPHTHALENE	ug/L		NA	<0.4 U
N-BUTYLBENZENE	ug/L		NA	<0.5 U
N-PROPYLBENZENE	ug/L		NA	<0.25 U
O-XYLENE	ug/L	83.6	NA	<0.5 U
P-ISOPROPYLTOLUENE	ug/L		NA	<0.5 U
SEC-BUTYLBENZENE	ug/L		NA	<0.5 U
STYRENE	ug/L	5987	NA	<0.25 U
TERT-BUTYLBENZENE	ug/L		NA	<0.5 U
TETRACHLOROETHENE	ug/L	180.7	NA	<0.5 U

GWTP Effluent Quarterly Sampling - December 2014

Location ID: Sample Date:	Units	Daily Maximum Conc	LH18/24-SP650-6234-COMP 12/15/2014	LH18/24-SP650-6234-GRAB 12/15/2014
TOLUENE	ug/L	4189	NA	<0.5 U
TRANS-1,2-DICHLOROETHENE	ug/L		NA	<0.5 U
TRANS-1,3-DICHLOROPROPENE	ug/L		NA	<1 U
TRICHLOROETHENE	ug/L	181	NA	1.18
TRICHLOROFLUOROMETHANE	ug/L		NA	<0.5 U
VINYL CHLORIDE	ug/L	72	NA	<0.5 U
Anions (9056)				
CHLORIDE	mg/L		708	707
SULFATE	mg/L		83.8	125

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

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

LHAAP Perimeter Wells Annual Sampling - December 2014

Location ID: Sample Date:	Units	MCL/ MSC	PW133-120514 12/5/2014	PW134-120514 12/5/2014
			LHAAP Perimeter - NW. Sampled annually.	LHAAP Perimeter - NW. Sampled annually.
Perchlorate (6850)				
PERCHLORATE	ug/L	72	0.665	0.89

ug/L- Micrograms per liter

LHAAP-46 Quarterly MNA Sampling - November 2014

Location ID: / Sample Date:	Units	MCL/ MSC	46WW02-111814 11/18/2014	46WW02FF-111814 11/18/2014	46WW03-112014 11/20/2014	46WW03FD-112014 11/20/2014	46WW05-111914 11/19/2014	46WW05F-111914 11/19/2014	46WW05FF-111914 11/19/2014	46WW06-111914 11/19/2014	46WW06FD-111914 11/19/2014	46WW07-112014 11/20/2014	46WW08-112014 11/20/2014	46WW09-111914 11/19/2014	46WW09FF-111914 11/19/2014
Location Description:			Site 46 - Central, inside site boundary. Intermediate zone. Sampled quarterly.	Site 46 - Central, inside site boundary. Intermediate zone. Sampled quarterly. Field filtered with 0.45 micron filter.	Site 46 - Central, inside site boundary. Sampled quarterly.	Site 46 - Central, inside site boundary. Sampled quarterly. Duplicate.	Site 46 - N, inside site boundary. Intermediate zone. Sampled quarterly.	Site 46 - N, inside site boundary. Intermediate zone. Sampled quarterly. Field filtered with 10 micron filter.	Site 46 - N, inside site boundary. Intermediate zone. Sampled quarterly. Field filtered with 0.45 micron filter.	Site 46 - W, inside site boundary. Intermediate zone. Sampled quarterly.	Site 46 - W, inside site boundary. Intermediate zone. Sampled quarterly. Duplicate.	Site 46 - N, inside site boundary. Intermediate zone. Sampled quarterly.	Site 46 - NNW, inside site boundary. Intermediate zone. Sampled quarterly.	Site 46 - Central, within site boundary. Intermediate zone. Sampled quarterly.	Site 46 - Central, within site boundary. Intermediate zone. Sampled quarterly. Field filtered with 0.45 micron filter.
Alkalinity (310.2)															
ALKALINITY, TOTAL	mg/L		28.6 J	NA	NA	NA	37.2 J	NA	NA	NA	NA	NA	NA	183	NA
Phosphorus (365.4)															
PHOSPHORUS	mg/L		0.218 J	NA	NA	NA	<0.2 UJ	NA	NA	NA	NA	NA	NA	<0.2 UJ	NA
Total Organic Carbon (415.1)															
TOTAL ORGANIC CARBON (TOC)	mg/L		8.02	NA	NA	NA	31.6	NA	NA	NA	NA	NA	NA	6.61	NA
Metals (6010C)															
IRON, TOTAL	mg/L		1.79	NA	NA	NA	NA	27.1	NA	NA	NA	NA	NA	0.361	NA
IRON, DISSOLVED	mg/L		NA	1.48	NA	NA	NA	NA	27.6	NA	NA	NA	NA	NA	0.0904 J
Metals (6020A)															
MANGANESE, DISSOLVED	mg/L	14	NA	0.259	NA	NA	NA	NA	15.9	NA	NA	NA	NA	NA	2
Volatile Organic Compounds (8260B)															
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	NA	<0.4 U	<0.4 U	<0.4 U	NA	NA	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	NA
1,1,2-TRICHLOROETHANE	ug/L	5	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
1,1-DICHLOROETHANE	ug/L	10000	<0.25 U	NA	<0.25 U	<0.25 U	1.05	NA	NA	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	NA
1,1-DICHLOROETHENE	ug/L	7	2.28	NA	<1 U	<1 U	8.33	NA	NA	<1 U	<1 U	<1 U	<1 U	<1 U	NA
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
1,2,3-TRICHLOROBENZENE	ug/L	310	<0.3 U	NA	<0.3 U	<0.3 U	<0.3 U	NA	NA	<0.3 U	<0.3 U	<0.3 U	<0.3 U	<0.3 U	NA
1,2,3-TRICHLOROPROPANE	ug/L	0.004	<1 U	NA	<1 U	<1 U	<1 U	NA	NA	<1 U	<1 U	<1 U	<1 U	<1 U	NA
1,2,4-TRICHLOROBENZENE	ug/L	70	<0.4 U	NA	<0.4 U	<0.4 U	<0.4 U	NA	NA	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	NA
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 U	NA	<2 U	<2 U	<2 U	NA	NA	<2 U	<2 U	<2 U	<2 U	<2 U	NA
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
1,2-DICHLOROBENZENE	ug/L	600	<0.25 U	NA	<0.25 U	<0.25 U	<0.25 U	NA	NA	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	NA
1,2-DICHLOROETHANE	ug/L	5	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
1,2-DICHLOROPROPANE	ug/L	5	<0.4 U	NA	<0.4 U	<0.4 U	<0.4 U	NA	NA	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	NA
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
1,3-DICHLOROBENZENE	ug/L	3100	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	NA	<0.4 U	<0.4 U	<0.4 U	NA	NA	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	NA
1,4-DICHLOROBENZENE	ug/L	75	<0.25 U	NA	<0.25 U	<0.25 U	<0.25 U	NA	NA	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	NA
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
2-BUTANONE	ug/L	61000	<5 U	NA	<5 U	<5 U	<5 U	NA	NA	<5 U	<5 U	<5 U	<5 U	<5 U	NA
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	NA	<0.25 U	<0.25 U	<0.25 U	NA	NA	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	NA
2-HEXANONE	ug/L	6100	<5 U	NA	<5 U	<5 U	<5 U	NA	NA	<5 U	<5 U	<5 U	<5 U	<5 U	NA
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	NA	<5 U	<5 U	<5 U	NA	NA	<5 U	<5 U	<5 U	<5 U	<5 U	NA
ACETONE	ug/L	92000	<5 U	NA	<5 U	<5 U	<5 U	NA	NA	<5 U	<5 U	<5 U	<5 U	<5 U	NA
BENZENE	ug/L	5	<0.25 U	NA	<0.25 U	<0.25 U	<0.25 U	NA	NA	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	NA
BROMOBENZENE	ug/L	2000	<0.25 U	NA	<0.25 U	<0.25 U	<0.25 U	NA	NA	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	NA
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	NA	<0.4 U	<0.4 U	<0.4 U	NA	NA	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	NA
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
BROMOFORM	ug/L	36	<1 U	NA	<1 U	<1 U	<1 U	NA	NA	<1 U	<1 U	<1 U	<1 U	<1 U	NA
BROMOMETHANE	ug/L	140	<1 U	NA	<1 UJ	<1 UJ	<1 U	NA	NA	<1 U	<1 U	<1 UJ	<1 UJ	<1 U	NA
CARBON DISULFIDE	ug/L	10000	<1 U	NA	<1 U	<1 U	<1 U	NA	NA	<1 U	<1 U	<1 U	<1 U	<1 U	NA
CARBON TETRACHLORIDE	ug/L	5	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
CHLOROBENZENE	ug/L	100	<0.25 U	NA	<0.25 U	<0.25 U	<0.25 U	NA	NA	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	NA
CHLOROETHANE	ug/L	41000	<1 U	NA	<1 U	<1 U	<1 U	NA	NA	<1 U	<1 U	<1 U	<1 U	<1 U	NA
CHLOROFORM	ug/L	1000	<0.25 U	NA	<0.25 U	<0.25 U	<0.25 U	NA	NA	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	NA

LHAAP-46 Quarterly MNA Sampling - November 2014

Location ID: / Sample Date:	Units	MCL/ MSC	46WW02-111814 11/18/2014	46WW02FF-111814 11/18/2014	46WW03-112014 11/20/2014	46WW03FD-112014 11/20/2014	46WW05-111914 11/19/2014	46WW05F-111914 11/19/2014	46WW05FF-111914 11/19/2014	46WW06-111914 11/19/2014	46WW06FD-111914 11/19/2014	46WW07-112014 11/20/2014	46WW08-112014 11/20/2014	46WW09-111914 11/19/2014	46WW09FF-111914 11/19/2014
CHLOROMETHANE	ug/L	220	<1 U	NA	<1 U	<1 U	<1 U	NA	NA	<1 U	<1 U	<1 U	<1 U	<1 U	NA
CIS-1,2-DICHLOROETHENE	ug/L	70	1.97	NA	<0.5 U	<0.5 U	9.55	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
DIBROMOMETHANE	ug/L	380	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
ETHYLBENZENE	ug/L	700	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
M,P-XYLENE	ug/L	10000	<1 U	NA	<1 U	<1 U	<1 U	NA	NA	<1 U	<1 U	<1 U	<1 U	<1 U	NA
METHYLENE CHLORIDE	ug/L	5	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
NAPHTHALENE	ug/L	2000	<0.4 U	NA	<0.4 U	<0.4 U	<0.4 U	NA	NA	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	NA
N-BUTYLBENZENE	ug/L	4100	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
N-PROPYLBENZENE	ug/L	4100	<0.25 U	NA	<0.25 U	<0.25 U	<0.25 U	NA	NA	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	NA
O-XYLENE	ug/L	10000	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
STYRENE	ug/L	100	<0.25 U	NA	<0.25 U	<0.25 U	<0.25 U	NA	NA	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	NA
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
TETRACHLOROETHENE	ug/L	5	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
TOLUENE	ug/L	1000	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
TRANS-1,2-DICHLOROETHENE	ug/L	100	<0.5 U	NA	<0.5 U	<0.5 U	0.325 J	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	NA	<1 U	<1 U	<1 U	NA	NA	<1 U	<1 U	<1 U	<1 U	<1 U	NA
TRICHLOROETHENE	ug/L	5	38.2	NA	<0.5 U	<0.5 U	128	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
TRICHLOROFLUOROMETHANE	ug/L	31000	<0.5 U	NA	<0.5 U	<0.5 U	<0.5 U	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
VINYL CHLORIDE	ug/L	2	0.501 J	NA	<0.5 U	<0.5 U	1.59	NA	NA	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA
Anions (9056)															
CHLORIDE	mg/L		38.8	NA	NA	NA	324	NA	NA	NA	NA	NA	NA	452	NA
NITRATE	mg/L	10	<0.4 U	NA	NA	NA	4	NA	NA	NA	NA	NA	NA	3	NA
NITRITE*	mg/L	1	<0.4 U	NA	NA	NA	<4 U	NA	NA	NA	NA	NA	NA	<3 U	NA
SULFATE	mg/L		226	NA	NA	NA	4180	NA	NA	NA	NA	NA	NA	2210	NA
Dissolved Gases (RSK-175)															
CARBON DIOXIDE	ug/L		121000 J	NA	NA	NA	423000	NA	NA	NA	NA	NA	NA	87800	NA
ETHANE	ug/L		<2 U	NA	NA	NA	<2 U	NA	NA	NA	NA	NA	NA	<2 U	NA
ETHENE	ug/L		<2 U	NA	NA	NA	<2 U	NA	NA	NA	NA	NA	NA	<2 U	NA
METHANE	ug/L		<2 U	NA	NA	NA	13.1	NA	NA	NA	NA	NA	NA	<2 U	NA
Sulfide (SM4500-S-(-2)-F-2000)															
SULFIDE	mg/L		0.5	NA	NA	NA	<2 U	NA	NA	NA	NA	NA	NA	<2 U	NA

Blue Highlighting Indicates concentrations above Daily Maximum Concentration

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

* Some of the samples were diluted to the point that the RLs for Nitrate were elevated above the MCL.

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

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

LHAAP-46 Quarterly MNA Sampling - November 2014

Location ID: / Sample Date:	Units	MCL/ MSC	46WW10-112014 11/20/2014	46WW11-111814 11/18/2014	46WW11FF-111814 11/18/2014	46WW14-111914 11/19/2014	46WW14FF-111914 11/19/2014	46WW16-111814 11/18/2014	46WW16FF-111814 11/18/2014	LHSMW19-111814 11/18/2014	LHSMW19FF-111814 11/18/2014	LHSMW25-112014 11/20/2014
Location Description:			Site 46 - W, within site boundary. Sampled quarterly.	Site 46 - Central, within site boundary. Sampled quarterly.	Site 46 - Central, within site boundary. Sampled quarterly. Field filtered with 0.45 micron filter.	Site 46 - NE, within site boundary. Intermediate zone. Sampled quarterly.	Site 46 - NE, within site boundary. Intermediate zone. Sampled quarterly. Field filtered with 0.45 micron filter.	Site 46 - N, within site boundary. Intermediate zone. Sampled quarterly.	Site 46 - N, within site boundary. Intermediate zone. Sampled quarterly. Field filtered with 0.45 micron filter.	Site 46 - Central, within site boundary. Sampled quarterly.	Site 46 - Central, within site boundary. Sampled quarterly. Field filtered with 0.45 micron filter.	Site 46 - E, within site boundary. Intermediate zone. Sampled quarterly.
Alkalinity (310.2)												
ALKALINITY, TOTAL	mg/L		NA	35.4 J	NA	242	NA	216	NA	288	NA	NA
Phosphorus (365.4)												
PHOSPHORUS	mg/L		NA	<0.2 U	NA	<0.2 U	NA	<0.2 U	NA	<0.2 U	NA	NA
Total Organic Carbon (415.1)												
TOTAL ORGANIC CARBON (TOC)	mg/L		NA	2.94	NA	4.89 J	NA	4.03	NA	14.7	NA	NA
Metals (6010C)												
IRON, TOTAL	mg/L		NA	0.161 J	NA	0.302	NA	30.1	NA	0.398	NA	NA
IRON, DISSOLVED	mg/L		NA	NA	0.0538 J	NA	0.101 J	NA	28.4	NA	0.495	NA
Metals (6020A)												
MANGANESE, DISSOLVED	mg/L	14	NA	NA	0.0619	NA	0.0505	NA	1.87	NA	0.106	NA
Volatile Organic Compounds (8260B)												
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	<0.4 U	NA	<0.4 U	NA	<0.4 U	NA	<0.4 U	NA	<0.4 U
1,1,2-TRICHLOROETHANE	ug/L	5	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
1,1-DICHLOROETHANE	ug/L	10000	<0.25 U	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U
1,1-DICHLOROETHENE	ug/L	7	<1 U	<1 U	NA	<1 U	NA	<1 U	NA	<1 U	NA	<1 U
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<0.3 U	<0.3 U	NA	<0.3 U	NA	<0.3 U	NA	<0.3 U	NA	<0.3 U
1,2,3-TRICHLOROPROPANE	ug/L	0.004	<1 U	<1 U	NA	<1 U	NA	<1 U	NA	<1 U	NA	<1 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<0.4 U	<0.4 U	NA	<0.4 U	NA	<0.4 U	NA	<0.4 U	NA	<0.4 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 U	<2 U	NA	<2 U	NA	<2 U	NA	<2 U	NA	<2 U
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
1,2-DICHLOROBENZENE	ug/L	600	<0.25 U	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U
1,2-DICHLOROETHANE	ug/L	5	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
1,2-DICHLOROPROPANE	ug/L	5	<0.4 U	<0.4 U	NA	<0.4 U	NA	<0.4 U	NA	<0.4 U	NA	<0.4 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
1,3-DICHLOROBENZENE	ug/L	3100	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	<0.4 U	NA	<0.4 U	NA	<0.4 U	NA	<0.4 U	NA	<0.4 U
1,4-DICHLOROBENZENE	ug/L	75	<0.25 U	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
2-BUTANONE	ug/L	61000	<5 U	<5 U	NA	<5 U	NA	<5 U	NA	<5 U	NA	<5 U
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U
2-HEXANONE	ug/L	6100	<5 U	<5 U	NA	<5 U	NA	<5 U	NA	<5 U	NA	<5 U
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	<5 U	NA	<5 U	NA	<5 U	NA	<5 U	NA	<5 U
ACETONE	ug/L	92000	<5 U	<5 U	NA	<5 U	NA	<5 U	NA	<5 U	NA	<5 U
BENZENE	ug/L	5	<0.25 U	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U
BROMOBENZENE	ug/L	2000	<0.25 U	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	<0.4 U	NA	<0.4 U	NA	<0.4 U	NA	<0.4 U	NA	<0.4 U
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
BROMOFORM	ug/L	36	<1 U	<1 U	NA	<1 U	NA	<1 U	NA	<1 U	NA	<1 U
BROMOMETHANE	ug/L	140	<1 UJ	<1 U	NA	<1 U	NA	<1 U	NA	<1 U	NA	<1 UJ
CARBON DISULFIDE	ug/L	10000	<1 U	<1 U	NA	<1 U	NA	<1 U	NA	<1 U	NA	<1 U
CARBON TETRACHLORIDE	ug/L	5	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
CHLOROBENZENE	ug/L	100	<0.25 U	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U
CHLOROETHANE	ug/L	41000	<1 U	<1 U	NA	<1 U	NA	<1 U	NA	<1 U	NA	<1 U
CHLOROFORM	ug/L	1000	<0.25 U	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U

LHAAP-46 Quarterly MNA Sampling - November 2014

Location ID: / Sample Date:	Units	MCL/ MSC	46WW10-112014 11/20/2014	46WW11-111814 11/18/2014	46WW11FF-111814 11/18/2014	46WW14-111914 11/19/2014	46WW14FF-111914 11/19/2014	46WW16-111814 11/18/2014	46WW16FF-111814 11/18/2014	LHSMW19-111814 11/18/2014	LHSMW19FF-111814 11/18/2014	LHSMW25-112014 11/20/2014
CHLOROMETHANE	ug/L	220	<1 U	<1 U	NA	<1 U	NA	<1 U	NA	<1 U	NA	<1 U
CIS-1,2-DICHLOROETHENE	ug/L	70	<0.5 U	1.28	NA	<0.5 U	NA	<0.5 U	NA	1.59	NA	<0.5 U
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
DIBROMOMETHANE	ug/L	380	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
ETHYLBENZENE	ug/L	700	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
M,P-XYLENE	ug/L	10000	<1 U	<1 U	NA	<1 U	NA	<1 U	NA	<1 U	NA	<1 U
METHYLENE CHLORIDE	ug/L	5	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
NAPHTHALENE	ug/L	2000	<0.4 U	<0.4 U	NA	<0.4 U	NA	<0.4 U	NA	<0.4 U	NA	<0.4 U
N-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
N-PROPYLBENZENE	ug/L	4100	<0.25 U	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U
O-XYLENE	ug/L	10000	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
STYRENE	ug/L	100	<0.25 U	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U	NA	<0.25 U
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
TETRACHLOROETHENE	ug/L	5	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
TOLUENE	ug/L	1000	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	0.271 J	NA	<0.5 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	<1 U	NA	<1 U	NA	<1 U	NA	<1 U	NA	<1 U
TRICHLOROETHENE	ug/L	5	<0.5 U	70.7	NA	<0.5 U	NA	<0.5 U	NA	31.2	NA	<0.5 U
TRICHLOROFLUOROMETHANE	ug/L	31000	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
VINYL CHLORIDE	ug/L	2	<0.5 U	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U	NA	<0.5 U
Anions (9056)												
CHLORIDE	mg/L		NA	229	NA	103	NA	271	NA	230	NA	NA
NITRATE	mg/L	10	NA	<1 U	NA	0.143 J	NA	<2 U	NA	<1 U	NA	NA
NITRITE*	mg/L	1	NA	<1 U	NA	<0.2 U	NA	<2 U	NA	<1 U	NA	NA
SULFATE	mg/L		NA	445	NA	26.7	NA	914	NA	563	NA	NA
Dissolved Gases (RSK-175)												
CARBON DIOXIDE	ug/L		NA	192000 J	NA	138000	NA	171000	NA	473000	NA	NA
ETHANE	ug/L		NA	<2 U	NA	<2 U	NA	<2 U	NA	<2 U	NA	NA
ETHENE	ug/L		NA	<2 U	NA	<2 U	NA	<2 U	NA	<2 U	NA	NA
METHANE	ug/L		NA	1.42 J	NA	20.2	NA	1.68 J	NA	<2 U	NA	NA
Sulfide (SM4500-S-(-2)-F-2000)												
SULFIDE	mg/L		NA	0.5	NA	<2 U	NA	0.5	NA	0.5	NA	NA

Blue Highlighting Indicates concentrations above Daily Maximum Concentration

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

* Some of the samples were diluted to the point that the RLs for Nitrate were elevated above the MCL.

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

mg/L - milligrams per liter

N/A - not analyzed

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

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

ug/L - micrograms per liter

LHAAP-67 Quarterly MNA Sampling - December 2014

Location ID: / Sample Date:	Units	MCL/ MSC	67WW01-120314 12/3/2014	67WW02-120314 12/3/2014	67WW05-120314 12/3/2014	67WW07-120314 12/3/2014	67WW08-120414 12/4/2014	67WW09-120414 12/4/2014	67WW09A-120314 12/3/2014	67WW09AFD-120314 12/3/2014	67WW10-120314 12/3/2014	67WW11-120414 12/4/2014
Location Description:			Site 67 - SW, within site boundary. Sampled quarterly.	Site 67 - NW, within site boundary. Sampled quarterly.	Site 67 - WNW, outside site boundary. Sampled quarterly.	Site 67 - E, outside site boundary. Sampled quarterly.	Site 67 - SSE, within the site boundary. Sampled quarterly.	Site 67 - WSW, within the site boundary. Sampled quarterly.	Site 67 - S, outside site boundary. Sampled quarterly.	Site 67 - S, outside site boundary. Sampled quarterly. Duplicate.	Site 67 - SE, outside site boundary. Sampled quarterly.	Site 67 - S, within the site boundary, outer region. Sampled quarterly.
Total Carbon (415.1)												
TOTAL INORGANIC CARBON (TIC)	mg/L		NA	NA	NA	NA	22.9	NA	NA	NA	NA	140
TOTAL ORGANIC CARBON (TOC)	mg/L		NA	NA	NA	NA	3.68	NA	NA	NA	NA	9.1 J
Volatile Organic Compounds (8260B)												
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U
1,1,2-TRICHLOROETHANE	ug/L	5	0.483 J	<0.5 U	<0.5 U	<0.5 U	7.36 J	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,1-DICHLOROETHANE	ug/L	10000	14.9	0.406 J	<0.25 U	<0.25 U	63.9	3.93	<0.25 U	<0.25 U	0.173 J	11.1
1,1-DICHLOROETHENE	ug/L	7	349	<1 U	<1 U	<1 U	2320	11.6	<1 U	<1 U	<1 U	37.5
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<0.3 U	<0.3 U	<0.3 U	<0.3 U	<3 U	<0.3 U	<0.3 U	<0.3 U	<0.3 U	<0.3 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<1 U	<1 U	<1 U	<1 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 U	<2 U	<2 U	<2 U	<20 U	<2 U	<2 U	<2 U	<2 U	<2 U
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,2-DICHLOROBENZENE	ug/L	600	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<2.5 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U
1,2-DICHLOROETHANE	ug/L	5	16.6	<0.5 U	<0.5 U	1.19	106	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.567 J
1,2-DICHLOROPROPANE	ug/L	5	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,3-DICHLOROBENZENE	ug/L	3100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U
1,4-DICHLOROBENZENE	ug/L	75	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<2.5 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
2-BUTANONE	ug/L	61000	<5 U	<5 U	<5 U	<5 U	<50 U	<5 U	<5 U	<5 U	<5 U	<5 U
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<2.5 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U
2-HEXANONE	ug/L	6100	<5 U	<5 U	<5 U	<5 U	<50 U	<5 U	<5 U	<5 U	<5 U	<5 U
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	<5 U	<5 U	<5 U	<50 U	<5 U	<5 U	<5 U	<5 U	<5 U
ACETONE	ug/L	92000	<5 U	<5 U	<5 U	<5 U	<50 U	<5 U	<5 U	<5 U	<5 U	<5 U
BENZENE	ug/L	5	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<2.5 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U
BROMOBENZENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<2.5 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
BROMOFORM	ug/L	36	<1 U	<1 U	<1 U	<1 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
BROMOMETHANE	ug/L	140	<1 U	<1 U	<1 U	<1 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
CARBON DISULFIDE	ug/L	10000	<1 U	<1 U	<1 U	<1 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
CARBON TETRACHLORIDE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
CHLOROBENZENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<2.5 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U
CHLOROETHANE	ug/L	41000	<1 U	<1 U	<1 U	<1 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
CHLOROFORM	ug/L	1000	<0.25 U	<0.25 U	<0.25 U	<0.25 U	2.53 J	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U
CHLOROMETHANE	ug/L	220	<1 U	<1 U	<1 U	<1 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U

LHAAP-67 Quarterly MNA Sampling - December 2014

Location ID: / Sample Date:	Units	MCL/ MSC	67WW01-120314 12/3/2014	67WW02-120314 12/3/2014	67WW05-120314 12/3/2014	67WW07-120314 12/3/2014	67WW08-120414 12/4/2014	67WW09-120414 12/4/2014	67WW09A-120314 12/3/2014	67WW09AFD-120314 12/3/2014	67WW10-120314 12/3/2014	67WW11-120414 12/4/2014
CIS-1,2-DICHLOROETHENE	ug/L	70	1.26	<0.5 U	<0.5 U	<0.5 U	2.69 J	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
DIBROMOMETHANE	ug/L	380	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
ETHYLBENZENE	ug/L	700	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
M,P-XYLENE	ug/L	10000	<1 U	<1 U	<1 U	<1 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
METHYLENE CHLORIDE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	3.42 J	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
NAPHTHALENE	ug/L	2000	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U
N-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
N-PROPYLBENZENE	ug/L	4100	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<2.5 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U
O-XYLENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
STYRENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<2.5 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TOLUENE	ug/L	1000	0.398 J	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	<1 U	<1 U	<1 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
TRICHLOROETHENE	ug/L	5	3.36	<0.5 U	<0.5 U	<0.5 U	3.55 J	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROFLUOROMETHANE	ug/L	31000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	ug/L	2	2.16	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.302 J
Anions (9056)												
CHLORIDE	mg/L		NA	NA	NA	NA	1310 J	NA	NA	NA	NA	1330 J
NITRATE	mg/L	10	NA	NA	NA	NA	2 J	NA	NA	NA	NA	NA
NITRITE	mg/L	1	NA	NA	NA	NA	2.04 J	NA	NA	NA	NA	NA
SULFATE	mg/L		NA	NA	NA	NA	302 J	NA	NA	NA	NA	NA
Dissolved Gases (RSK-175)												
CARBON DIOXIDE	ug/L		NA	NA	NA	NA	89600	NA	NA	NA	NA	364000
ETHANE	ug/L		NA	NA	NA	NA	<2 U	NA	NA	NA	NA	<2.00 U
ETHENE	ug/L		NA	NA	NA	NA	<2 U	NA	NA	NA	NA	<2.00 U
METHANE	ug/L		NA	NA	NA	NA	14.4	NA	NA	NA	NA	2.41 J
SM3500FE												
FERROUS IRON	mg/L		NA	NA	NA	NA	0.374	NA	NA	NA	NA	<0.04 U

Blue Highlighting Indicates concentrations above Daily Maximum Concentration

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

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

mg/L - milligrams per liter

N/A - not analyzed

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

ug/L - micrograms per liter

LHAAP-67 Quarterly MNA Sampling - December 2014

Location ID: / Sample Date:	Units	MCL/ MSC	67WW12-120314 12/3/2014	67WW13-120414 12/4/2014	67WW13FD-120414 12/4/2014	67WW14-120314 12/3/2014
Location Description:			Site 67 - NNE, outside site boundary. Sampled quarterly.	Site 67 - WSW, within site boundary. Sampled quarterly.	Site 67 - WSW, within site boundary. Sampled quarterly. Duplicate	Site 67 - SW, outside the site boundary beside Ignatius Avenue. Sampled quarterly.
Total Carbon (415.1)						
TOTAL INORGANIC CARBON (TIC)	mg/L		NA	NA	NA	NA
TOTAL ORGANIC CARBON (TOC)	mg/L		NA	NA	NA	NA
Volatile Organic Compounds (8260B)						
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	<2.5 U	<2.5 U	<0.5 U
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	<2.5 U	<2.5 U	<0.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	<2 U	<2 U	<0.4 U
1,1,2-TRICHLOROETHANE	ug/L	5	<0.5 U	4.4 J	4.56 J	<0.5 U
1,1-DICHLOROETHANE	ug/L	10000	<0.25 U	28.8	27.4	0.451 J
1,1-DICHLOROETHENE	ug/L	7	<1 U	572	522	4.73
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	<2.5 U	<2.5 U	<0.5 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<0.3 U	<1.5 U	<1.5 U	<0.3 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<1 U	<5 U	<5 U	<1 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<0.4 U	<2 U	<2 U	<0.4 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<2.5 U	<2.5 U	<0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 U	<10 U	<10 U	<2 U
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	<2.5 U	<2.5 U	<0.5 U
1,2-DICHLOROBENZENE	ug/L	600	<0.25 U	<1.25 U	<1.25 U	<0.25 U
1,2-DICHLOROETHANE	ug/L	5	<0.5 U	24.9	24.6	0.79 J
1,2-DICHLOROPROPANE	ug/L	5	<0.4 U	<2 U	<2 U	<0.4 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<2.5 U	<2.5 U	<0.5 U
1,3-DICHLOROBENZENE	ug/L	3100	<0.5 U	<2.5 U	<2.5 U	<0.5 U
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	<2 U	<2 U	<0.4 U
1,4-DICHLOROBENZENE	ug/L	75	<0.25 U	<1.25 U	<1.25 U	<0.25 U
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	<2.5 U	<2.5 U	<0.5 U
2-BUTANONE	ug/L	61000	<5 U	<25 U	<25 U	<5 U
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	<1.25 U	<1.25 U	<0.25 U
2-HEXANONE	ug/L	6100	<5 U	<25 U	<25 U	<5 U
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	<2.5 U	<2.5 U	<0.5 U
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	<25 U	<25 U	<5 U
ACETONE	ug/L	92000	<5 U	<25 U	<25 U	<5 U
BENZENE	ug/L	5	<0.25 U	<1.25 U	<1.25 U	<0.25 U
BROMOBENZENE	ug/L	2000	<0.25 U	<1.25 U	<1.25 U	<0.25 U
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	<2 U	<2 U	<0.4 U
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	<2.5 U	<2.5 U	<0.5 U
BROMOFORM	ug/L	36	<1 U	<5 U	<5 U	<1 U
BROMOMETHANE	ug/L	140	<1 U	<5 U	<5 U	<1 U
CARBON DISULFIDE	ug/L	10000	<1 U	<5 U	<5 U	<1 U
CARBON TETRACHLORIDE	ug/L	5	<0.5 U	<2.5 U	<2.5 U	<0.5 U
CHLOROBENZENE	ug/L	100	<0.25 U	<1.25 U	<1.25 U	<0.25 U
CHLOROETHANE	ug/L	41000	<1 U	<5 U	<5 U	<1 U
CHLOROFORM	ug/L	1000	<0.25 U	0.813 J	0.848 J	<0.25 U
CHLOROMETHANE	ug/L	220	<1 U	<5 U	<5 U	<1 U

LHAAP-67 Quarterly MNA Sampling - December 2014

Location ID: / Sample Date:	Units	MCL/ MSC	67WW12-120314 12/3/2014	67WW13-120414 12/4/2014	67WW13FD-120414 12/4/2014	67WW14-120314 12/3/2014
CIS-1,2-DICHLOROETHENE	ug/L	70	<0.5 U	1.31 J	1.49 J	<0.5 U
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	<2.5 U	<2.5 U	<0.5 U
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	<2.5 U	<2.5 U	<0.5 U
DIBROMOMETHANE	ug/L	380	<0.5 U	<2.5 U	<2.5 U	<0.5 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	<2.5 U	<2.5 U	<0.5 U
ETHYLBENZENE	ug/L	700	<0.5 U	<2.5 U	<2.5 U	<0.5 U
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	<2.5 U	<2.5 U	<0.5 U
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	<2.5 U	<2.5 U	<0.5 U
M,P-XYLENE	ug/L	10000	<1 U	<5 U	<5 U	<1 U
METHYLENE CHLORIDE	ug/L	5	<0.5 U	2.88 J	2.9 J	<0.5 U
NAPHTHALENE	ug/L	2000	<0.4 U	<2 U	<2 U	<0.4 U
N-BUTYLBENZENE	ug/L	4100	<0.5 U	<2.5 U	<2.5 U	<0.5 U
N-PROPYLBENZENE	ug/L	4100	<0.25 U	<1.25 U	<1.25 U	<0.25 U
O-XYLENE	ug/L	10000	<0.5 U	<2.5 U	<2.5 U	<0.5 U
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	<2.5 U	<2.5 U	<0.5 U
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	<2.5 U	<2.5 U	<0.5 U
STYRENE	ug/L	100	<0.25 U	<1.25 U	<1.25 U	<0.25 U
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	<2.5 U	<2.5 U	<0.5 U
TETRACHLOROETHENE	ug/L	5	<0.5 U	<2.5 U	<2.5 U	<0.5 U
TOLUENE	ug/L	1000	<0.5 U	<2.5 U	<2.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	<0.5 U	<2.5 U	<2.5 U	<0.5 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	<5 U	<5 U	<1 U
TRICHLOROETHENE	ug/L	5	<0.5 U	1.65 J	1.94 J	<0.5 U
TRICHLOROFLUOROMETHANE	ug/L	31000	<0.5 U	<2.5 U	<2.5 U	<0.5 U
VINYL CHLORIDE	ug/L	2	<0.5 U	<2.5 U	<2.5 U	<0.5 U
Anions (9056)						
CHLORIDE	mg/L		NA	NA	NA	NA
NITRATE	mg/L	10	NA	NA	NA	NA
NITRITE	mg/L	1	NA	NA	NA	NA
SULFATE	mg/L		NA	NA	NA	NA
Dissolved Gases (RSK-175)						
CARBON DIOXIDE	ug/L		NA	NA	NA	NA
ETHANE	ug/L		NA	NA	NA	NA
ETHENE	ug/L		NA	NA	NA	NA
METHANE	ug/L		NA	NA	NA	NA
SM3500FE						
FERROUS IRON	mg/L		NA	NA	NA	NA

Blue Highlighting Indicates concentrations above Daily Maximum Concentration

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

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

mg/L - milligrams per liter

N/A - not analyzed

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

ug/L - micrograms per liter

AECOM

MEMORANDUM FOR FILE

DATE: February 19, 2015

PROJECT NAME: Remediation of Multiple Sites, Longhorn Army Ammunition Plant, Karnack, TX

TO: Rose Zeiler — Site Manager

Rick Smith — Project Manager

Aaron Williams — Project Engineer

FROM: Mark Heaston — AECOM PM, (402) 643-9823

SUBJECT: **Surface Water Data Transmittal February 2014 – August 2014**
Perimeter Well Data Transmittal April 2014 – August 2014
Longhorn Army Ammunition Plant, Karnack, TX
(Contract: W912DY-09-D-0059, Task Order DS01)

REMARKS

Surface Water and Perimeter well sampling data is currently collected at the following frequencies except when locations are dry:

Perimeter Wells	Frequency
PW108	Annually
PW110	Annually
PW111	Annually
PW112	Annually
PW133	Semi-Annually
PW134	Semi-Annually
Surface Water	**Frequency**
HBW-1	Harrison Bayou , quarterly
HBW-7	Harrison Bayou , quarterly
HBW-10	Harrison Bayou , quarterly
GPW-1	Goose Prairie Creek, quarterly
GPW-3	Goose Prairie Creek, quarterly

Data associated with sampling events for the subject periods including the data validation report (Quality Control Summary Report) for the samples are attached for your file. Note all surface water locations were dry during surface water sampling events in May 2014 and August 2014.

All Perimeter Well and Surface Water sampling data is updated and reported to the regulatory agencies and to the public as it is available through handouts reviewed and distributed in association with the quarterly Restoration Advisory Board (RAB) meetings, and included in the Administrative Record along with other RAB meeting materials. The attached handouts were distributed at the November 2014 RAB meeting.

List of Attachments:

Harrison Bayou and Goose Prairie Creek Perchlorate Data Handout

LHAAP Perimeter Well Monitoring Perchlorate Data Handout

Quality Control Summary Report

Laboratory Analytical Data Reports

Harrison Bayou and Goose Prairie Creek – Perchlorate Data

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

Historic Surface Water Sample Data
(in micrograms per liter)

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

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

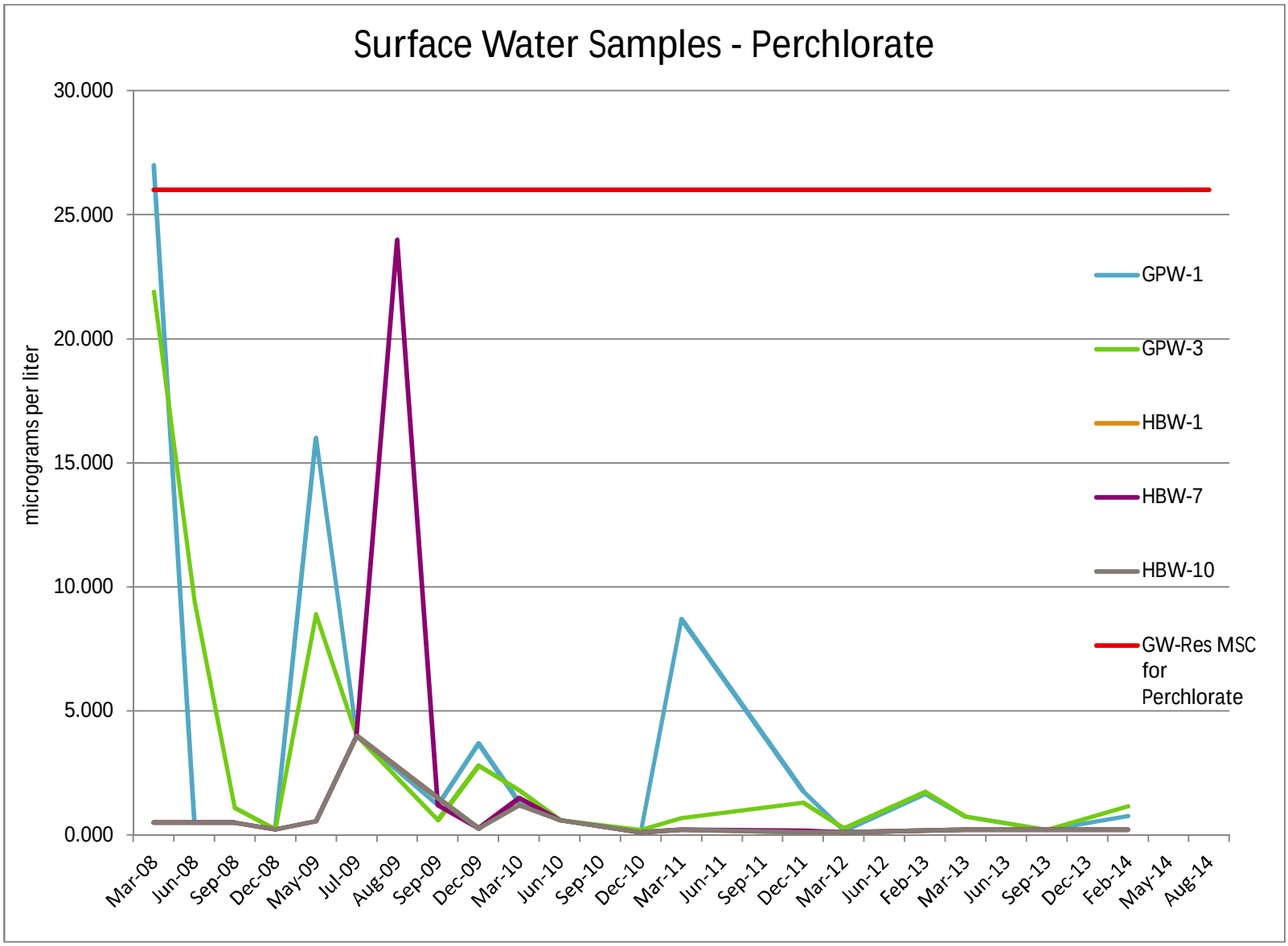
Quarter	1st	2nd	3rd	4th	2nd	3rd	3rd	3rd	4th	1st	2nd
Creek Sample ID	Mar 2008	Jun 2008	Sep 2008	Dec 2008	May 2009	Jul 2009	Aug 2009	Sep 2009	Dec 2009	Mar 2010	Jun 2010
GPW-1	27	<0.5U	<0.5U	<0.22U	16	<4U	NS	<1.2U	3.7	1.3J	<0.6U
GPW-3	21.9	9.42	1.1	<0.22U	8.9	<4U	NS	<0.6U	2.8	1.8J	<0.6U
HBW-1	<0.5U	<0.5U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

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

Quarter	2nd	3rd	4th	1st	2nd	3rd
Creek Sample ID	Jun 2013	Sept 2013	Dec 2013	Feb 2014	May 2014	Aug 2014
GPW-1	dry	<0.2 U	dry	0.766	dry	dry
GPW-3	dry	<0.2 U	dry	1.15	dry	dry
HBW-1	<0.2U	<0.2 U	dry	<0.2U	dry	dry
HBW-7	<0.2U	<0.2 U	dry	0.201J	dry	dry
HBW-10	<0.2U	<0.2 U	dry	<0.2U	dry	dry

Notes:

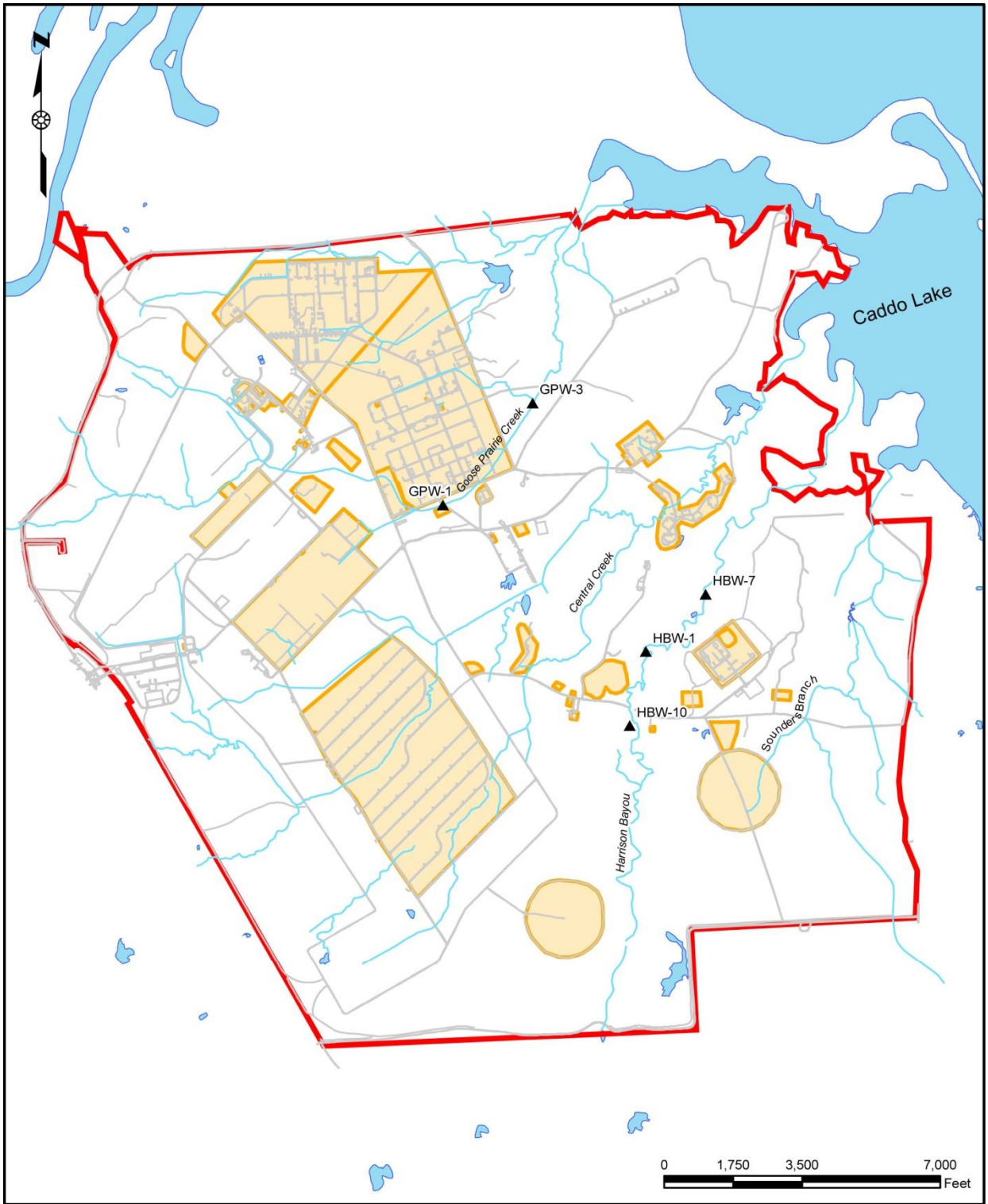
J	Estimated
U	Non-detect
NC	Not Collected
NS	Not Sampled
dry	Sampling location was dry
-	No historical data available



Notes:

Perchlorate Screening Criteria - TCEQ GW_{Res} (micrograms per liter) 26

Longhorn Army Ammuntion Plant Map with creek sampling locations.



Legend

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

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

SURFACE WATER SAMPLING LOCATION

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

LHAAP Perimeter Well Monitoring – Perchlorate Data

Groundwater samples are currently collected quarterly from six wells on the LHAAP perimeter.

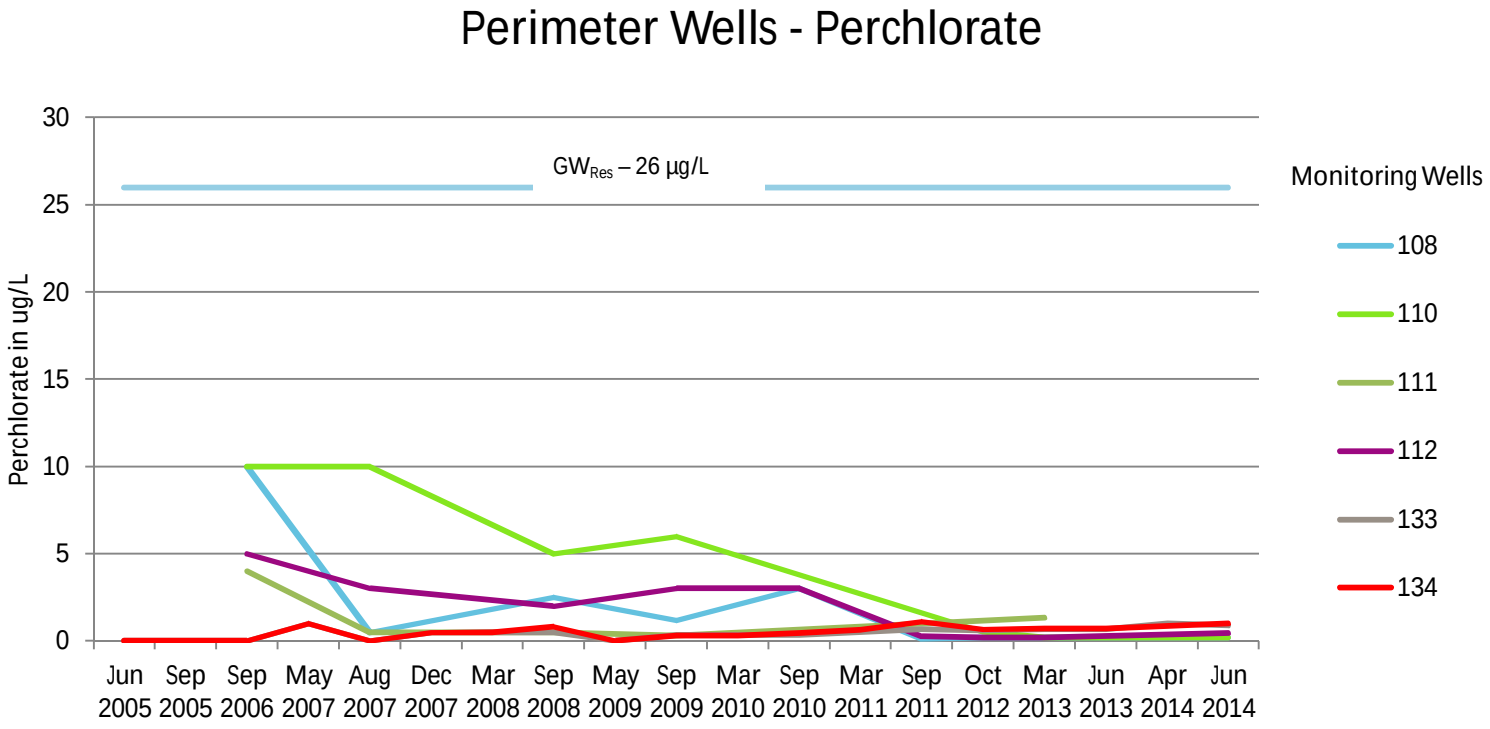
Historic Perimeter Well Sample Data
(in micrograms per liter)

Well ID	June 2005	Sep 2005	Sep 2006	May 2007	Aug 2007	Dec 2007	Mar 2008	Sep 2008	May 2009	Sep 2009	Mar 2010
108	Dry	Dry	10 U	Dry	0.5 U	Dry	Dry	2.5 U	Dry	1.2 U	Dry
110	Dry	Dry	10 U	Dry	10 U	Dry	Dry	5.0 U	Dry	6 U	Dry
111	Dry	Dry	4 U	Dry	0.5 U	Dry	Dry	0.5 U	Dry	0.3 U	Dry
112	Dry	Dry	5 U	Dry	3 U	Dry	Dry	2.0 U	Dry	3 U	Dry
133	0.541	0.597	1.08	1 U	1.09	0.5 U	0.5 U	0.5 U	0.47 J	0.32	Dry
134	0.881	0.725	0.708 J	1 U	0.949 J	0.5 U	0.5 U	0.829 U	0.04 J	0.3 U	0.3 U

Well ID	Sep 2010	Mar 2011	Sep 2011	Oct 2012	Mar 2013	June 2013	Apr 2014	Jun 2014
108	3 U	Dry	0.1 U	0.2 U	0.2 U	Dry	Dry	0.2 U
110	Dry	Dry	Dry	0.535	0.2 U	Dry	Dry	0.2 U
111	Dry	Dry	Dry	Dry	1.32	Dry	Dry	Dry
112	3 U	Dry	0.26	0.2 U	0.2 U	Dry	Dry	0.458
133	0.32	Dry	0.68	0.598	0.655	0.685	0.988	0.887
134	0.45	0.636	1.11	0.671	0.698	0.706	0.863	0.989

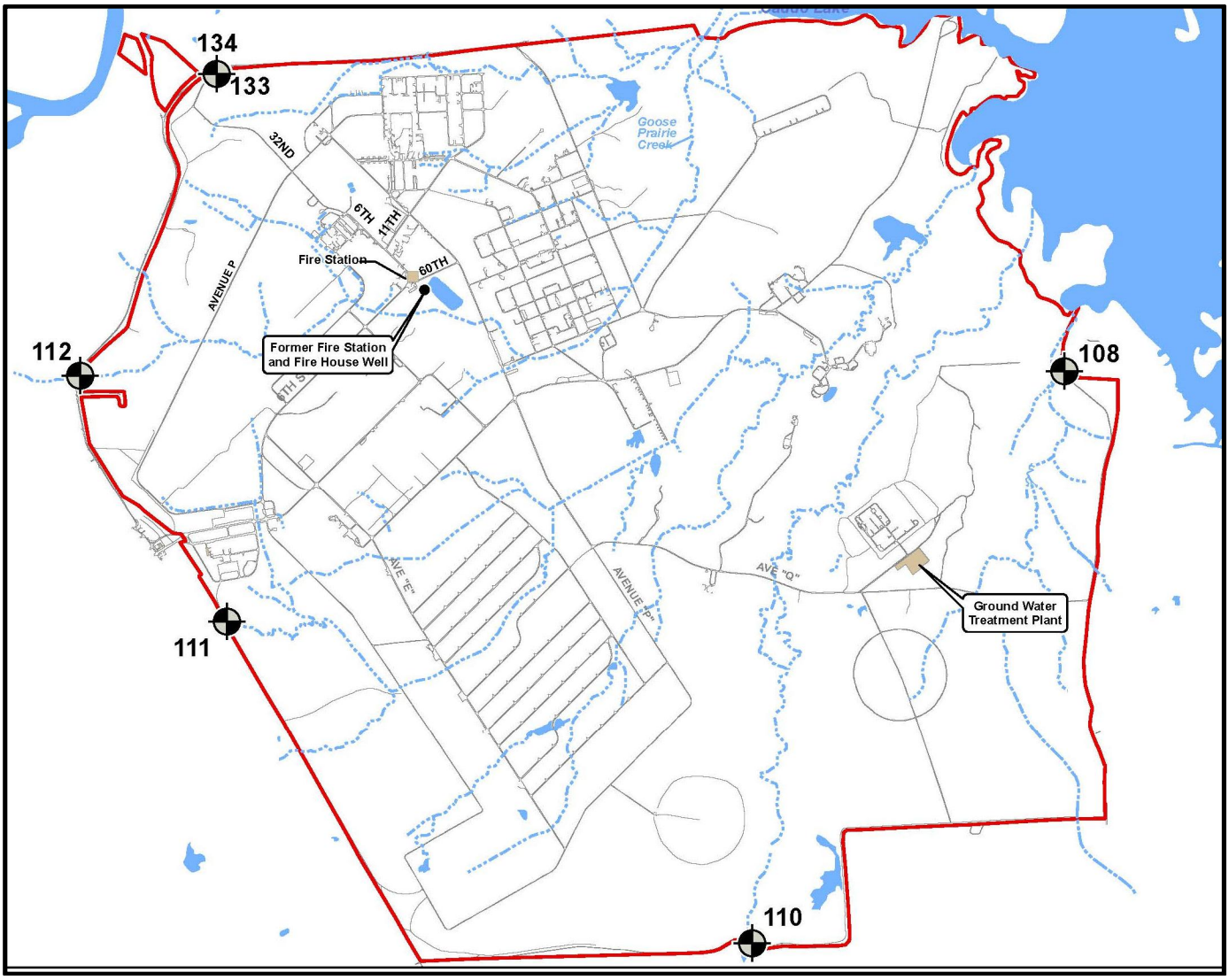
Notes:

J	Estimated
U	Non-Detect
Dry	Well Dry



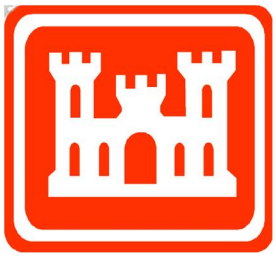
Note: Perchlorate Screening Criteria - TCEQ GW_{Res} (micrograms per liter) 26

Longhorn Army Ammuntion Plant Map with Perimeter Well Locations



QUALITY CONTROL SUMMARY REPORT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared For:



U.S. Army Corps of Engineers

Prepared By:

AECOM

AECOM Technical Services

January 2015

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1 INTRODUCTION

AECOM reviewed four data packages from Microbac Laboratory Services, Marietta, OH. Surface and groundwater samples were collected February 25, April 2, June 17, and August 24, 2014 at Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas. Data were reviewed for conformance to the requirements of the following guidance documents: Automated Data Review by Laboratory Data Consultants (ADR.net), United States Environmental Protection Agency (EPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, (EPA, July 2002), and EPA Contract Laboratory Program National Functional Guidelines for Low Concentration Organic Data Review, (EPA, June 2001).

1.1 Intended Use of Data

Groundwater treatment activities consist of monitoring of treated water to ensure compliance with the discharge limitations.

Analyses requested included:

- SW6850 – Perchlorates by LC/MS/MS
- SW8260 – Volatile Organics by GC/MS

Table 2 lists the sample identifications and their associated laboratory identifications. Table 3 lists qualified results with the associated quality control parameter that was exceeded.

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

Initial calibration criteria modification includes RSD< or = to 30%, two compounds allowed up to 40%. If the continuing calibration verification (CCV) compound exceeds 30% drift, the compound is checked in the LCS, if both are outside recovery limits, the compound is rejected, R. If only the CCV exceeds recovery criteria and is less than ± 40% drift, then the compound is qualified J or UJ.

1.3.1 Continuing Calibration Verifications (CCV)

All CCVs are within criteria.

1.3.2 Blanks

Where contamination by a target analyte of one of the various blanks was found, 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 B. Where the sample result for the affected analyte was greater than 5X the amount in the blank, no qualifier was applied.

No blank contamination found.

1.3.3 Surrogates

All surrogates are within criteria.

1.3.4 Laboratory Control Sample (LCS)

All LCS are within criteria.

2 DATA USABILITY SUMMARY

The data are usable for the intended purposes of the project. The data quality objectives have been met for the project.

Table 1: Completeness by Method

Method	Total Analytes	No. of Rejected Results	% Completeness
SW8260	64	0	100
SW6850	13	0	100

Table 2: Field Sample Identification and Laboratory Identification

Client Sample ID	Lab Sample ID	Collected	SW6850	SW8260
HBW7-020514	L14020226-01	2/5/2014	X	
HBW10-020514	L14020226-02	2/5/2014	X	
HBW1-020514	L14020226-03	2/5/2014	X	
GPW1-020514	L14020226-04	2/5/2014	X	
GPW3-020514	L14020226-05	2/5/2014	X	
PW-133-040214	L14040302-01	4/2/2014	X	
PW-134-040214	L14040302-02	4/2/2014	X	
PW133-061714	L14061094-01	6/17/2014	X	
PW134-061714	L14061094-02	6/17/2014	X	
PW112-061714	L14061094-03	6/17/2014	X	
PW108-061714	L14061094-04	6/17/2014	X	
PW110-061714	L14061094-05	6/17/2014	X	
PW134-082414*	L14081444-01	8/24/2014	X	X
Trip blank*	L14081444-02	8/24/2014		X

* Collected as part of a split sampling event for samples collected by the United States Environmental Protection Agency

Microbac

Laboratory Report Number: L14020226

Kayla Teague
AECOM Technical Services, Inc.
16000 Dallas Parkway
Dallas, TX 75248

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Kathy Albertson – Team Chemist/Data Specialist
(740) 373-4071
Kathy.Albertson@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on February 18 2014

David L. Vandenberg

David Vandenberg – Managing Director

State of Origin: TX
Accrediting Authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: DOD Ver 4.1

Microbac

Lab Report #: L14020226
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
0014447	I	2.0		j2317157492	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	NA
12	Were VOA samples free of headspace (less than 6mm)?	NA

Microbac

Lab Report #: L14020226
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
HBW 7-020514	L14020226-01	02/05/2014 08:05	02/06/2014 09:53
HBW 10-020514	L14020226-02	02/05/2014 08:20	02/06/2014 09:53
HBW 1-020514	L14020226-03	02/05/2014 08:35	02/06/2014 09:53
GPW 1-020514	L14020226-04	02/05/2014 08:55	02/06/2014 09:53
GPW 3-020514	L14020226-05	02/05/2014 09:08	02/06/2014 09:53

Microbac REPORT L14020226
PREPARED FOR AECOM Technical Services, Inc.
WORK ID:

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1.0 Summary Data

1.1 Narratives

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14020226
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG463400	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-02-18 00:00:00		

Laboratory Data Package Cover Page

	R1	Field chain-of-custody documentation;
	R2	Sample identification cross-reference;
	R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a.if required for the project, tentatively identified compounds (TICs).
	R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
	R5	Test reports/summary forms for blank samples;
	R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
	R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
	R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
	R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
	R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Mike Cochran		Semivolatiles Supervisor	2014-02-18 20:52:38

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14020226
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG463400	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-02-18 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification	X				
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports					
Were all samples prepared and analyzed within holding times?	X				
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?			X		
Were % moisture (or solids) reported for all soil and sediment samples?			X		
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?			X		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
Test reports/summary forms for blank samples	X				
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	X				

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14020226
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG463400	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-02-18 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?			X		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			X		
Were MS/MSD analyzed at the appropriate frequency?			X		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			X		
Were MS/MSD RPDs within laboratory QC limits?			X		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			X		
Were analytical duplicates analyzed at the appropriate frequency?			X		
Were RPDs or relative standard deviations within the laboratory QC limits?			X		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14020226
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG463400	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-02-18 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?	X				
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?	X				
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?	X				
Were ion abundance data within the method-required QC limits?	X				
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?	X				
Raw data (NELAC Section 5.5.10)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?	X				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?			X		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
Method detection limit (MDL) studies					

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14020226
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG463400	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-02-18 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter “R” must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter “S” should be retained and made available upon request for the appropriate retention period;

2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

3. NA = Not applicable;

4. NR = Not reviewed;

5. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

The Exception Report for each “No” or “Not Reviewed (NR)” item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14020226
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG463400	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-02-18 00:00:00		

the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [ ] This laboratory meets an exception under 30 TAC §25.6 and was last inspection by [ ] TCEQ or [ ] _____ on **(enter date of last inspection**). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report

1.2 Certificate of Analysis

Microbac

Lab Report #: L14020226
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14020226-01	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	HBW 7-020514	**Prep Method:**	6850	**Prep Date:**	02/17/2014 14:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	12/18/2013 19:20
Workgroup #:	WG463400	**Analyst:**	JWR	**Run Date:**	02/17/2014 21:09
Collect Date:	02/05/2014 08:05	**Dilution:**	1	**File ID:**	1LM.LM23801
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.201	J	0.400	0.200	0.100

J	Estimated value ; the analyte concentration was less than the LOQ.

Microbac

Lab Report #: L14020226
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14020226-02	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	HBW 10-020514	**Prep Method:**	6850	**Prep Date:**	02/17/2014 14:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	12/18/2013 19:20
Workgroup #:	WG463400	**Analyst:**	JWR	**Run Date:**	02/17/2014 21:28
Collect Date:	02/05/2014 08:20	**Dilution:**	1	**File ID:**	1LM.LM23802
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.200	U	0.400	0.200	0.100

U	Analyte was not detected. The concentration is below the reported LOD.

Microbac

Lab Report #: L14020226
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14020226-03	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	HBW 1-020514	**Prep Method:**	6850	**Prep Date:**	02/17/2014 14:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	12/18/2013 19:20
Workgroup #:	WG463400	**Analyst:**	JWR	**Run Date:**	02/17/2014 21:46
Collect Date:	02/05/2014 08:35	**Dilution:**	1	**File ID:**	1LM.LM23803
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.200	U	0.400	0.200	0.100

U	Analyte was not detected. The concentration is below the reported LOD.

Microbac

Lab Report #: L14020226
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14020226-04	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	GPW 1-020514	**Prep Method:**	6850	**Prep Date:**	02/17/2014 14:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	12/18/2013 19:20
Workgroup #:	WG463400	**Analyst:**	JWR	**Run Date:**	02/17/2014 22:05
Collect Date:	02/05/2014 08:55	**Dilution:**	1	**File ID:**	1LM.LM23804
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.766		0.400	0.200	0.100

Certificate of Analysis

Sample #:	L14020226-05	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	GPW 3-020514	**Prep Method:**	6850	**Prep Date:**	02/17/2014 14:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	12/18/2013 19:20
Workgroup #:	WG463400	**Analyst:**	JWR	**Run Date:**	02/17/2014 22:24
Collect Date:	02/05/2014 09:08	**Dilution:**	1	**File ID:**	1LM.LM23805
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	1.15		0.400	0.200	0.100

2.0 Full Sample Data Package

2.1 General Chromatography Data

2.1.1 6850 LC/MS Data

2.1.1.1 Summary Data

Microbac

Lab Report #: L14020226
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14020226-01	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	HBW 7-020514	**Prep Method:**	6850	**Prep Date:**	02/17/2014 14:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	12/18/2013 19:20
Workgroup #:	WG463400	**Analyst:**	JWR	**Run Date:**	02/17/2014 21:09
Collect Date:	02/05/2014 08:05	**Dilution:**	1	**File ID:**	1LM.LM23801
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.201	J	0.400	0.200	0.100

J	Estimated value ; the analyte concentration was less than the LOQ.

Microbac

Lab Report #: L14020226
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14020226-02	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	HBW 10-020514	**Prep Method:**	6850	**Prep Date:**	02/17/2014 14:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	12/18/2013 19:20
Workgroup #:	WG463400	**Analyst:**	JWR	**Run Date:**	02/17/2014 21:28
Collect Date:	02/05/2014 08:20	**Dilution:**	1	**File ID:**	1LM.LM23802
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.200	U	0.400	0.200	0.100

U	Analyte was not detected. The concentration is below the reported LOD.

Microbac

Lab Report #: L14020226
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14020226-03	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	HBW 1-020514	**Prep Method:**	6850	**Prep Date:**	02/17/2014 14:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	12/18/2013 19:20
Workgroup #:	WG463400	**Analyst:**	JWR	**Run Date:**	02/17/2014 21:46
Collect Date:	02/05/2014 08:35	**Dilution:**	1	**File ID:**	1LM.LM23803
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.200	U	0.400	0.200	0.100

U	Analyte was not detected. The concentration is below the reported LOD.

Microbac

Lab Report #: L14020226
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14020226-04	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	GPW 1-020514	**Prep Method:**	6850	**Prep Date:**	02/17/2014 14:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	12/18/2013 19:20
Workgroup #:	WG463400	**Analyst:**	JWR	**Run Date:**	02/17/2014 22:05
Collect Date:	02/05/2014 08:55	**Dilution:**	1	**File ID:**	1LM.LM23804
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.766		0.400	0.200	0.100

Certificate of Analysis

Sample #:	L14020226-05	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	GPW 3-020514	**Prep Method:**	6850	**Prep Date:**	02/17/2014 14:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	12/18/2013 19:20
Workgroup #:	WG463400	**Analyst:**	JWR	**Run Date:**	02/17/2014 22:24
Collect Date:	02/05/2014 09:08	**Dilution:**	1	**File ID:**	1LM.LM23805
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	1.15		0.400	0.200	0.100

2.1.1.2 QC Summary Data

Example Calculation 6850 - Perchlorate

Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of internal standard (IS) = Rx/Ristd

x = amount ratio = concentration analyte/concentration internal standard (IS) = Cx / Cistd

m = slope from curve (1.45)

b = intercept from curve (-0.00242)

y = 1.45x + -0.00242

Step 2: Substitute the value for y

where y = 12600/226000 = 0.055752

Step 3: Solve for x

x = (y - b)/m = 0.0040119

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(x) = (5 ug/L)(0.040119) = 0.200594 ug/L

Example Calculation - Water:

Slope from curve, m:	1.45
Intercept from curve, b:	-0.00242
Response of analyte, Rx:	12600
Response of Internal Standard , Ristd:	226000
Concentration of IS, Cistd (ug/L):	5.00
Response Ratio:	0.05575
Amount Ratio:	0.04012
Analyte Concentration, Cx (ug/L) :	0.200594

Example Calculation - Soil:

Analyte Concentration, Cx (ug/L):	0.20059
Amount of soil extracted (g):	5.00
Final volume of extract (mL):	50.00
Percent solids (Pct wt.)	100
Concentration in soil (ug/kg):	2.005938

Perchlorate Conductivity Check

(perchlorate1)

Conductivity Probe
Calibration Check: 1421 /1410 µs/cm

Working MCT Level: 10,000 µs/cm

Sample	Conductivity (µs/cm)	Pretreatment or Dilution Needed
WG463400-01 MCT	9,920	
-02 Blank	0.0	
-03 LCS	0.0	
L14020842-01	3,120	
-02	3,130	
L14020051-01	516	
-02	539	
-03	1,432	
-04	268	
-05	966	
L14020226-01	217	
-02	203	
-03	204	
-04	127.2	
-05	126.3	

Analyst: John Richards

Date/Time: 02/18/14 / 12:30

DCN#100615

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 121813_JWR.TXT

Analyst1: JWR Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 130402254

Eluent ID#:

Column 1 ID: KP-RPPX250 Column 2 ID: NA

Workgroups: Analytical WG456903 (waters)

Internal STD: COA17210 Surrogate STD: NA Calibration STD STD61802 (12/18/2013)

CCV STD: STD61802 LCS STD: STD61802 MS/MSD STD: STD61802

Comments: ICAL WG456864 : Alternate Source STD61185
Samples L13120673(-04,-05,-06) were analyzed at dilutions based on their historical results. Samples L13120673(-01,-02,-07,-08,-10) had no historical results. Samples with no historical results are initially screened at a 100x dilution in order to prevent overloading the analytical column and/or detector.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM23230	WG456864-01 CCB	1	1		12/18/13 17:07
2	1LM.LM23231	WG456864-02 STD (0.1 ug/L)	1	1	STD61802	12/18/13 17:26
3	1LM.LM23232	WG456864-03 STD (0.2 ug/L)	1	1	STD61802	12/18/13 17:45
4	1LM.LM23233	WG456864-04 STD (0.5 ug/L)	1	1	STD61802	12/18/13 18:04
5	1LM.LM23234	WG456864-05 STD (1.0 ug/L)	1	1	STD61802	12/18/13 18:23
6	1LM.LM23235	WG456864-06 STD (2.0 ug/L)	1	1	STD61802	12/18/13 18:42
7	1LM.LM23236	WG456864-07 STD (5.0 ug/L)	1	1	STD61802	12/18/13 19:01
8	1LM.LM23237	WG456864-08 STD (10 ug/L)	1	1	STD61802	12/18/13 19:20
9	1LM.LM23238	WG456864-09 SSCV (1.0 ug/L)	1	1	STD61185	12/18/13 19:39
10	1LM.LM23239	WG456905-01 CCB	1	1		12/18/13 19:58
11	1LM.LM23240	WG456905-02 CCV (1.0ug/L)	1	1	STD61802	12/18/13 20:17
12	1LM.LM23241	WG456903-07 MRL (0.2ug/L)	1	1	STD61802	12/18/13 20:36
13	1LM.LM23242	WG456903-01 MCT (0.2ug/L)	1	1	STD61802	12/18/13 20:55
14	1LM.LM23243	WG456903-02 BLANK	1	1		12/18/13 21:14
15	1LM.LM23244	WG456903-03 LCS (0.2ug/L)	1	1	STD61802	12/18/13 21:33
16	1LM.LM23245	L13120643-01	1	1		12/18/13 21:51
17	1LM.LM23246	L13120643-02	1	1		12/18/13 22:10
18	1LM.LM23247	L13120643-03 RS	1	1		12/18/13 22:29
19	1LM.LM23248	L13120643-04 MS	1	1	STD61802	12/18/13 22:48
20	1LM.LM23249	L13120643-05 MSD	1	1	STD61802	12/18/13 23:07
21	1LM.LM23250	L13120643-06	1	1		12/18/13 23:26
22	1LM.LM23251	L13120643-07	1	1		12/18/13 23:45
23	1LM.LM23252	WG456905-03 CCV (1.0ug/L)	1	1	STD61802	12/19/13 00:04
24	1LM.LM23253	WG456903-08 MRL (0.2ug/L)	1	1	STD61802	12/19/13 00:23
25	1LM.LM23254	WG456905-04 CCB	1	1		12/19/13 00:42
26	1LM.LM23255	L13120643-08	1	1		12/19/13 01:01
27	1LM.LM23256	L13120643-09	1	1		12/19/13 01:20
28	1LM.LM23257	L13120643-10	1	1		12/19/13 01:39
29	1LM.LM23258	L13120643-11	1	1		12/19/13 01:58
30	1LM.LM23259	L13120644-01	1	1		12/19/13 02:17
31	1LM.LM23260	L13120673-01 (100x)	1	100		12/19/13 02:36
32	1LM.LM23261	L13120673-02 (100x) (NR)	1	100		12/19/13 02:55

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Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 121813_JWR.TXT

Analyst1: JWR Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 130402254

Eluent ID#:

Column 1 ID: KP-RPPX250 Column 2 ID: NA

Workgroups: Analytical WG456903 (waters)

Internal STD: COA17210 Surrogate STD: NA STD61802 (12/18/2013)

CCV STD: STD61802 LCS STD: STD61802 STD61802

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
33	1LM.LM23262	L13120673-04 (5,000x)	1	5000		12/19/13 03:13
34	1LM.LM23263	L13120673-05 (10,000x)	1	10000		12/19/13 03:32
35	1LM.LM23264	L13120673-06 (10,000x)	1	10000		12/19/13 03:51
36	1LM.LM23265	WG456905-05 CCV (1.0ug/L)	1	1	STD61802	12/19/13 04:10
37	1LM.LM23266	WG456903-09 MRL (0.2ug/L)	1	1	STD61802	12/19/13 04:29
38	1LM.LM23267	WG456905-06 CCB	1	1		12/19/13 04:48
39	1LM.LM23268	L13120673-07 (100x) (NR)	1	100		12/19/13 05:07
40	1LM.LM23269	L13120673-08 (100x) (NR)	1	100		12/19/13 05:26
41	1LM.LM23270	L13120673-10 (100x) (NR)	1	100		12/19/13 05:45
42	1LM.LM23271	WG456905-07 CCV (1.0ug/L)	1	1	STD61802	12/19/13 06:04
43	1LM.LM23272	WG456903-10 MRL (0.2ug/L)	1	1	STD61802	12/19/13 06:23
44	1LM.LM23273	WG456905-08 CCB	1	1		12/19/13 06:42
45	1LM.LM23274	WG456905-09 CCV (1.0ug/L)	1	1	STD61802	12/19/13 14:20
46	1LM.LM23275	WG456903-11 MRL (0.2ug/L)	1	1	STD61802	12/19/13 14:39
47	1LM.LM23276	WG456905-10 CCB	1	1		12/19/13 14:58
48	1LM.LM23277	L13120673-02 (RR 100,000x)	1	100000		12/19/13 15:17
49	1LM.LM23278	L13120673-07 (RR 4x)	1	4		12/19/13 15:36
50	1LM.LM23279	L13120673-08 (RR Neat)	1	1		12/19/13 15:55
51	1LM.LM23280	L13120673-10 (RR 10,000x)	1	10000		12/19/13 16:14
52	1LM.LM23281	WG456905-11 CCV (1.0ug/L)	1	1	STD61802	12/19/13 16:33
53	1LM.LM23282	WG456903-12 MRL (0.2ug/L)	1	1	STD61802	12/19/13 16:52
54	1LM.LM23283	WG456905-12 CCB	1	1		12/19/13 17:11

Comments

Seq.	Rerun	Dil.	Reason	Analytes
32	X	100000	Over Calibration Range	
	L13120673-02 (100x) (NR) : This sample was reanalyzed at a 100,000x dilution on the end of this run.			
39	X	4	Analyzed too dilute	
	L13120673-07 (100x) (NR) : This sample was reanalyzed at a 4x dilution on the end of this run.			
40	X	1	Analyzed too dilute	
	L13120673-08 (100x) (NR) : This sample was reanalyzed neat on the end of this run.			
41	X	10000	Over Calibration Range	
	L13120673-10 (100x) (NR) : This sample was reanalyzed at a 10,000x dilution on the end of this run.			

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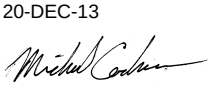

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 021714_JWR.TXT

Analyst1: JWR Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 130402254

Eluent ID#:

Workgroups: Column 1 ID: KP-RPPX250 Column 2 ID: NA

Analytical WG463400 (waters)

Internal STD: COA17210 Surrogate STD: NA Calibration STD STD61802 (12/18/2013)

CCV STD: STD61802 LCS STD: STD61802 MS/MSD STD: STD61802

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM23779	WG463411-01 CCB	1	1		02/17/14 14:12
2	1LM.LM23780	WG463411-02 CCV (1.0ug/L)	1	1	STD61802	02/17/14 14:31
3	1LM.LM23781	WG463400-07 MRL (0.2ug/L)	1	1	STD61802	02/17/14 14:50
4	1LM.LM23782	WG463400-01 MCT (0.2ug/L)	1	1	STD61802	02/17/14 15:09
5	1LM.LM23783	WG463400-02 BLANK	1	1		02/17/14 15:28
6	1LM.LM23784	WG463400-03 LCS (0.2ug/L)	1	1	STD61802	02/17/14 15:47
7	1LM.LM23785	L14020042-01 100x (NR)	1	100		02/17/14 16:06
8	1LM.LM23786	L14020042-01 RR Neat	1	1		02/17/14 16:24
9	1LM.LM23787	Blank Rinse	1	1		02/17/14 16:43
10	1LM.LM23788	L14020042-02 100x (NR)	1	100		02/17/14 17:02
11	1LM.LM23789	L14020042-02 RR Neat	1	1		02/17/14 17:21
12	1LM.LM23790	Blank Rinse	1	1		02/17/14 17:40
13	1LM.LM23791	L14020051-01 REF	1	1		02/17/14 17:59
14	1LM.LM23792	L14020051-01 MS	1	1	STD61802	02/17/14 18:18
15	1LM.LM23793	L14020051-01 MSD	1	1	STD61802	02/17/14 18:37
16	1LM.LM23794	WG463411-03 CCV (1.0ug/L)	1	1	STD61802	02/17/14 18:56
17	1LM.LM23795	WG463400-08 MRL (0.2ug/L)	1	1	STD61802	02/17/14 19:15
18	1LM.LM23796	WG463411-04 CCB	1	1		02/17/14 19:34
19	1LM.LM23797	L14020051-02	1	1		02/17/14 19:53
20	1LM.LM23798	L14020051-03	1	1		02/17/14 20:12
21	1LM.LM23799	L14020051-04	1	1		02/17/14 20:31
22	1LM.LM23800	L14020051-05	1	1		02/17/14 20:50
23	1LM.LM23801	L14020226-01	1	1		02/17/14 21:09
24	1LM.LM23802	L14020226-02	1	1		02/17/14 21:28
25	1LM.LM23803	L14020226-03	1	1		02/17/14 21:46
26	1LM.LM23804	L14020226-04	1	1		02/17/14 22:05
27	1LM.LM23805	L14020226-05	1	1		02/17/14 22:24
28	1LM.LM23806	WG463411-05 CCV (1.0ug/L)	1	1	STD61802	02/17/14 22:43
29	1LM.LM23807	WG463400-09 MRL (0.2ug/L)	1	1	STD61802	02/17/14 23:02
30	1LM.LM23808	WG463411-06 CCB	1	1		02/17/14 23:21

Comments

Seq.	Rerun	Dil.	Reason	Analytes

Page: 1 Approved: 18-FEB-14

Microbac Laboratories Inc.

Data Checklist

Date: 18-DEC-2013
Analyst: JWR
Analyst: NA
Method: 6850
Instrument: LCMS1
Curve Workgroup: WG456864
Runlog ID: 57868
Analytical Workgroups: L13120643, 0644, 0673

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	ND
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Interference check sample (ICS) (LCMS)	MCT
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	X
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	
Check for completeness	X
Primary Reviewer	JWR
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
19-DEC-2013

Secondary Reviewer:
20-DEC-2013

CHECKLIST1 - Modified 03/05/2008
Generated: DEC-20-2013 07:56:23

Microbac Laboratories Inc.

Data Checklist

Date: 17-FEB-2014
Analyst: JWR
Analyst: NA
Method: 6850
Instrument: LCMS1
Curve Workgroup: NA
Runlog ID: 58999
Analytical Workgroups: L14020042, 0051, 0226 (WATERS)

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	ND
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Interference check sample (ICS) (LCMS)	MCT
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	NA
Manual integrations	MCT ONLY
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	
Check for completeness	X
Primary Reviewer	JWR
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
18-FEB-2014

Secondary Reviewer:
18-FEB-2014

CHECKLIST1 - Modified 03/05/2008
Generated: FEB-18-2014 12:26:33

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 6850 AAB#: WG463400

Login Number: L14020226

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
HBW 7-020514	01	02/05/14					02/17/2014	12.2	28		02/17/14	.3	28	
HBW 10-020514	02	02/05/14					02/17/2014	12.2	28		02/17/14	.3	28	
HBW 1-020514	03	02/05/14					02/17/2014	12.2	28		02/17/14	.3	28	
GPW 1-020514	04	02/05/14					02/17/2014	12.2	28		02/17/14	.3	28	
GPW 3-020514	05	02/05/14					02/17/2014	12.2	28		02/17/14	.4	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 3368797
Report generated 02/18/2014 13:46

METHOD BLANK SUMMARY

Login Number: L14020226
Work Group: WG463400
Blank File ID: 1LM.LM23783
Blank Sample ID: WG463400-02
Prep Date: 02/17/14 14:00
Instrument ID: LCMS1
Analyzed Date: 02/17/14 15:28
Method: 6850
Analyst: JWR

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
QCMRL	WG463400-07	1LM.LM23781	02/17/14 14:50	01
MCT	WG463400-01	1LM.LM23782	02/17/14 15:09	01
LCS	WG463400-03	1LM.LM23784	02/17/14 15:47	01
QCMRL	WG463400-08	1LM.LM23795	02/17/14 19:15	01
HBW 7-020514	L14020226-01	1LM.LM23801	02/17/14 21:09	01
HBW 10-020514	L14020226-02	1LM.LM23802	02/17/14 21:28	01
HBW 1-020514	L14020226-03	1LM.LM23803	02/17/14 21:46	01
GPW 1-020514	L14020226-04	1LM.LM23804	02/17/14 22:05	01
GPW 3-020514	L14020226-05	1LM.LM23805	02/17/14 22:24	01
QCMRL	WG463400-09	1LM.LM23807	02/17/14 23:02	01

Report Name: BLANK_SUMMARY
PDF File ID: 3368798
Report generated 02/18/2014 13:46

Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L14020226 Prep Date: 02/17/14 14:00 Sample ID: WG463400-02
Instrument ID: LCMS1 Run Date: 02/17/14 15:28 Prep Method: 6850
File ID: 1LM.LM23783 Analyst: JWR Method: 6850
Workgroup (AAB#): WG463400 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-18-DEC-13

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Perchlorate	0.100	0.400	0.100	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 3368799
18-FEB-2014 13:46

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L14020226 **Run Date:** 02/17/2014 **Sample ID:** WG463400-03
Instrument ID: LCMS1 **Run Time:** 15:47 **Prep Method:** 6850
File ID: 1LM.LM23784 **Analyst:** JWR **Method:** 6850
Workgroup (AAB#): WG463400 **Matrix:** Water **Units:** ug/L
QC Key: DOD4 **Lot#:** STD61802 **Cal ID:** LCMS1-18-DEC-13

Analytes	Expected	Found	% Rec	LCS Limits	Q
Perchlorate	0.200	0.220	110	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 3368800
Report generated: 02/18/2014 13:46

Login Number: L14020226
Analytical Method: 6850
ICAL Workgroup: WG456864
Instrument ID: LCMS1
Initial Calibration Date: 18-DEC-13 19:20
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
Perchlorate		1.443	2.71	1.00000	

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008
PDF File ID: 3369276
Report generated 02/18/2014 13:46

Login Number: L14020226
Analytical Method: 6850
Instrument ID: LCMS1
Initial Calibration Date: 18-DEC-13 19:20
Column ID: F

Analyte	WG456864-02			WG456864-03			WG456864-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	0.100	8410.00000	1.534	0.200	16200.0000	1.465	0.500	39200.0000	1.440

INT_CAL - Modified 03/06/2008
PDF File ID: 3369276
Report generated 02/18/2014 13:46

Login Number: L14020226
Analytical Method: 6850
Instrument ID: LCMS1
Initial Calibration Date: 18-DEC-13 19:20
Column ID: F

Analyte	WG456864-05			WG456864-06			WG456864-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	1.00	78800.0000	1.435	2.00	157000.000	1.414	5.00	393000.000	1.409

INT_CAL - Modified 03/06/2008
PDF File ID: 3369276
Report generated 02/18/2014 13:46

Login Number: L14020226
Analytical Method: 6850
Instrument ID: LCMS1
Initial Calibration Date: 18-DEC-13 19:20
Column ID: F

Analyte	WG456864-08		
	CONC	RESP	RF
Perchlorate	10.0	784000.000	1.406

INT_CAL - Modified 03/06/2008
PDF File ID: 3369276
Report generated 02/18/2014 13:46

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L14020226 Run Date: 12/18/2013 Sample ID: WG456864-09
Instrument ID: LCMS1 Run Time: 19:39 Method: 6850
File ID: 1LM.LM23238 Analyst: JWR QC Key: DOD4
ICal Workgroup: WG456864 Cal ID: LCMS1 - 18-DEC-13

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Perchlorate		1.00	0.978	ug/L	1.39	2.20	15	

* Exceeds %D Limit

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 3369277
Report generated 02/18/2014 13:46

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number:	L14020226	**Run Date:**	02/17/2014	**Sample ID:**	WG463411-01
Instrument ID:	LCMS1	**Run Time:**	14:12	**Method:**	6850
File ID:	1LM.LM23779	**Analyst:**	JWR	**Units:**	ug/L
Workgroup (AAB#):	WG463400	**Cal ID:**	LCMS1 - 18-DEC-13		
Matrix:	WATER	**QAPP:**	DOD4		

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3368804
Report generated 02/18/2014 13:46

Login Number: L14020226 | Run Date: 02/17/2014 | Sample ID: WG463411-04
Instrument ID: LCMS1 | Run Time: 19:34 | Method: 6850
File ID: 1LM.LM23796 | Analyst: JWR | Units: ug/L
Workgroup (AAB#): WG463400 | Cal ID: LCMS1 - 18-DEC-13
Matrix: WATER | QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3368804
Report generated 02/18/2014 13:46

Login Number: L14020226 Run Date: 02/17/2014 Sample ID: WG463411-06
Instrument ID: LCMS1 Run Time: 23:21 Method: 6850
File ID: 1LM.LM23808 Analyst: JWR Units: ug/L
Workgroup (AAB#): WG463400 Cal ID: LCMS1 - 18-DEC-13
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3368804
Report generated 02/18/2014 13:46

Login Number: L14020226 Run Date: 02/17/2014 Sample ID: WG463411-02
Instrument ID: LCMS1 Run Time: 14:31 Method: 6850
File ID: 1LM.LM23780 Analyst: JWR QC Key: DOD4
Workgroup (AAB#): WG463400 Cal ID: LCMS1 - 18-DEC-13
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.08	ug/L	1.54	8.00	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 3368803
Report generated 02/18/2014 13:46

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L14020226 **Run Date:** 02/17/2014 **Sample ID:** WG463411-03
Instrument ID: LCMS1 **Run Time:** 18:56 **Method:** 6850
File ID: 1LM.LM23794 **Analyst:** JWR **QC Key:** DOD4
Workgroup (AAB#): WG463400 **Cal ID:** LCMS1 - 18-DEC-13
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.03	ug/L	1.46	3.00	15	

*** Exceeds %D Criteria**

CCV - Modified 03/05/2008
PDF File ID: 3368803
Report generated 02/18/2014 13:46

Login Number: L14020226 Run Date: 02/17/2014 Sample ID: WG463411-05
Instrument ID: LCMS1 Run Time: 22:43 Method: 6850
File ID: 1LM.LM23806 Analyst: JWR QC Key: DOD4
Workgroup (AAB#): WG463400 Cal ID: LCMS1 - 18-DEC-13
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.02	ug/L	1.45	2.00	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 3368803
Report generated 02/18/2014 13:46

Login Number: L14020226 Run Date: 02/17/2014 Sample ID: WG463400-07
Instrument ID: LCMS1 Run Time: 14:50 Prep Method: 6850
File ID: 1LM.LM23781 Analyst: JWR Method: 6850
Workgroup (AAB#): WG463400 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-18-DEC-13

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.228	114	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3368801
Report generated 02/18/2014 13:46

Login Number: L14020226 Run Date: 02/17/2014 Sample ID: WG463400-08
Instrument ID: LCMS1 Run Time: 19:15 Prep Method: 6850
File ID: 1LM.LM23795 Analyst: JWR Method: 6850
Workgroup (AAB#): WG463400 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-18-DEC-13

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.206	103	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3368801
Report generated 02/18/2014 13:46

Login Number: L14020226 Run Date: 02/17/2014 Sample ID: WG463400-09
Instrument ID: LCMS1 Run Time: 23:02 Prep Method: 6850
File ID: 1LM.LM23807 Analyst: JWR Method: 6850
Workgroup (AAB#): WG463400 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-18-DEC-13

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.199	99.5	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3368801
Report generated 02/18/2014 13:46

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO MIDPOINT OF ICAL)

Login Number:L14020226
Instrument ID:LCMS1
Workgroup (AAB#):WG463400

ICAL CCV Number:WG456864-05
CAL ID: LCMS1-18-DEC-13
Matrix:WATER

Sample Number	Dilution	Tag	IS-1
WG456864-05	NA	NA	274000
Upper Limit	NA	NA	548000
Lower Limit	NA	NA	137000
L14020226-01	1.00	01	240000
L14020226-02	1.00	01	246000
L14020226-03	1.00	01	248000
L14020226-04	1.00	01	244000
L14020226-05	1.00	01	234000
WG463400-02	1.00	01	237000
WG463400-03	1.00	01	245000

IS-1 - O18LP

Underline = Response outside limits

INTERNAL_STD_ICAL - Modified 03/06/2008
PDF File ID: 3368805
Report generated 02/18/2014 13:46

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**	6850	**Samplenum:**	L14020226-01
Instrument:	LCMS1	**Prep Date:**	02/17/2014 14:00	**File ID:**	1LM.LM23801
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	02/17/2014 21:09	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	14200	4400	3.23	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**	6850	**Samplenum:**	L14020226-02
Instrument:	LCMS1	**Prep Date:**	02/17/2014 14:00	**File ID:**	1LM.LM23802
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	02/17/2014 21:28	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	2200	1130	1.95	2.3	3.8	*

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**	6850	**Samplenum:**	L14020226-03
Instrument:	LCMS1	**Prep Date:**	02/17/2014 14:00	**File ID:**	1LM.LM23803
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	02/17/2014 21:46	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	1140	305	3.74	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**	6850	**Samplenum:**	L14020226-04
Instrument:	LCMS1	**Prep Date:**	02/17/2014 14:00	**File ID:**	1LM.LM23804
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	02/17/2014 22:05	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	53300	16300	3.27	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**	6850	**Samplenum:**	L14020226-05
Instrument:	LCMS1	**Prep Date:**	02/17/2014 14:00	**File ID:**	1LM.LM23805
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	02/17/2014 22:24	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	76300	24800	3.08	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**		**Samplenum:**	WG456864-02
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23231
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	12/18/2013 17:26	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	8410	2790	3.01	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**		**Samplenum:**	WG456864-03
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23232
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	12/18/2013 17:45	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	16200	5210	3.11	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**		**Samplenum:**	WG456864-04
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23233
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	12/18/2013 18:04	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	39200	12700	3.09	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**		**Samplenum:**	WG456864-05
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23234
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	12/18/2013 18:23	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	78800	25700	3.07	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**		**Samplenum:**	WG456864-06
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23235
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	12/18/2013 18:42	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	157000	51500	3.05	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**		**Samplenum:**	WG456864-07
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23236
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	12/18/2013 19:01	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	393000	129000	3.05	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**		**Samplenum:**	WG456864-08
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23237
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	12/18/2013 19:20	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	784000	253000	3.10	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**		**Samplenum:**	WG456864-09
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23238
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	12/18/2013 19:39	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	81000	26800	3.02	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**	6850	**Samplenum:**	WG463400-01
Instrument:	LCMS1	**Prep Date:**	02/17/2014 14:00	**File ID:**	1LM.LM23782
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	02/17/2014 15:09	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	13400	4170	3.21	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**	6850	**Samplenum:**	WG463400-02
Instrument:	LCMS1	**Prep Date:**	02/17/2014 14:00	**File ID:**	1LM.LM23783
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	02/17/2014 15:28	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	175	155	1.13	2.3	3.8	*

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**	6850	**Samplenum:**	WG463400-03
Instrument:	LCMS1	**Prep Date:**	02/17/2014 14:00	**File ID:**	1LM.LM23784
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	02/17/2014 15:47	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	15800	4940	3.20	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**	6850	**Samplenum:**	WG463400-07
Instrument:	LCMS1	**Prep Date:**	02/17/2014 14:00	**File ID:**	1LM.LM23781
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	02/17/2014 14:50	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	15700	4810	3.26	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**	6850	**Samplenum:**	WG463400-08
Instrument:	LCMS1	**Prep Date:**	02/17/2014 14:00	**File ID:**	1LM.LM23795
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	02/17/2014 19:15	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	15500	4850	3.20	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**	6850	**Samplenum:**	WG463400-09
Instrument:	LCMS1	**Prep Date:**	02/17/2014 14:00	**File ID:**	1LM.LM23807
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	02/17/2014 23:02	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	14700	4820	3.05	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**		**Samplenum:**	WG463411-01
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23779
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	02/17/2014 14:12	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	432	125	3.46	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**		**Samplenum:**	WG463411-02
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23780
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	02/17/2014 14:31	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	70900	24100	2.94	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**		**Samplenum:**	WG463411-03
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23794
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	02/17/2014 18:56	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	72500	24900	2.91	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**		**Samplenum:**	WG463411-04
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23796
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	02/17/2014 19:34	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	462	374	1.24	2.3	3.8	*

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**		**Samplenum:**	WG463411-05
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23806
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	02/17/2014 22:43	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	69700	22200	3.14	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14020226	**Prep Method:**		**Samplenum:**	WG463411-06
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23808
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG463400	**Analysis Date:**	02/17/2014 23:21	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	348	297	1.17	2.3	3.8	*

2.1.1.3 Sample Data

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Data File	LM23801.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	2/17/2014 9:09:05 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

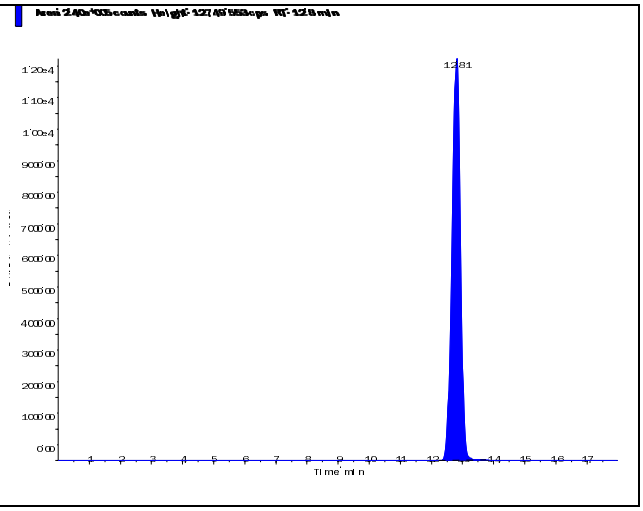
Sample Name	L14020226-01	**Injection Vial**	18.00
Data File	LM23801.wiff	**Injection Volume**	10.00
Acquisition Date	2/17/2014 9:09:05 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	L14020226-01	**Dilution Factor**	1.00
Sample Comment	1,1 (Hist)	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.400e+05	12.80	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.420e+04	12.80	N/A	0.201
Perchlorate conf	4.400e+03	12.80	N/A	0.19

O18LP (Internal Standard)

RT (Exp. RT): 12.80(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



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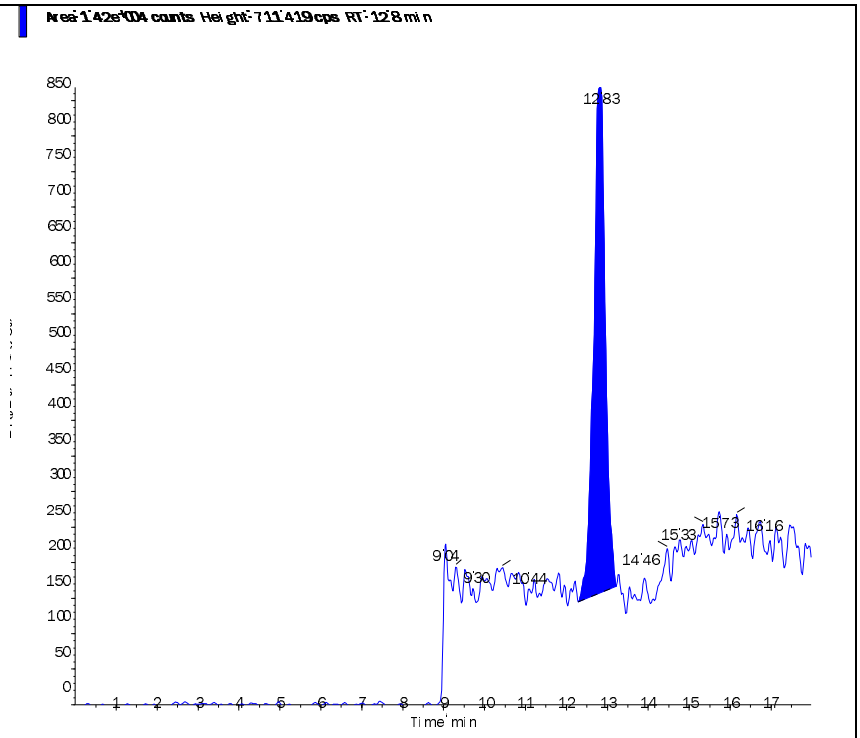
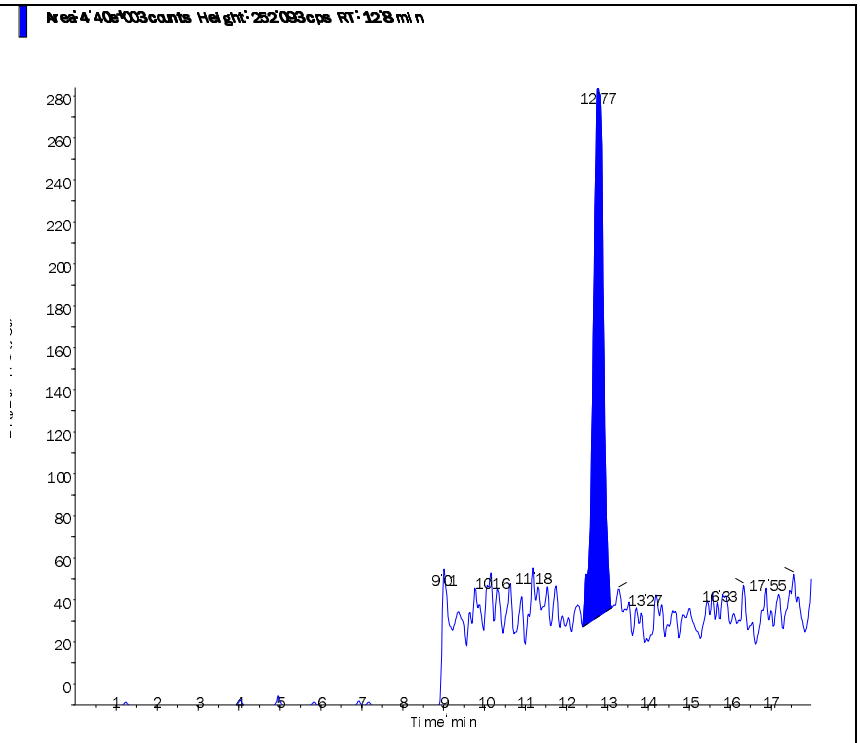
Perchlorate (98.8/83.3 amu) RT (Exp. RT): 12.80 (13.40) min Calculated conc: 0.201 ng/ml Area Ratio: 0.059 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 12.80 (13.40) min Calculated conc: 0.19 ng/ml Area Ratio: 0.018 Sample Type: (Unknown)	

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Printed: 2/18/2014 11:16 AM

Data File	LM23802.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	2/17/2014 9:28:01 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

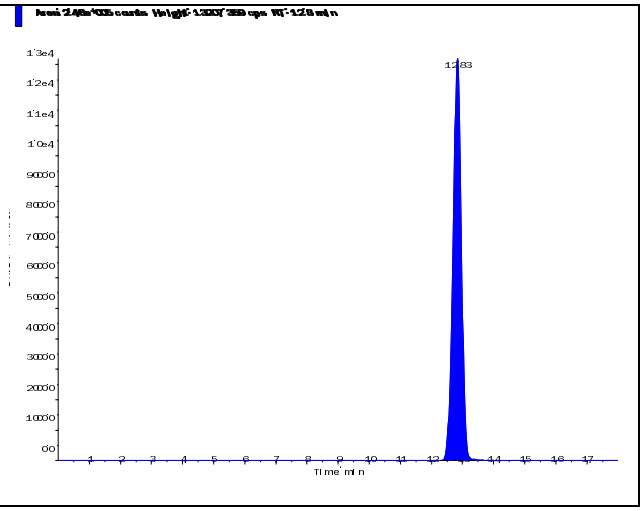
Sample Name	L14020226-02	**Injection Vial**	19.00
Data File	LM23802.wiff	**Injection Volume**	10.00
Acquisition Date	2/17/2014 9:28:01 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	L14020226-02	**Dilution Factor**	1.00
Sample Comment	1,1 (Hist)	**Weight to Volume**	0.00

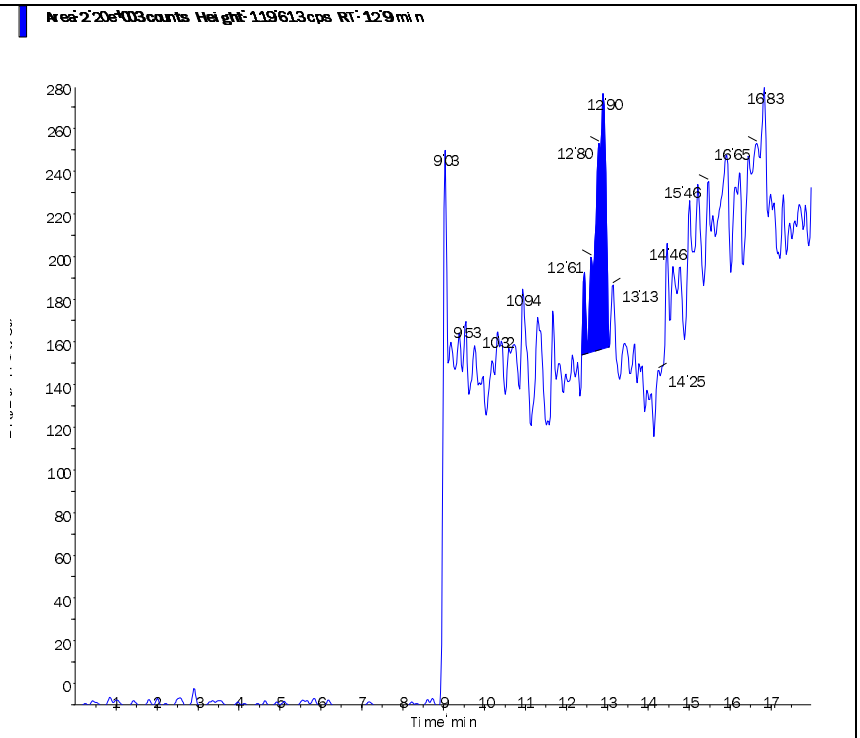
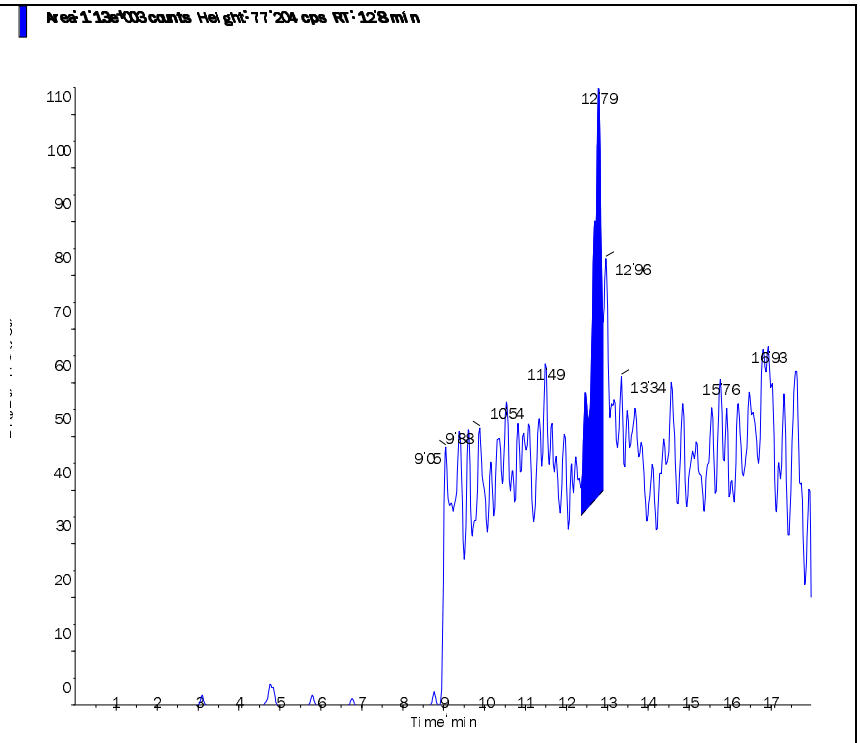
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.460e+05	12.80	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	2.200e+03	12.90	N/A	0.0221
Perchlorate conf	1.130e+03	12.80	N/A	0.0397

O18LP (Internal Standard)

RT (Exp. RT): 12.80(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 12.90 (13.40) min Calculated conc: 0.0221 ng/ml Area Ratio: 0.009 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 12.80 (13.40) min Calculated conc: 0.0397 ng/ml Area Ratio: 0.005 Sample Type: (Unknown)	

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Data File	LM23803.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	2/17/2014 9:46:58 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

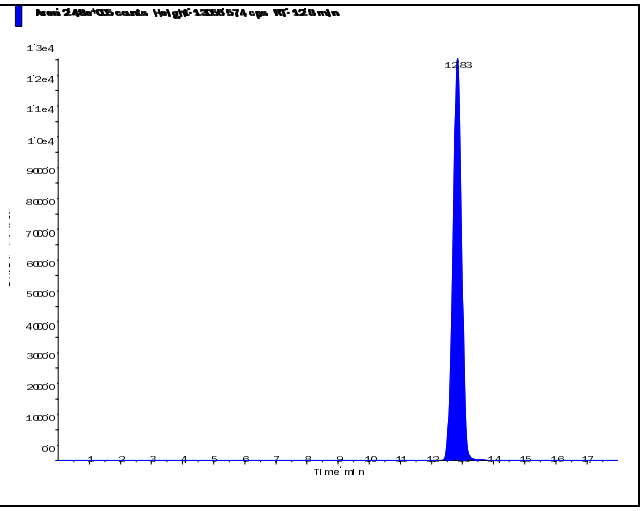
Sample Name	L14020226-03	**Injection Vial**	20.00
Data File	LM23803.wiff	**Injection Volume**	10.00
Acquisition Date	2/17/2014 9:46:58 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	L14020226-03	**Dilution Factor**	1.00
Sample Comment	1,1 (Hist)	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.480e+05	12.80	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.140e+03	12.80	N/A	0.0067
Perchlorate conf	3.050e+02	12.90	N/A	0.0029

O18LP (Internal Standard)

RT (Exp. RT): 12.80(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



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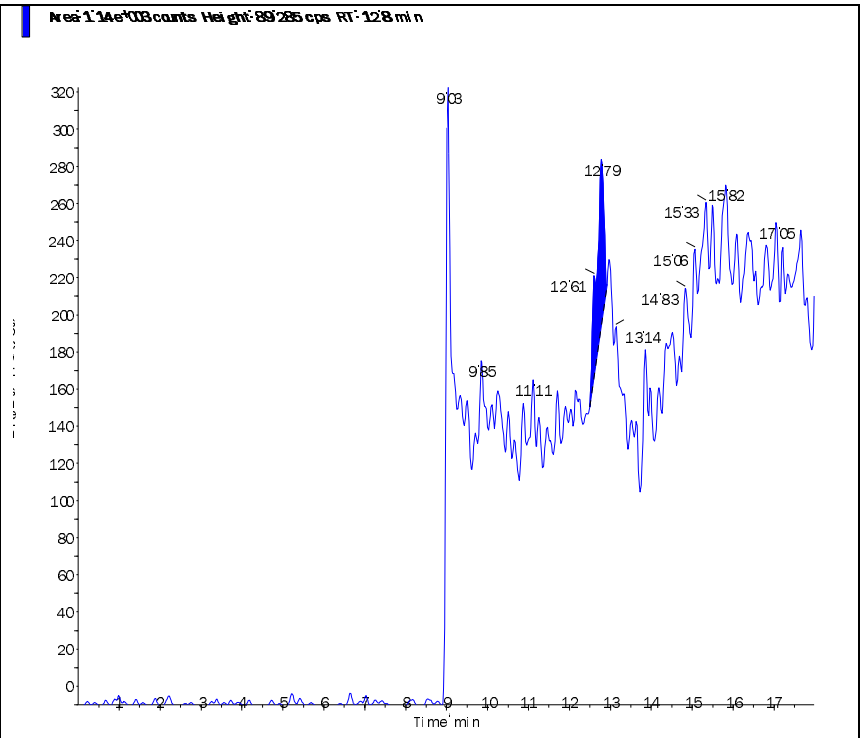
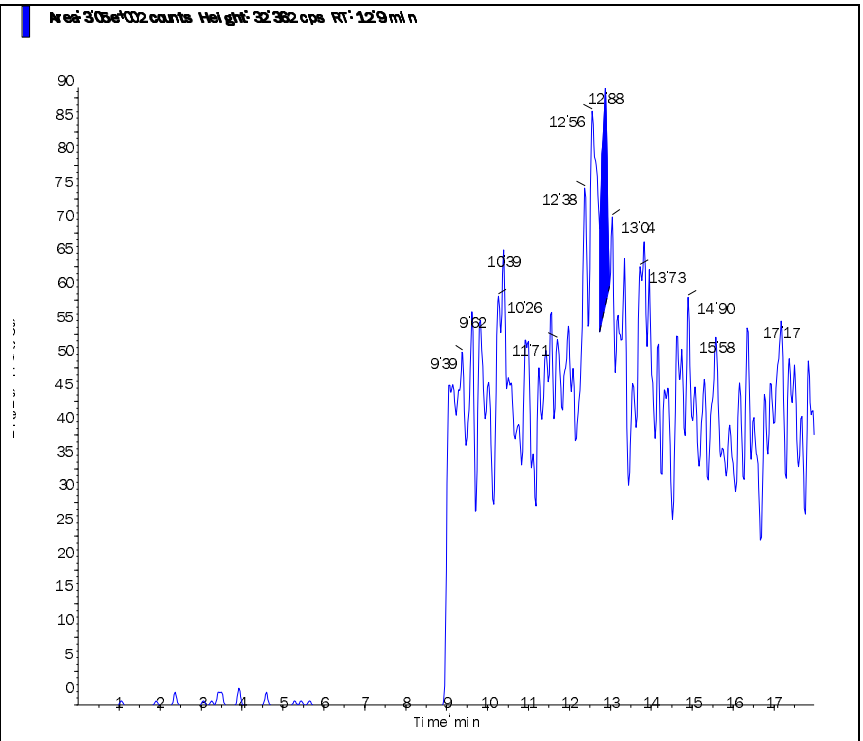
Perchlorate (98.8/83.3 amu) RT (Exp. RT): Calculated conc: Area Ratio: Sample Type:	 12.80 (13.40) min 0.0067 ng/ml 0.005 (Unknown)



Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): Calculated conc: Area Ratio: Sample Type:	 12.90 (13.40) min 0.0029 ng/ml 0.001 (Unknown)



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Data File	LM23804.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	2/17/2014 10:05:57 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

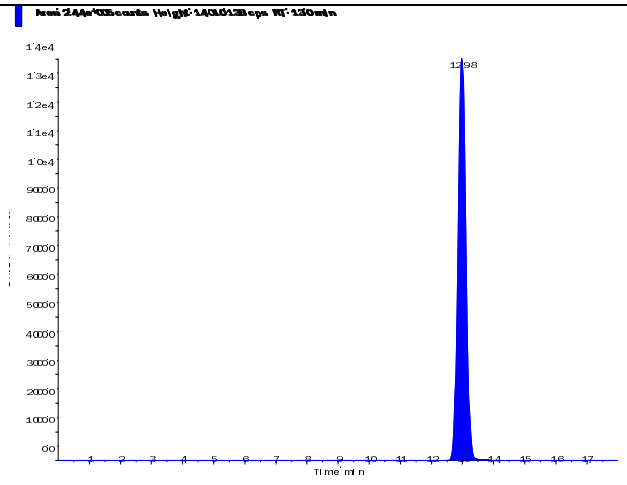
Sample Name	L14020226-04	**Injection Vial**	21.00
Data File	LM23804.wiff	**Injection Volume**	10.00
Acquisition Date	2/17/2014 10:05:57 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	L14020226-04	**Dilution Factor**	1.00
Sample Comment	1,1 (Hist)	**Weight to Volume**	0.00

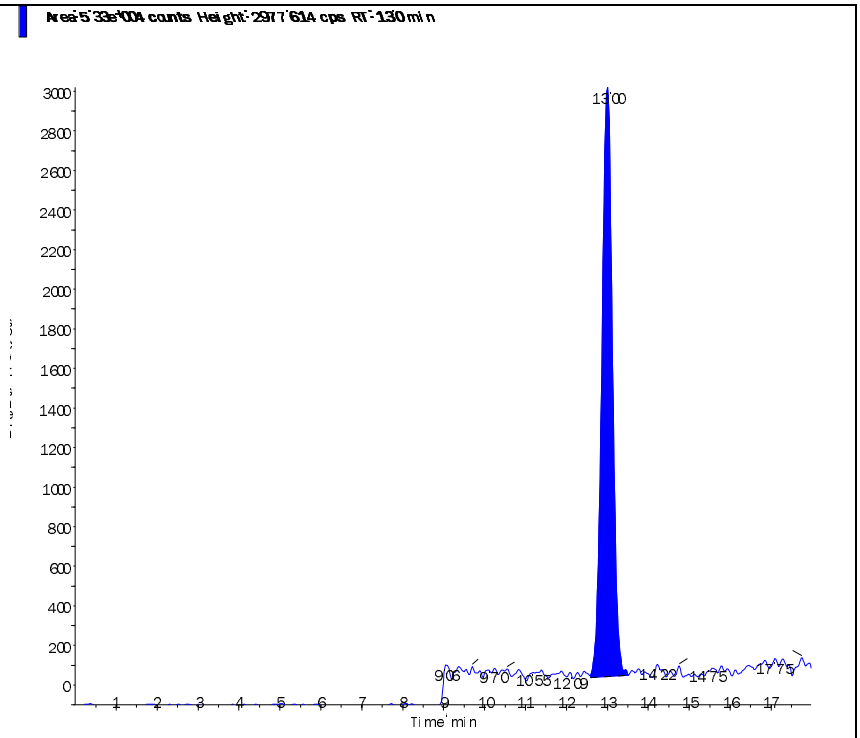
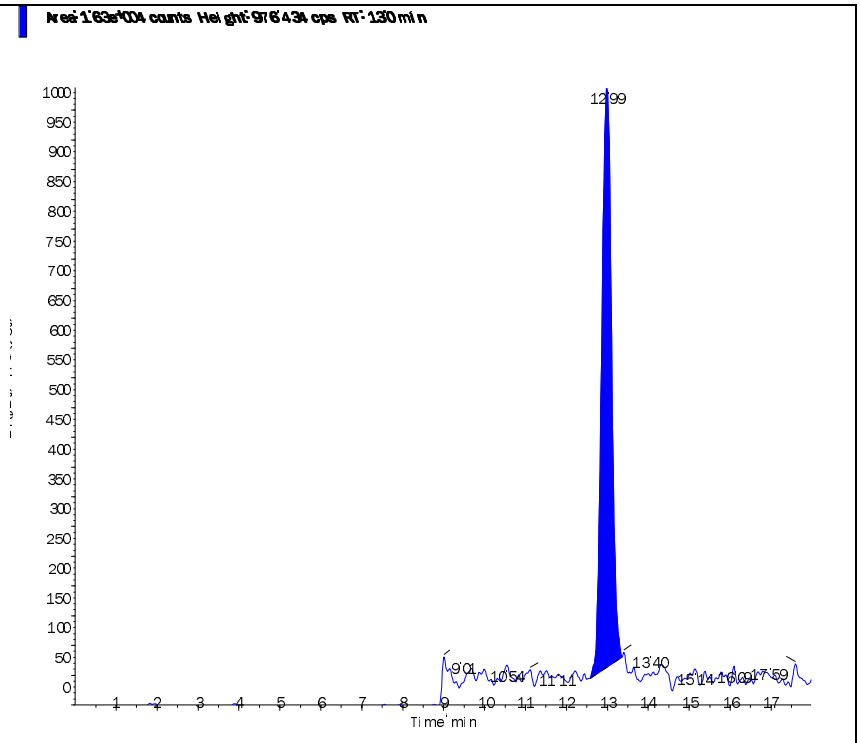
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.440e+05	13.00	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	5.330e+04	13.00	N/A	0.766
Perchlorate conf	1.630e+04	13.00	N/A	0.719

O18LP (Internal Standard)

RT (Exp. RT): 13.00(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.00 (13.40) min Calculated conc: 0.766 ng/ml Area Ratio: 0.218 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.00 (13.40) min Calculated conc: 0.719 ng/ml Area Ratio: 0.067 Sample Type: (Unknown)	

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Data File	LM23805.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	2/17/2014 10:24:52 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

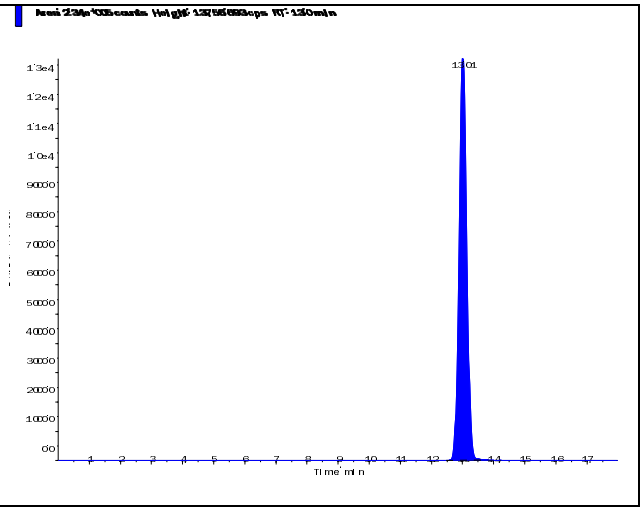
Sample Name	L14020226-05	**Injection Vial**	22.00
Data File	LM23805.wiff	**Injection Volume**	10.00
Acquisition Date	2/17/2014 10:24:52 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	L14020226-05	**Dilution Factor**	1.00
Sample Comment	1,1 (Hist)	**Weight to Volume**	0.00

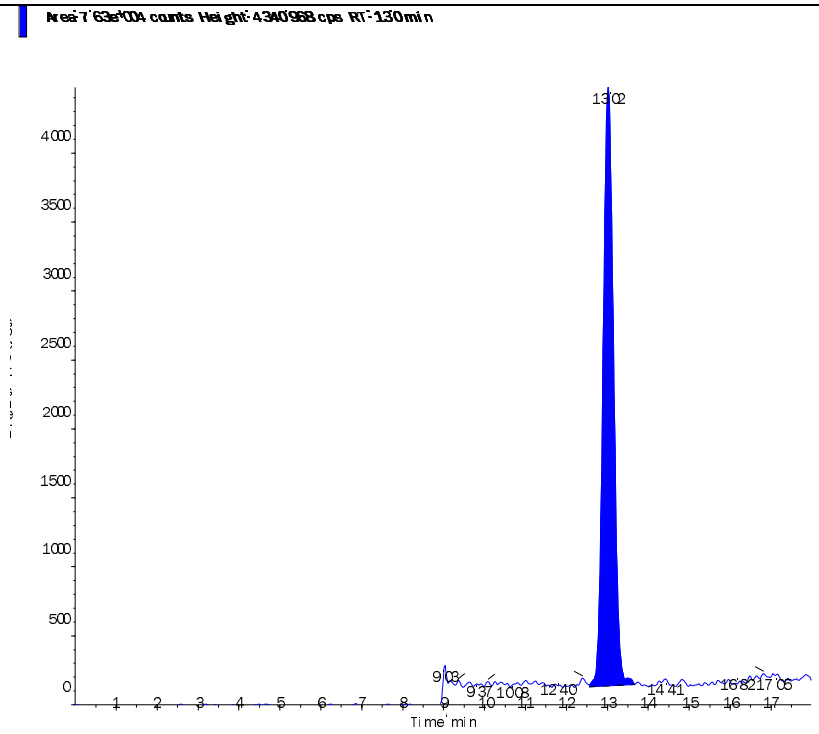
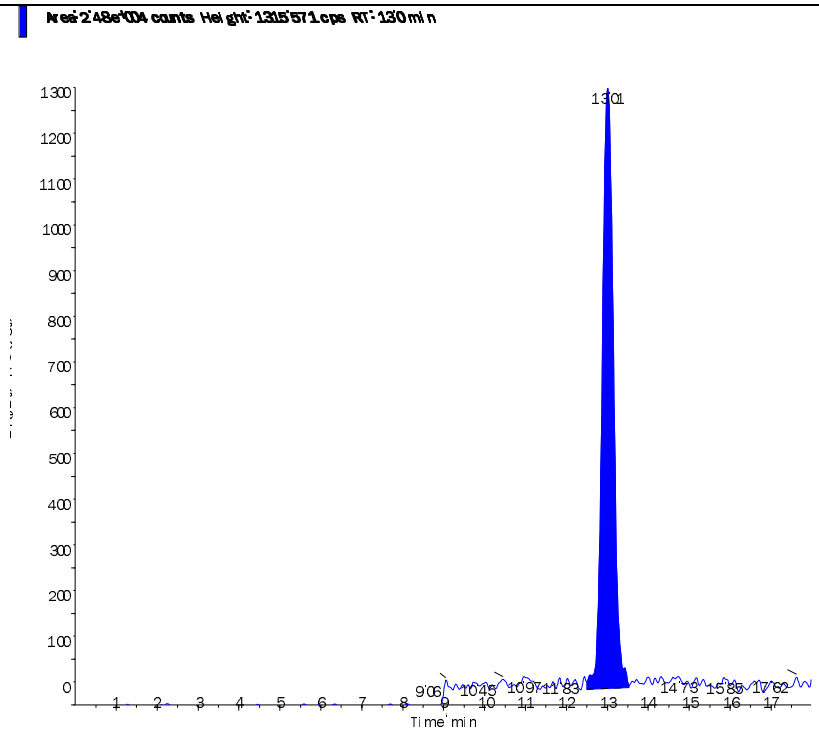
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.340e+05	13.00	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.630e+04	13.00	N/A	1.15
Perchlorate conf	2.480e+04	13.00	N/A	1.15

O18LP (Internal Standard)

RT (Exp. RT): 13.00(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.00 (13.40) min Calculated conc: 1.15 ng/ml Area Ratio: 0.326 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.00 (13.40) min Calculated conc: 1.15 ng/ml Area Ratio: 0.106 Sample Type: (Unknown)	

2.1.1.4 Standards Data

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Data File	LM23230.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	12/18/2013 5:07:55 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

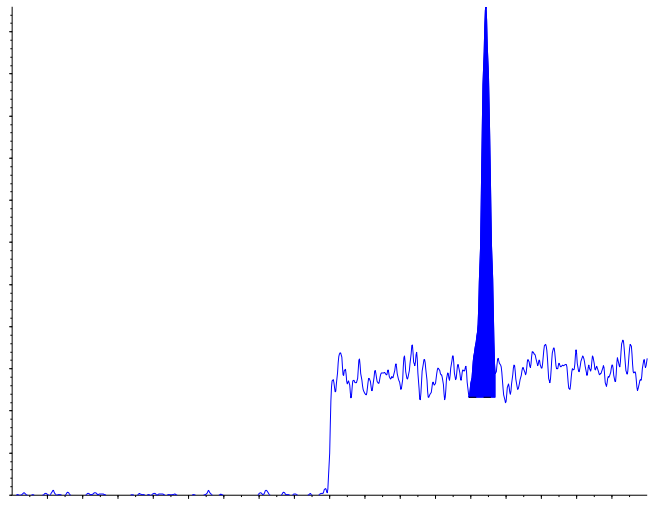
Sample Name	WG456864-01 CCB	**Injection Vial**	1.00
Data File	LM23230.wiff	**Injection Volume**	10.00
Acquisition Date	12/18/2013 5:07:55 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG456864-01	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.690e+05	13.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.350e+02	13.30	N/A	< 0
Perchlorate conf	1.420e+02	13.50	N/A	< 0

O18LP (Internal Standard)

RT (Exp. RT): 13.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



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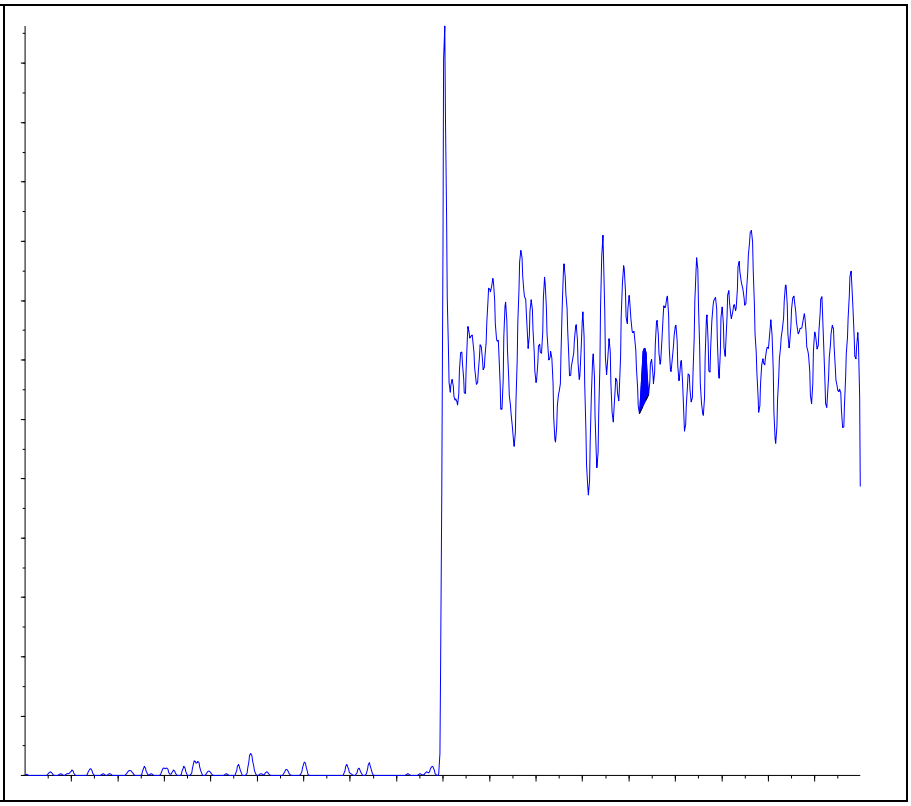
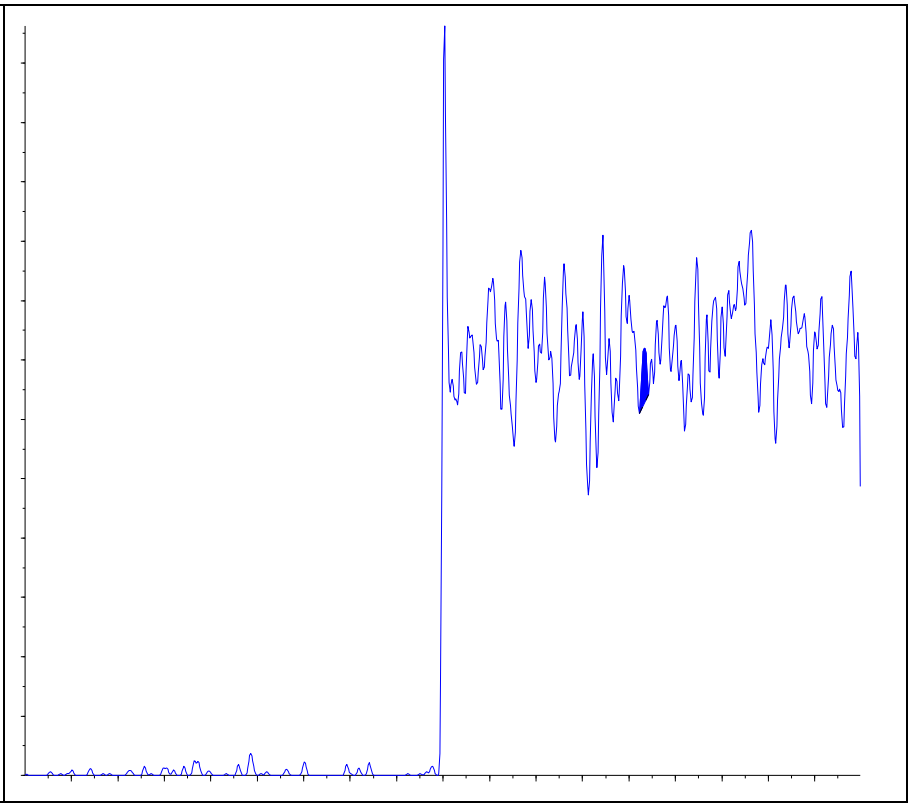
Perchlorate (98.8/83.3 amu)

RT (Exp. RT):	13.30 (13.40) min
Calculated conc:	< 0 ng/ml
Area Ratio:	0.001
Sample Type:	(Unknown)



Perchlorate conf (100.8/85.2 amu)

RT (Exp. RT):	13.50 (13.40) min
Calculated conc:	< 0 ng/ml
Area Ratio:	0.001
Sample Type:	(Unknown)



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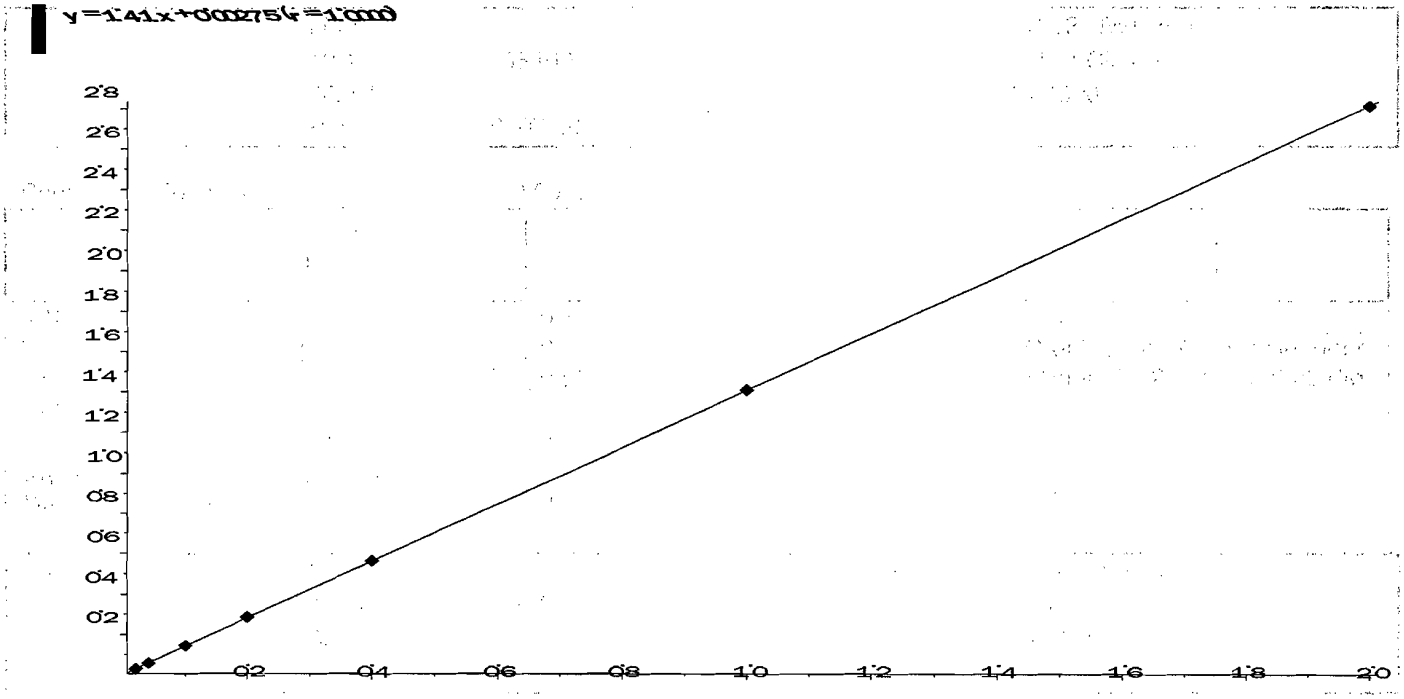
Analyte Name: **Perchlorate**
Internal Standard: O18LP

Data File	LM23230.wiff	**Result Table**	121813_JWR.rdb
Acquisition Date	12/18/2013 5:07:55 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

Regression Equation: y = 1.41 x + 0.00275 (r = 1.0000)

Expected Concentration	Number of Values	Mean Calculated Concentration	% Accuracy	Std. Deviation	%CV
0.10	1	0.10	99.3	N/A	N/A
0.20	1	0.20	99.3	N/A	N/A
0.50	1	0.50	100.4	N/A	N/A
1.00	1	1.01	101.1	N/A	N/A
2.00	1	2.00	100.0	N/A	N/A
5.00	1	5.00	100.0	N/A	N/A
10.00	1	9.99	99.9	N/A	N/A



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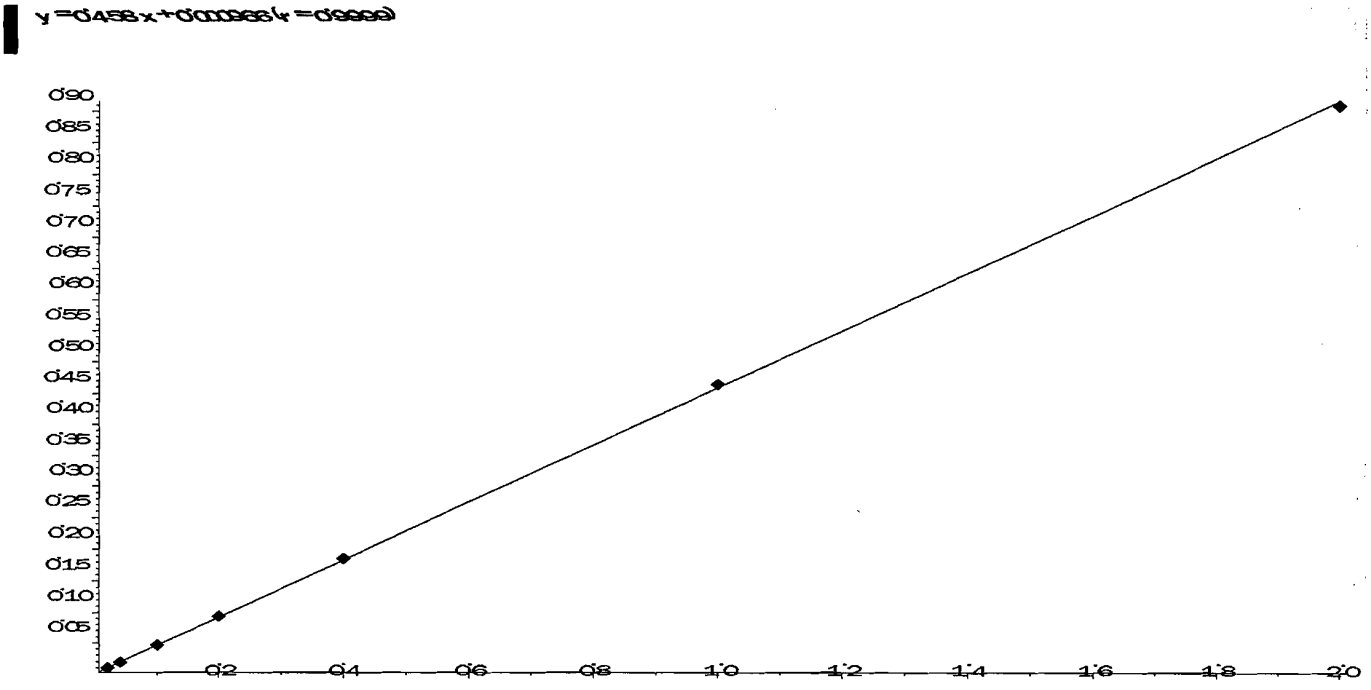
Created with Analyst Reporter
Printed: 12/19/2013 6:20 PM

Analyte Name: **Perchlorate conf**
Internal Standard: O18LP

Data File	LM23230.wiff	**Result Table**	121813_JWR.rdb
Acquisition Date	12/18/2013 5:07:55 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

Regression Equation: y = 0.458 x + 0.000966 (r = 0.9999)

Expected Concentration	Number of Values	Mean Calculated Concentration	% Accuracy	Std. Deviation	%CV
0.10	1	0.10	100.5	N/A	N/A
0.20	1	0.20	97.6	N/A	N/A
0.50	1	0.50	99.5	N/A	N/A
1.00	1	1.01	101.2	N/A	N/A
2.00	1	2.02	100.8	N/A	N/A
5.00	1	5.06	101.2	N/A	N/A
10.00	1	9.92	99.2	N/A	N/A



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Printed: 2/18/2014 11:07 AM

Data File	LM23231.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	12/18/2013 5:26:51 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

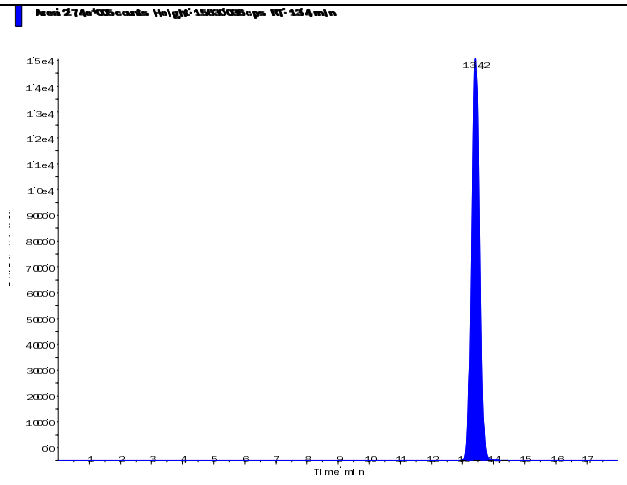
Sample Name	WG456864-02 STD (0.1 ug/L)	**Injection Vial**	2.00
Data File	LM23231.wiff	**Injection Volume**	10.00
Acquisition Date	12/18/2013 5:26:51 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG456864-02	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

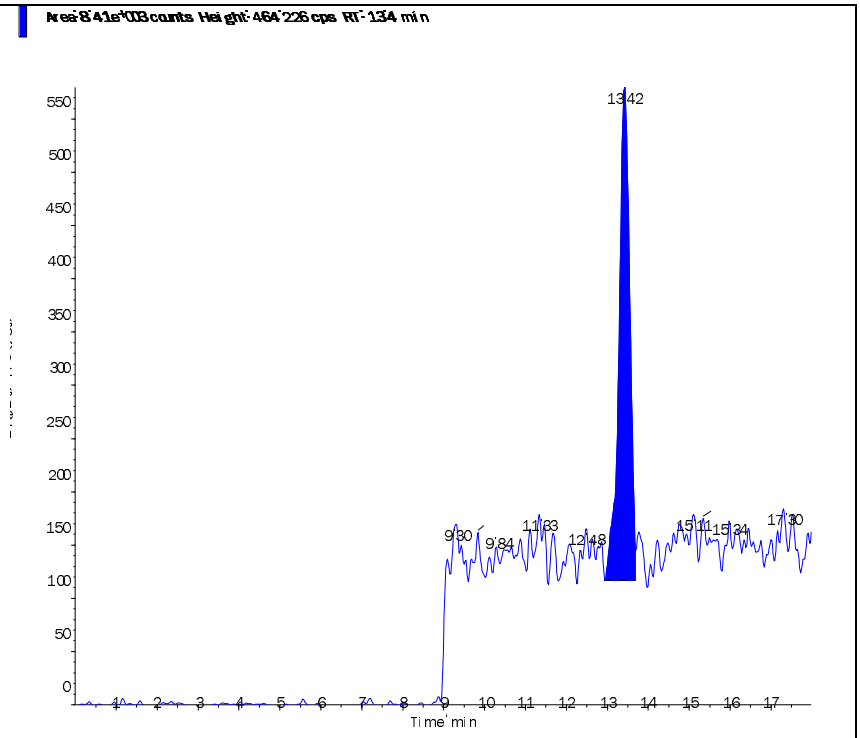
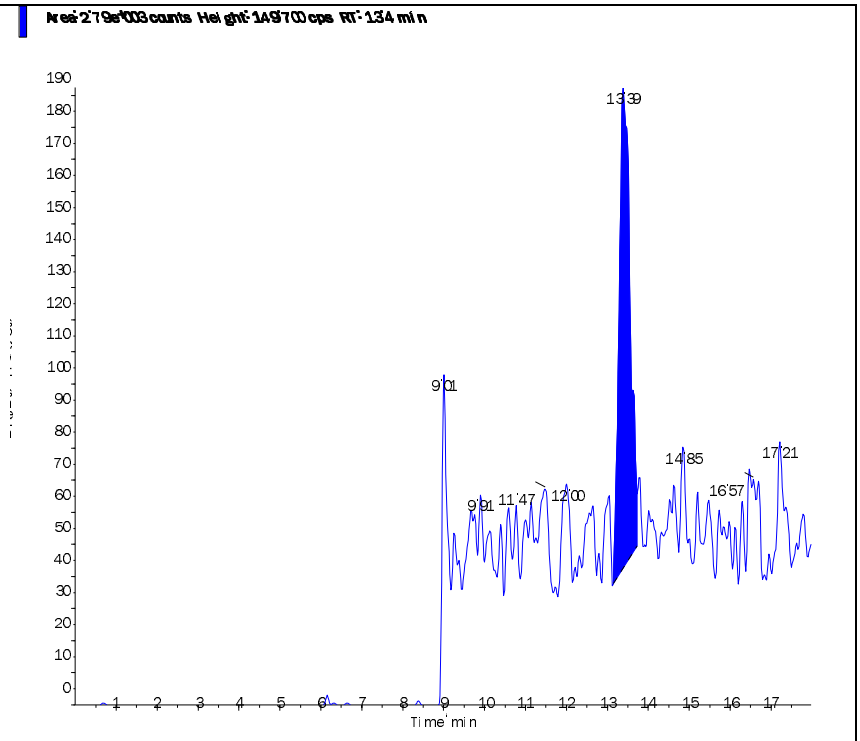
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.740e+05	13.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	8.410e+03	13.40	0.10	0.0993
Perchlorate conf	2.790e+03	13.40	0.10	0.101

O18LP (Internal Standard)

RT (Exp. RT): 13.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 0.0993 ng/ml Area Ratio: 0.031 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 0.101 ng/ml Area Ratio: 0.01 Sample Type: (Standard)	

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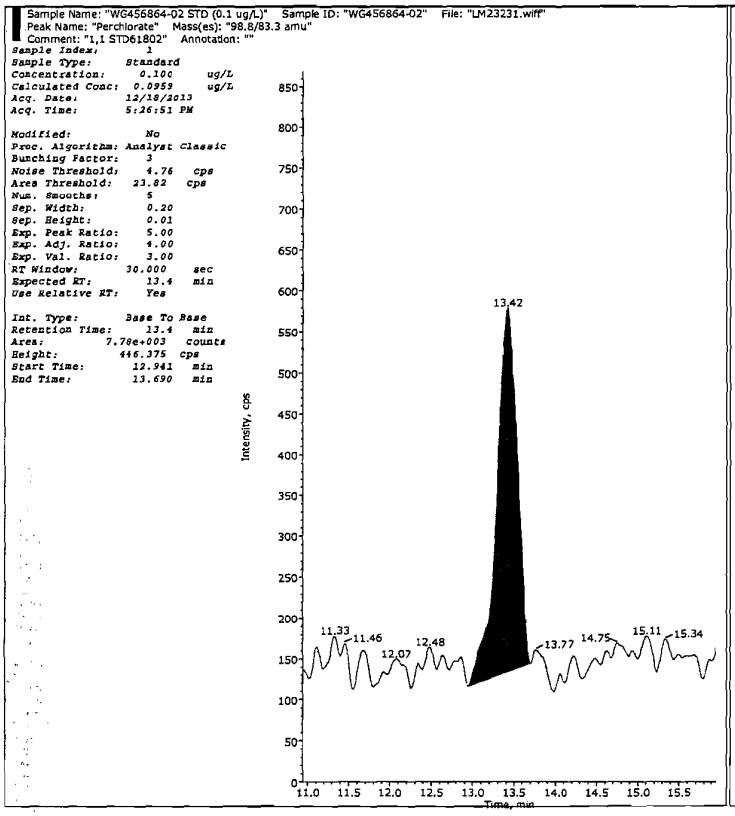
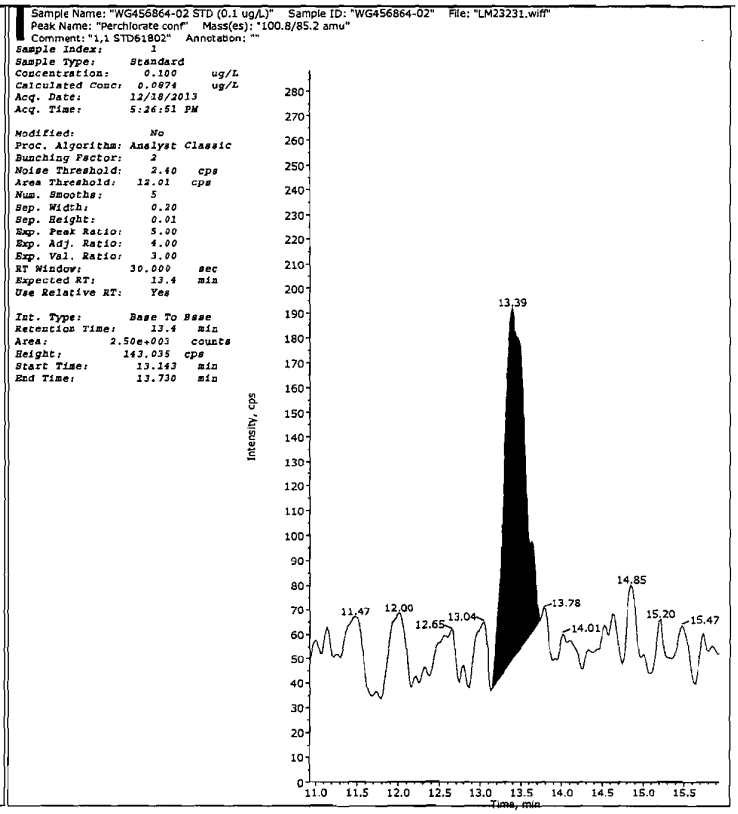
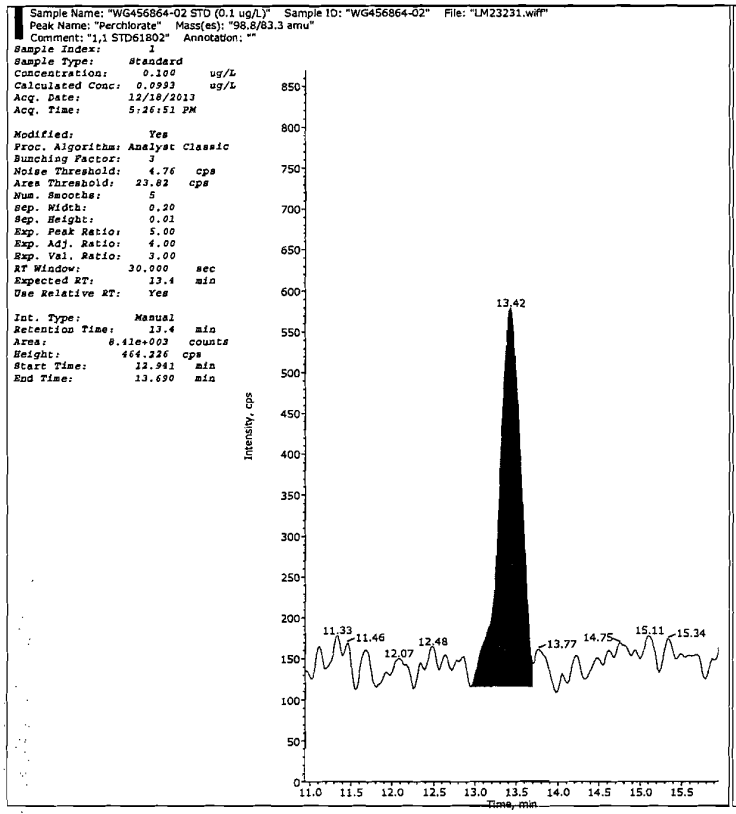
Printing Date: Thursday, December 19, 2013

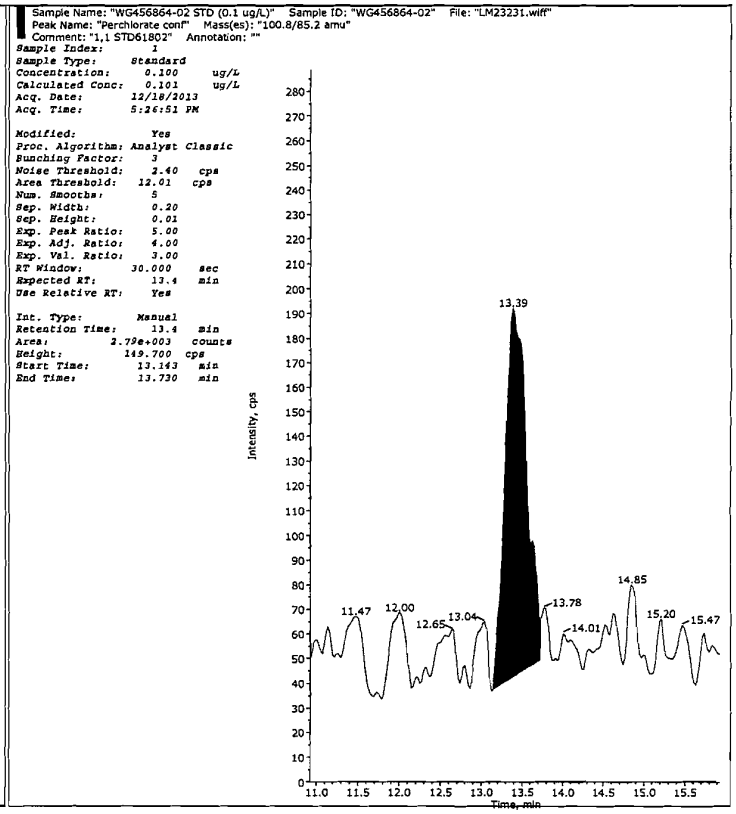




Collected by: N/A
Electronic Signature: no
Operator: lcms1

Printing Time: 11:19:41 AM
Printing Date: Thursday, December 19, 2013





#4
SWR 12/19/13
pdw 12/20/13

Collected by: N/A
Electronic Signature: no
Operator: lcms1

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Created with Analyst Reporter
Printed: 2/18/2014 11:07 AM

Data File	LM23232.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	12/18/2013 5:45:47 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

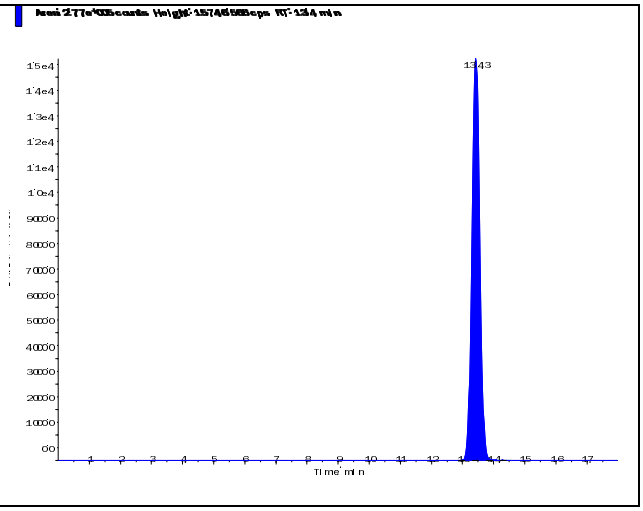
Sample Name	WG456864-03 STD (0.2 ug/L)	**Injection Vial**	3.00
Data File	LM23232.wiff	**Injection Volume**	10.00
Acquisition Date	12/18/2013 5:45:47 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG456864-03	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

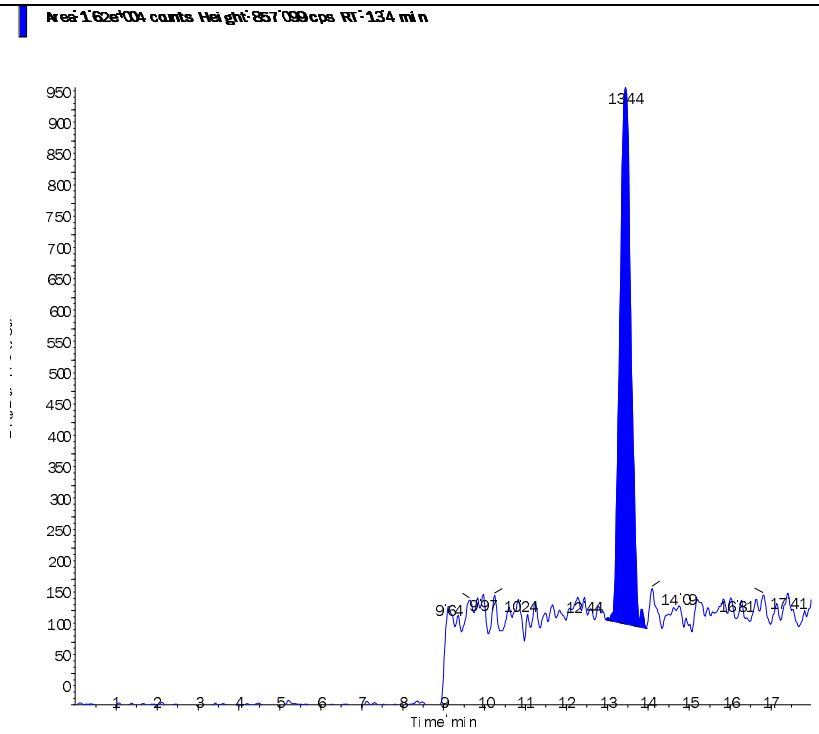
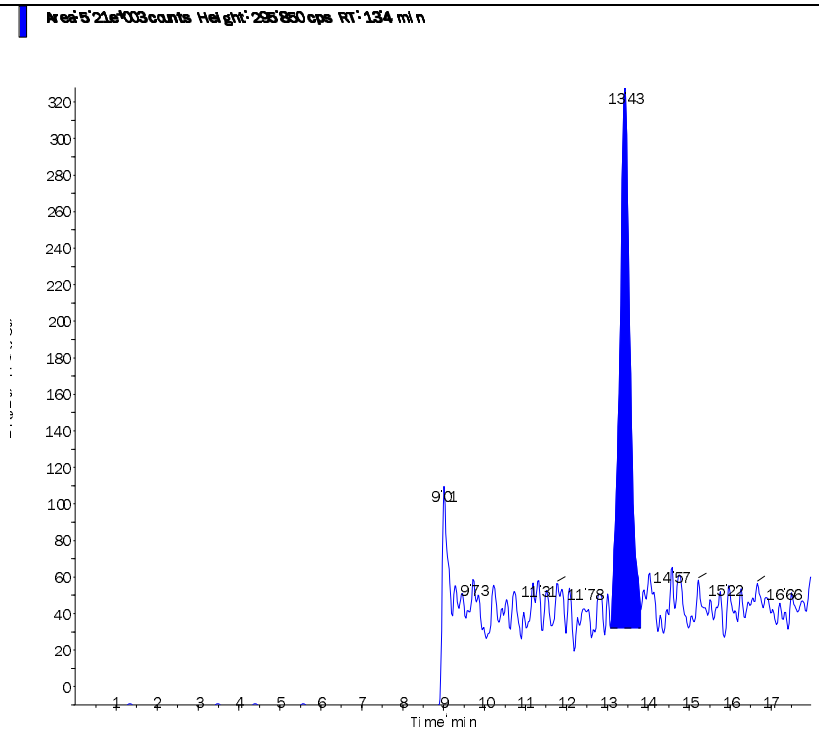
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.770e+05	13.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.620e+04	13.40	0.20	0.199
Perchlorate conf	5.210e+03	13.40	0.20	0.195

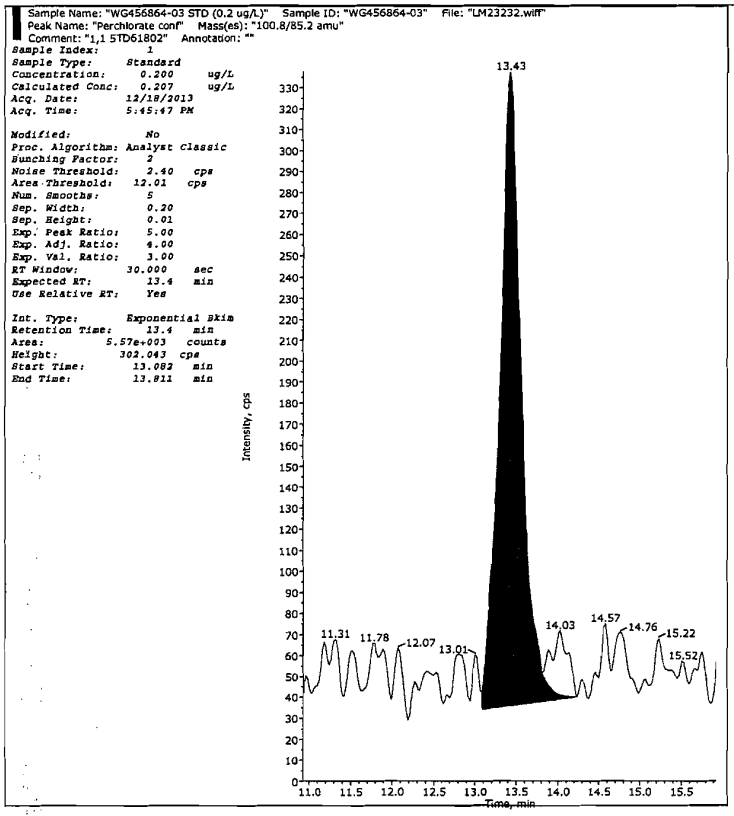
O18LP (Internal Standard)

RT (Exp. RT): 13.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



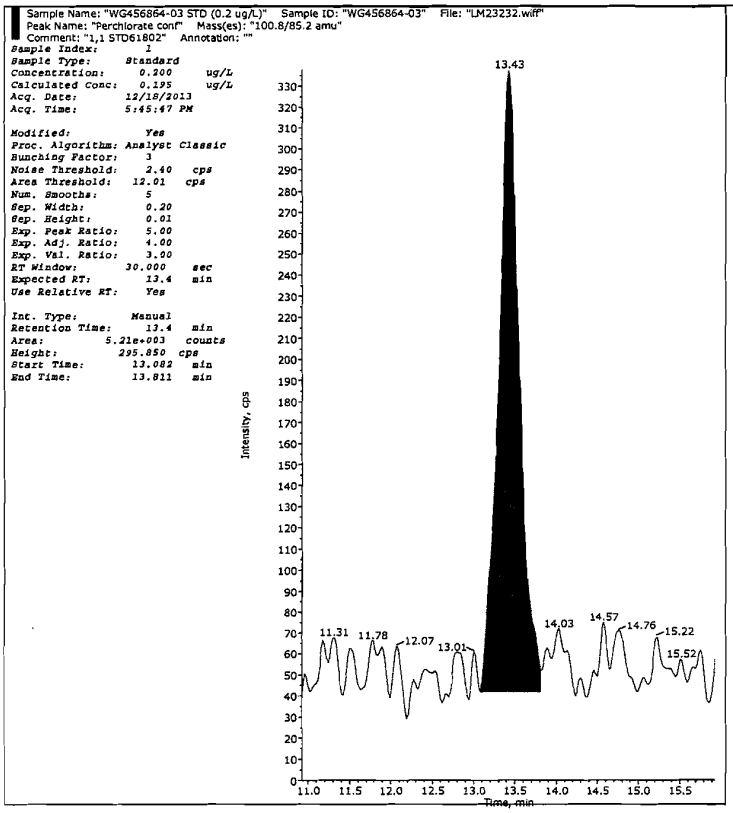
Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 0.199 ng/ml Area Ratio: 0.059 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 0.195 ng/ml Area Ratio: 0.019 Sample Type: (Standard)	

Printing Time: 11:14:10 AM
Printing Date: Thursday, December 19, 2013



Collected by: N/A
Electronic Signature: no
Operator: lcms1

Printing Time: 11:20:28 AM
Printing Date: Thursday, December 19, 2013



#4
JWR 12/19/13
mlc 12/20/13

Collected by: N/A
Electronic Signature: no
Operator: lcms1

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Created with Analyst Reporter
Printed: 2/18/2014 11:07 AM

Data File	LM23233.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	12/18/2013 6:04:43 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

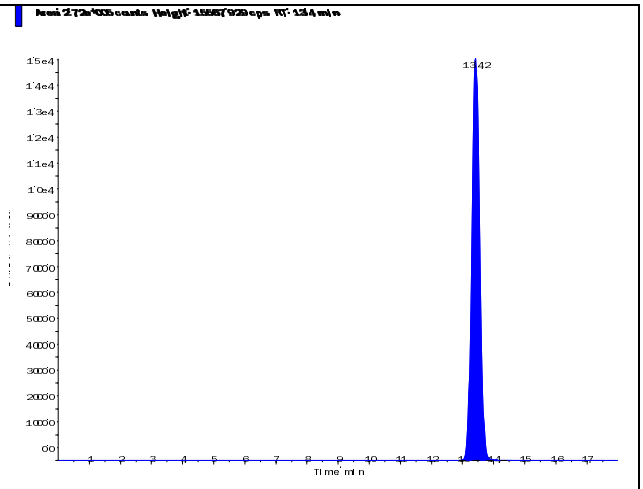
Sample Name	WG456864-04 STD (0.5 ug/L)	**Injection Vial**	4.00
Data File	LM23233.wiff	**Injection Volume**	10.00
Acquisition Date	12/18/2013 6:04:43 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG456864-04	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.720e+05	13.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	3.920e+04	13.40	0.50	0.502
Perchlorate conf	1.270e+04	13.40	0.50	0.497

O18LP (Internal Standard)

RT (Exp. RT): 13.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



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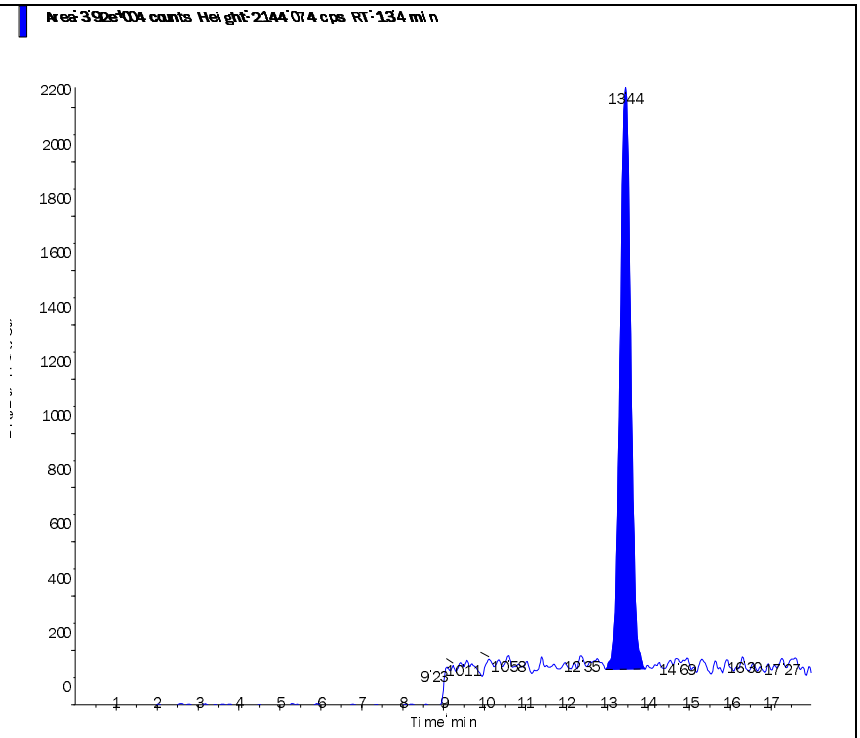
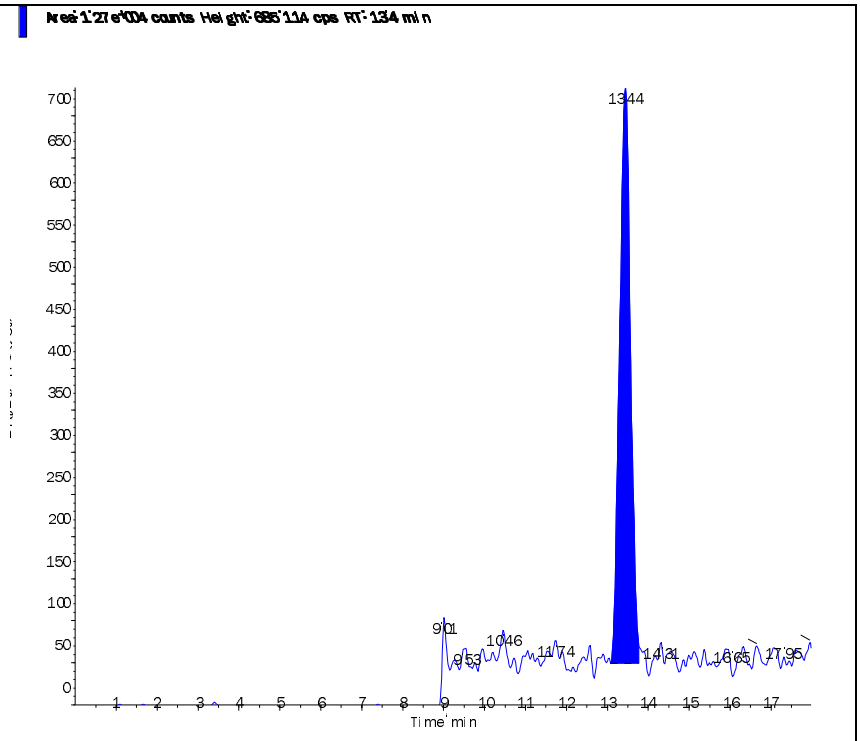
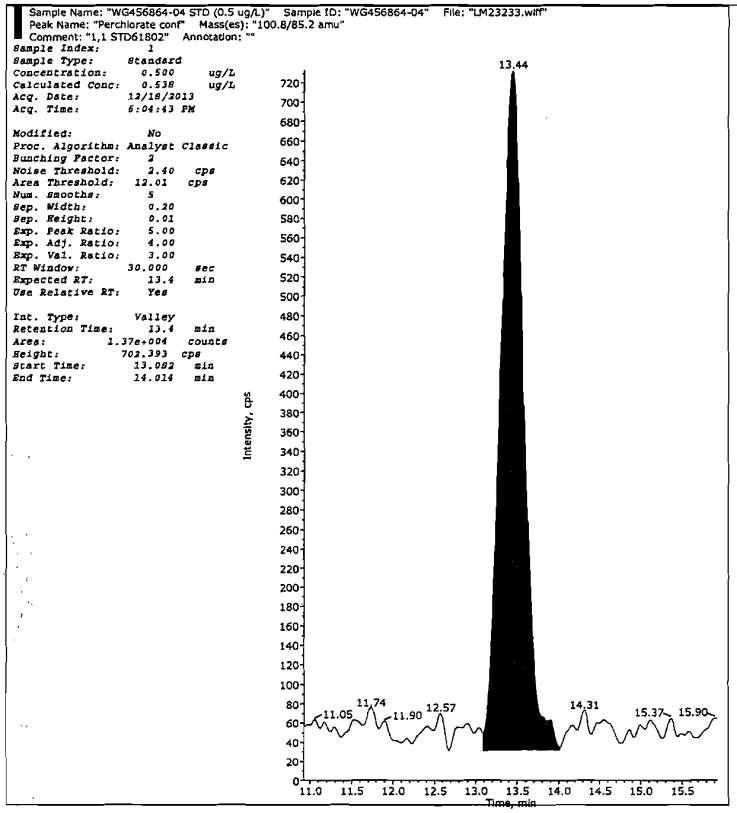
Printed: 2/18/2014 11:07 AM

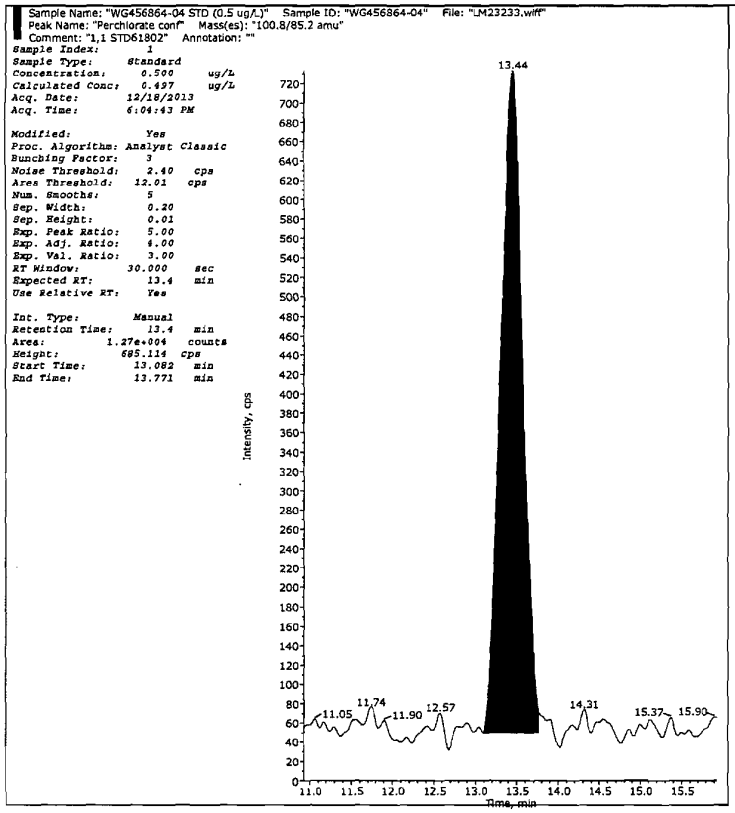
Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 0.502 ng/ml Area Ratio: 0.144 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 0.497 ng/ml Area Ratio: 0.047 Sample Type: (Standard)	

Printing Time: 11:30:08 AM
Printing Date: Thursday, December 19, 2013



Collected by: N/A
Electronic Signature: no
Operator: lcms1

Printing Time: 11:32:22 AM
Printing Date: Thursday, December 19, 2013



#4
JWR 12/19/13
pcc 12/20/13

Collected by: N/A
Electronic Signature: no
Operator: lcms1

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Created with Analyst Reporter
Printed: 2/18/2014 11:08 AM

Data File	LM23234.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	12/18/2013 6:23:41 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

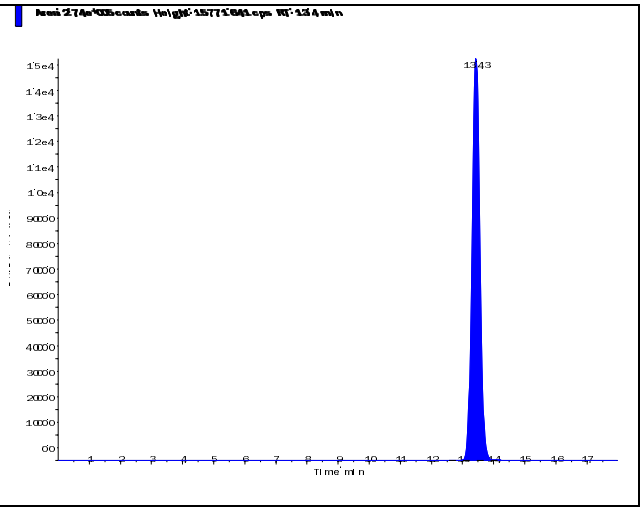
Sample Name	WG456864-05 STD (1.0 ug/L)	**Injection Vial**	5.00
Data File	LM23234.wiff	**Injection Volume**	10.00
Acquisition Date	12/18/2013 6:23:41 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG456864-05	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

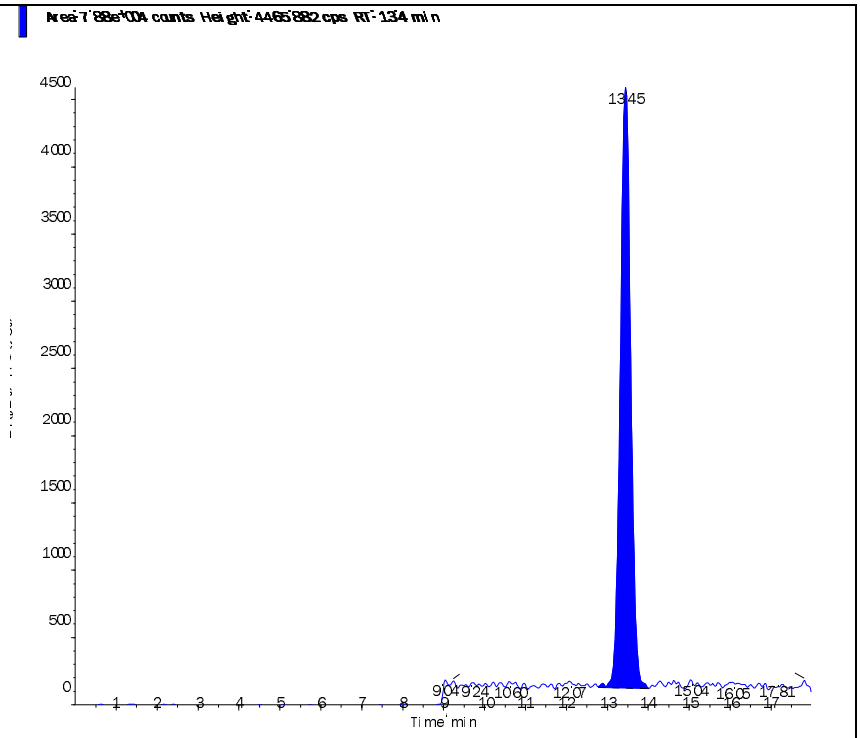
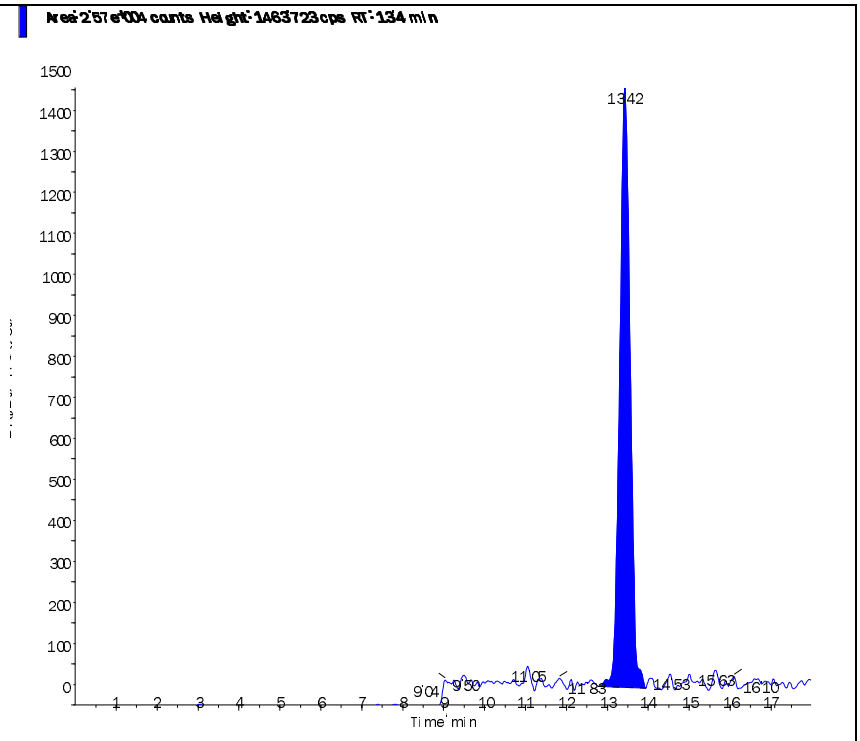
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.740e+05	13.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.880e+04	13.40	1.00	1.01
Perchlorate conf	2.570e+04	13.40	1.00	1.01

O18LP (Internal Standard)

RT (Exp. RT): 13.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 1.01 ng/ml Area Ratio: 0.287 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 1.01 ng/ml Area Ratio: 0.094 Sample Type: (Standard)	

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Printed: 2/18/2014 11:08 AM

Data File	LM23235.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	12/18/2013 6:42:37 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

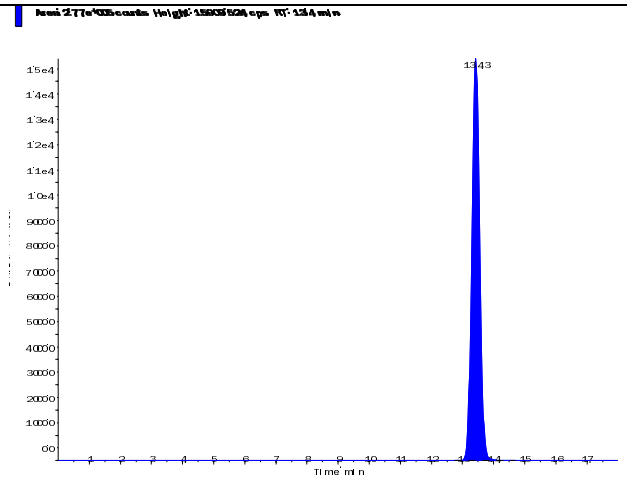
Sample Name	WG456864-06 STD (2.0 ug/L)	**Injection Vial**	6.00
Data File	LM23235.wiff	**Injection Volume**	10.00
Acquisition Date	12/18/2013 6:42:37 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG456864-06	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

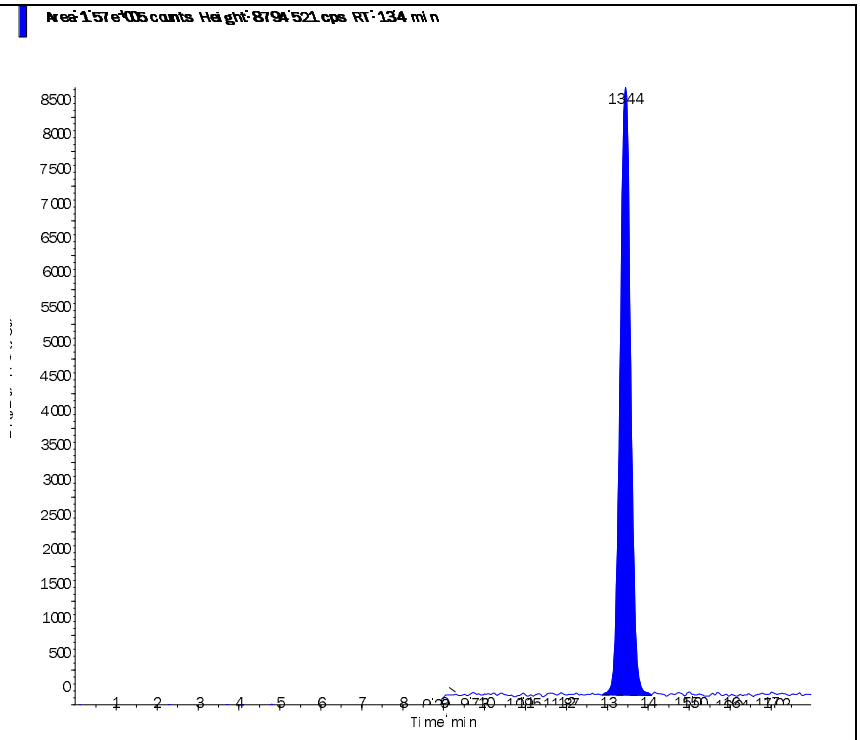
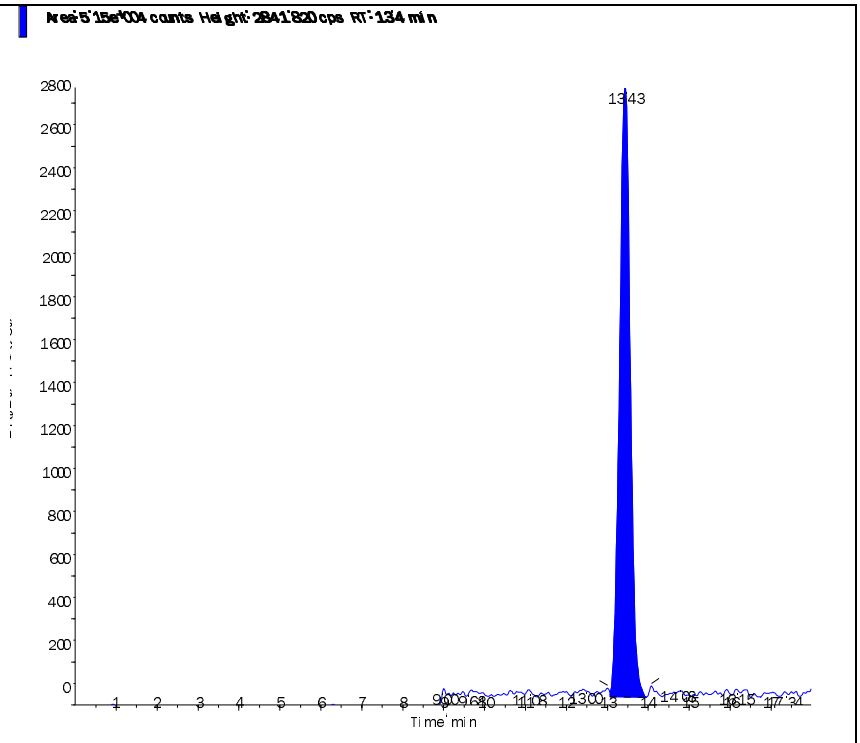
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.770e+05	13.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.570e+05	13.40	2.00	2.00
Perchlorate conf	5.150e+04	13.40	2.00	2.02

O18LP (Internal Standard)

RT (Exp. RT): 13.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 2.00 ng/ml Area Ratio: 0.566 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 2.02 ng/ml Area Ratio: 0.186 Sample Type: (Standard)	

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Printed: 2/18/2014 11:08 AM

Data File	LM23236.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	12/18/2013 7:01:33 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

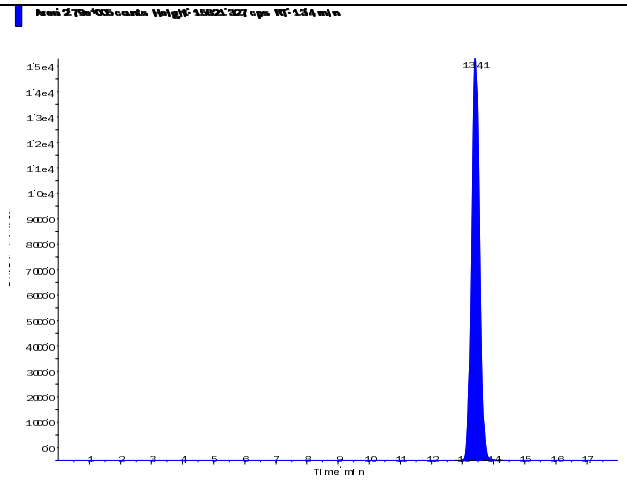
Sample Name	WG456864-07 STD (5.0 ug/L)	**Injection Vial**	7.00
Data File	LM23236.wiff	**Injection Volume**	10.00
Acquisition Date	12/18/2013 7:01:33 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG456864-07	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

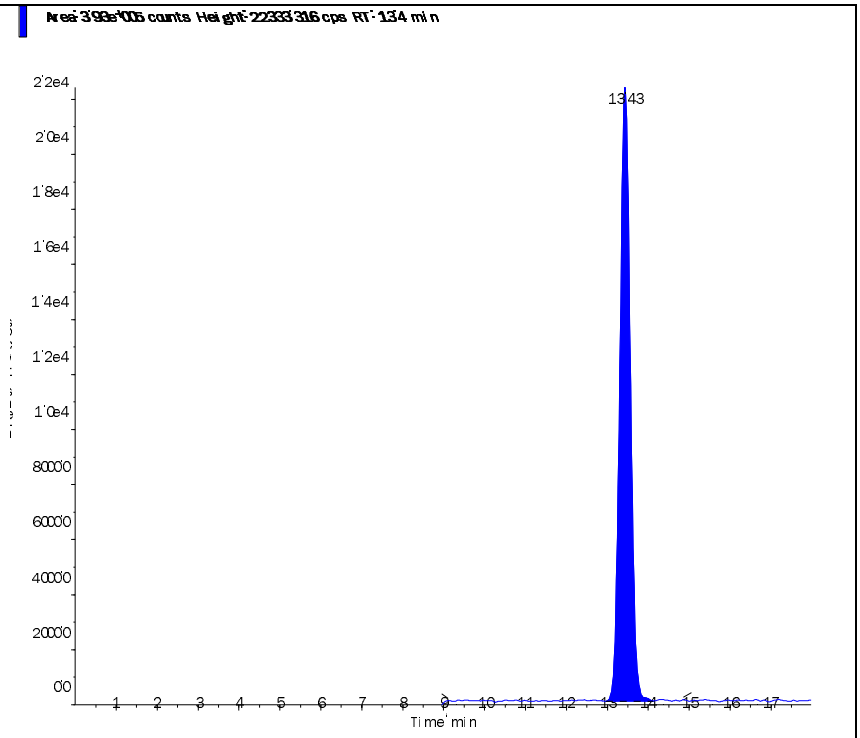
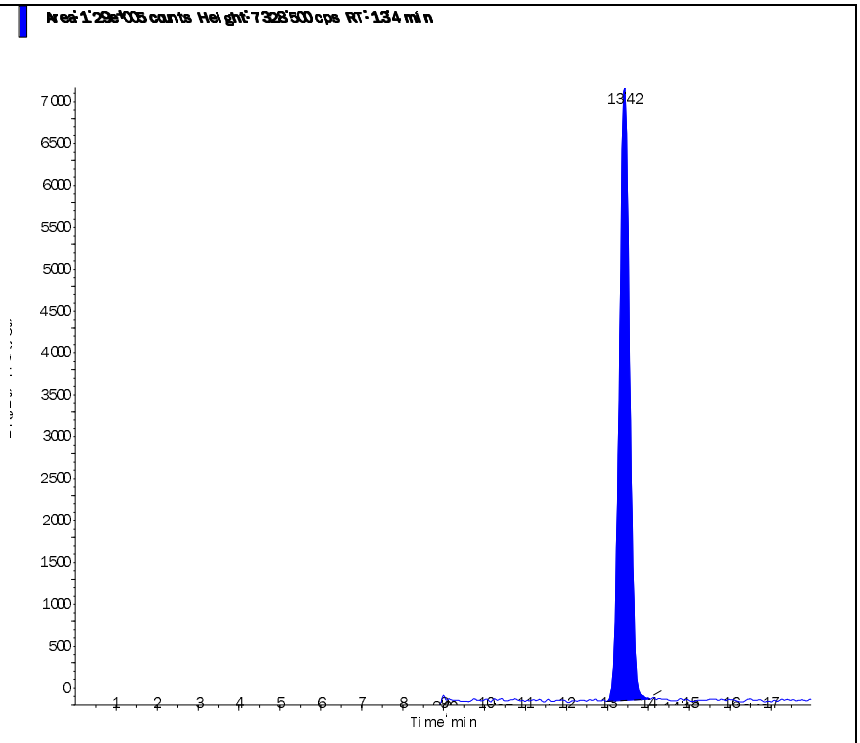
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.790e+05	13.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	3.930e+05	13.40	5.00	5.00
Perchlorate conf	1.290e+05	13.40	5.00	5.06

O18LP (Internal Standard)

RT (Exp. RT): 13.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 5.00 ng/ml Area Ratio: 1.409 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 5.06 ng/ml Area Ratio: 0.464 Sample Type: (Standard)	

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Printed: 2/18/2014 11:09 AM

Data File	LM23237.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	12/18/2013 7:20:30 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

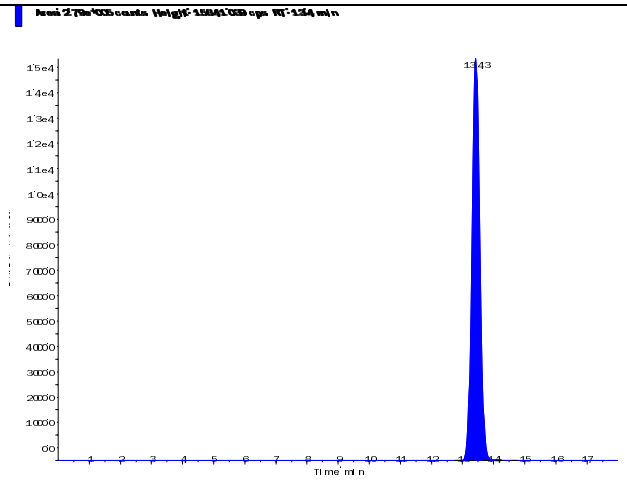
Sample Name	WG456864-08 STD (10 ug/L)	**Injection Vial**	8.00
Data File	LM23237.wiff	**Injection Volume**	10.00
Acquisition Date	12/18/2013 7:20:30 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG456864-08	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

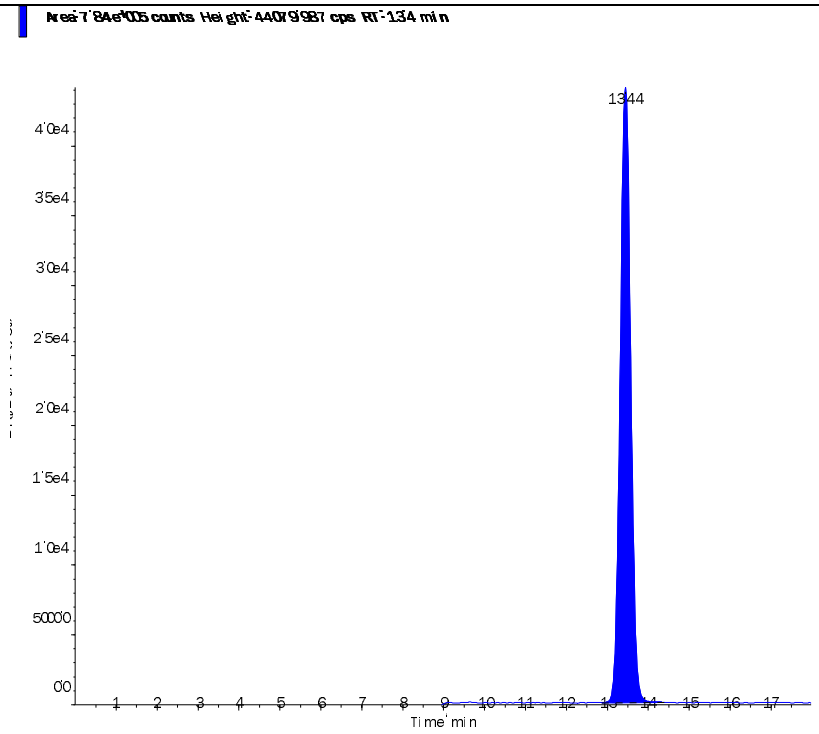
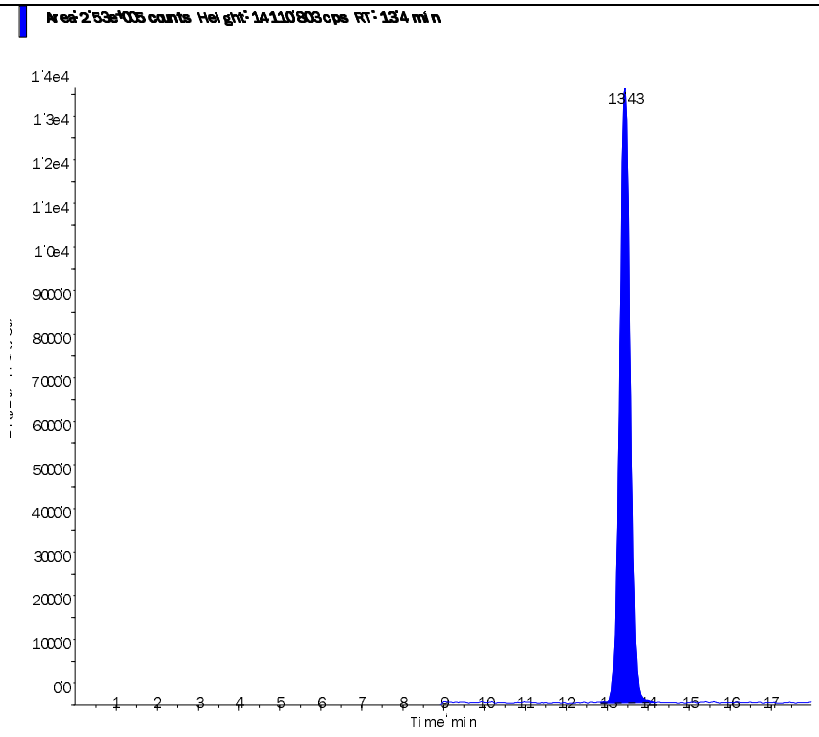
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.790e+05	13.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.840e+05	13.40	10.00	9.99
Perchlorate conf	2.530e+05	13.40	10.00	9.92

O18LP (Internal Standard)

RT (Exp. RT): 13.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 9.99 ng/ml Area Ratio: 2.812 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 9.92 ng/ml Area Ratio: 0.909 Sample Type: (Standard)	

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Printed: 12/19/2013 6:24 PM

Data File	LM23238.wiff	**Result Table**	121813_JWR.rdb
Acquisition Date	12/18/2013 7:39:25 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

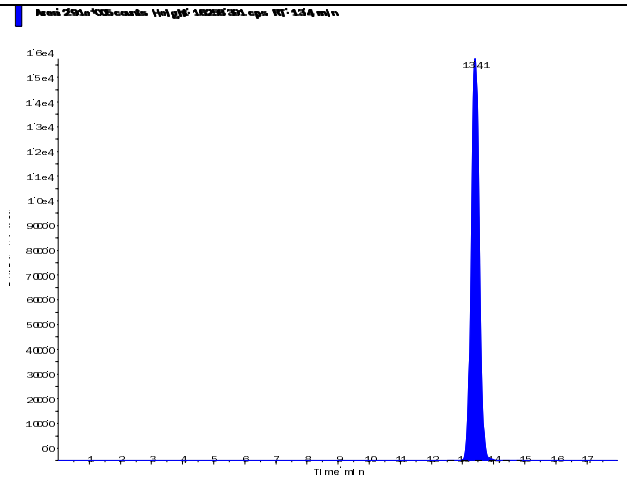
Sample Name	WG456864-09 SSCV (1.0 ug/L)	**Injection Vial**	9.00
Data File	LM23238.wiff	**Injection Volume**	10.00
Acquisition Date	12/18/2013 7:39:25 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	121813_JWR.rdb
Sample ID	WG456864-09	**Dilution Factor**	1.00
Sample Comment	1,1 STD61185	**Weight to Volume**	0.00

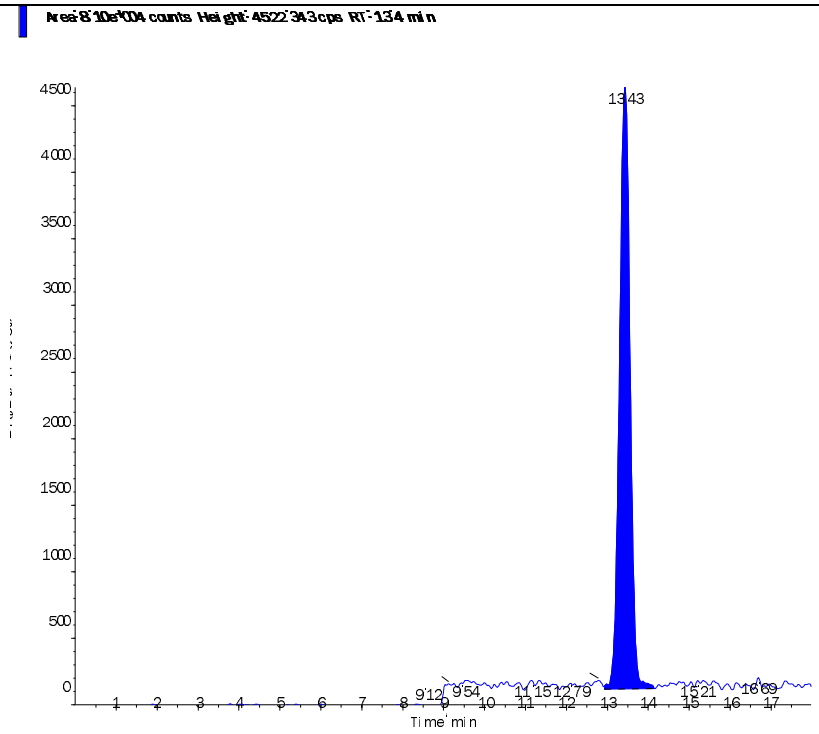
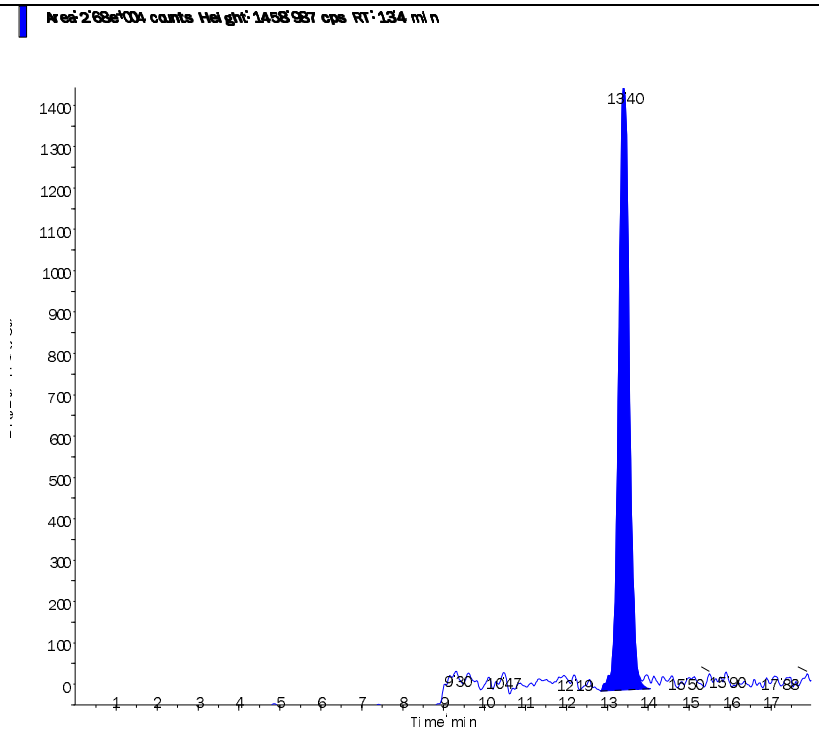
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.910e+05	13.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	8.100e+04	13.40	1.00	0.978
Perchlorate conf	2.680e+04	13.40	1.00	0.994

O18LP (Internal Standard)

RT (Exp. RT): 13.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 0.978 ng/ml Area Ratio: 0.278 Sample Type: (Quality Control)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 0.994 ng/ml Area Ratio: 0.092 Sample Type: (Quality Control)	

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Data File	LM23780.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	2/17/2014 2:31:24 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

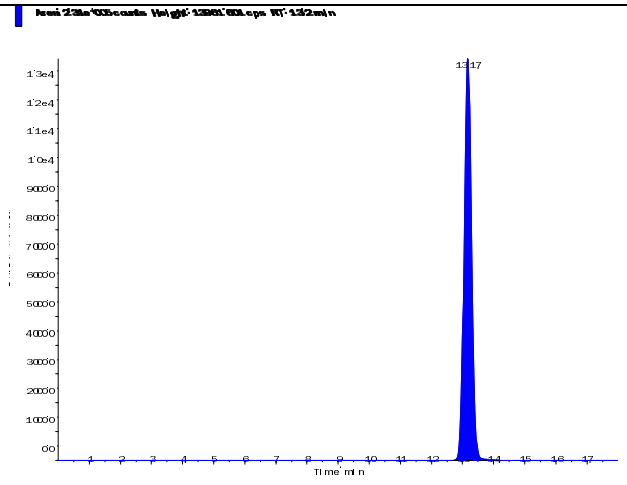
Sample Name	WG463411-02 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM23780.wiff	**Injection Volume**	10.00
Acquisition Date	2/17/2014 2:31:24 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG463411-02	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

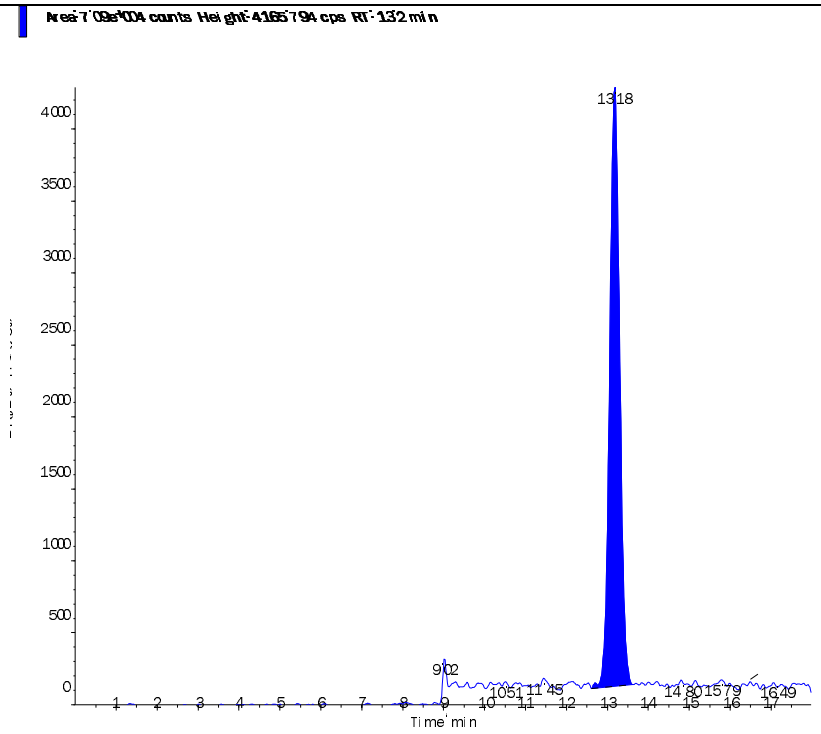
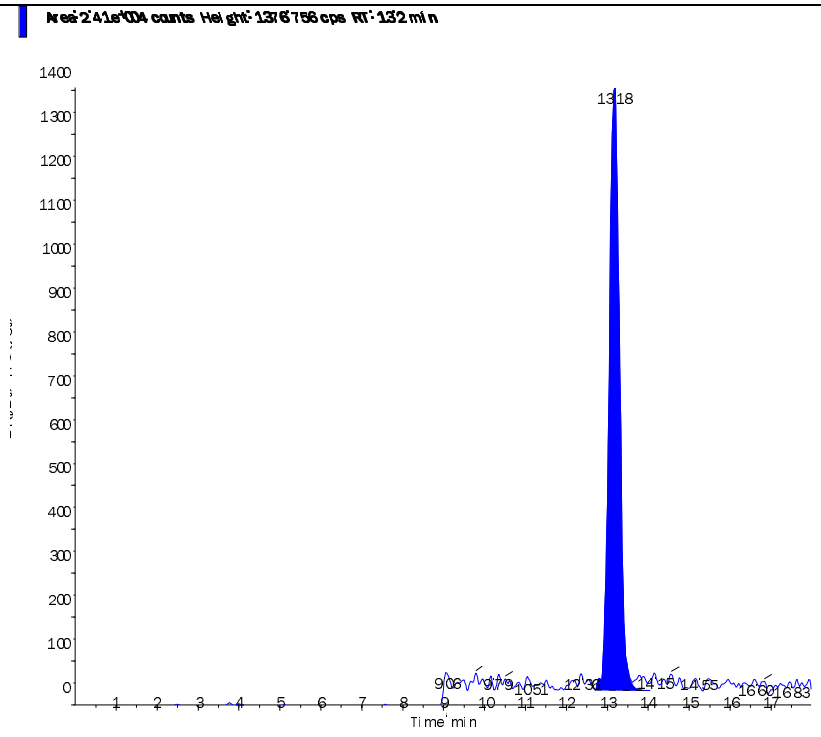
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.310e+05	13.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.090e+04	13.20	1.00	1.08
Perchlorate conf	2.410e+04	13.20	1.00	1.13

O18LP (Internal Standard)

RT (Exp. RT): 13.20(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.20 (13.40) min Calculated conc: 1.08 ng/ml Area Ratio: 0.307 Sample Type: (Quality Control)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.20 (13.40) min Calculated conc: 1.13 ng/ml Area Ratio: 0.105 Sample Type: (Quality Control)	

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Data File	LM23794.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	2/17/2014 6:56:34 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

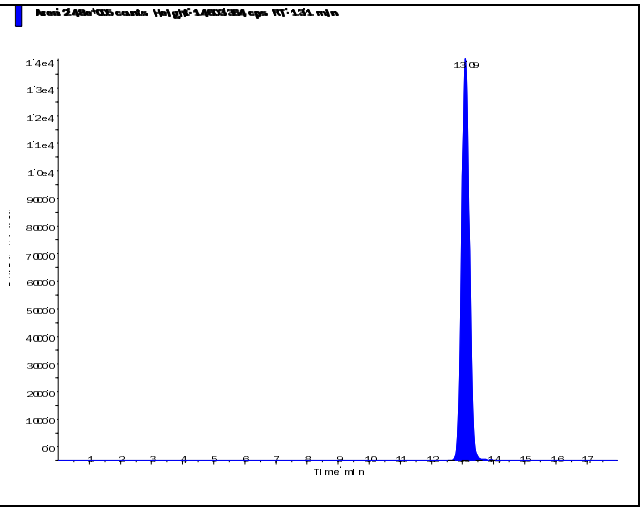
Sample Name	WG463411-03 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM23794.wiff	**Injection Volume**	10.00
Acquisition Date	2/17/2014 6:56:34 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG463411-03	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

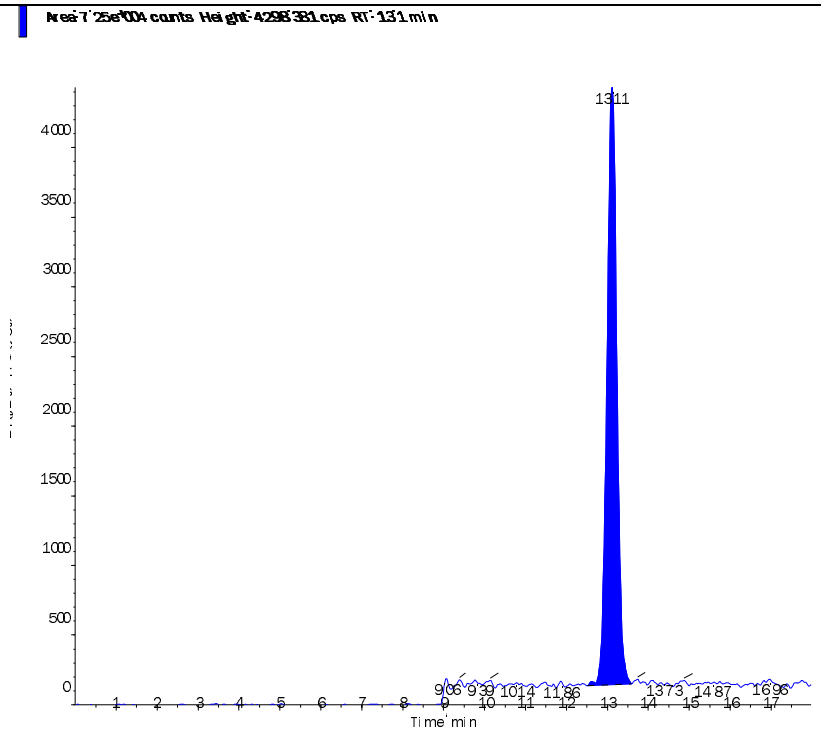
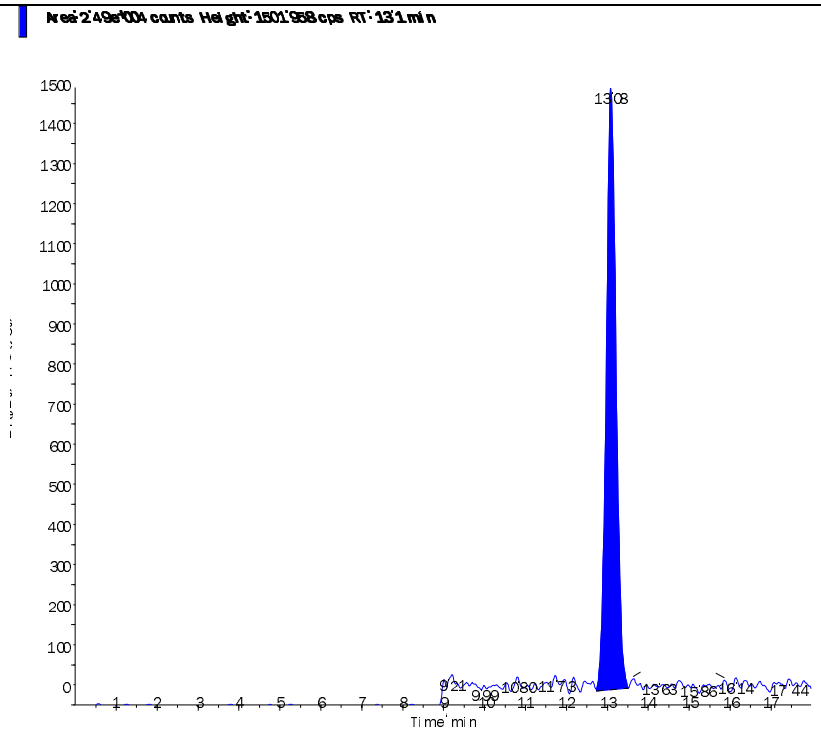
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.480e+05	13.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.250e+04	13.10	1.00	1.03
Perchlorate conf	2.490e+04	13.10	1.00	1.09

O18LP (Internal Standard)

RT (Exp. RT): 13.10(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.10 (13.40) min Calculated conc: 1.03 ng/ml Area Ratio: 0.293 Sample Type: (Quality Control)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.10 (13.40) min Calculated conc: 1.09 ng/ml Area Ratio: 0.101 Sample Type: (Quality Control)	

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Data File	LM23806.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	2/17/2014 10:43:47 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

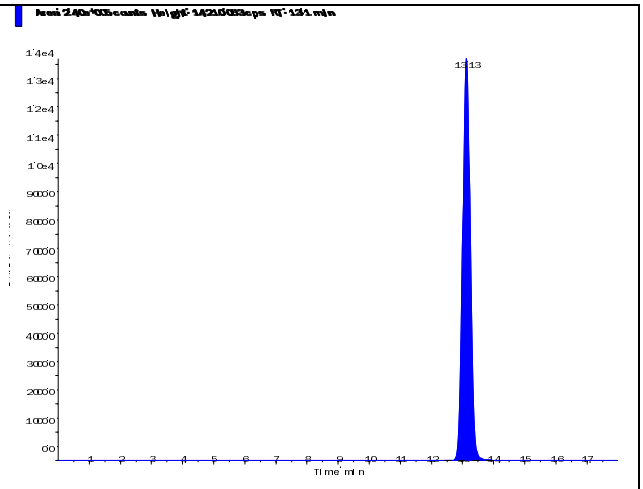
Sample Name	WG463411-05 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM23806.wiff	**Injection Volume**	10.00
Acquisition Date	2/17/2014 10:43:47 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG463411-05	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

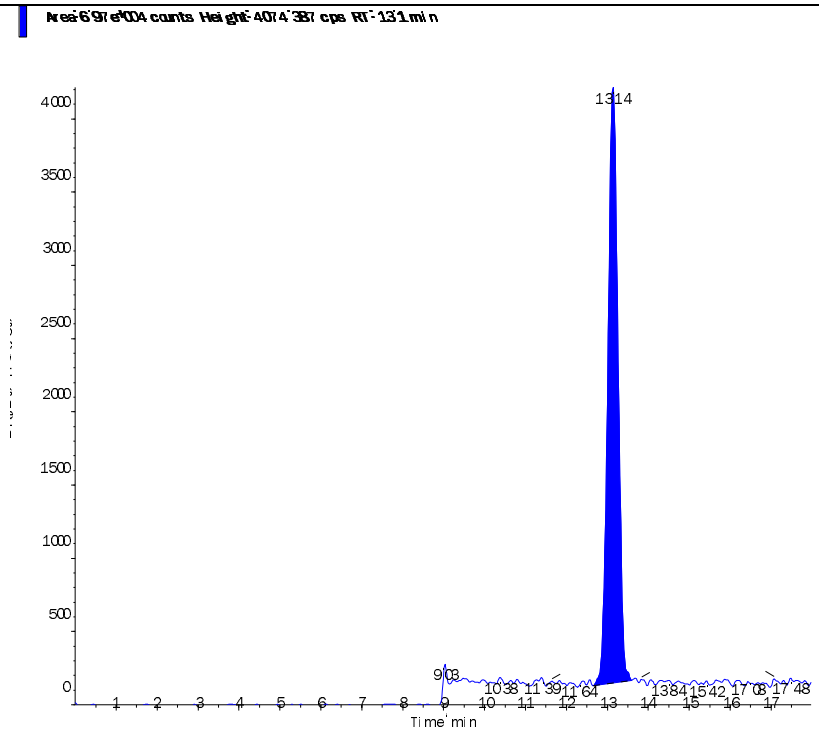
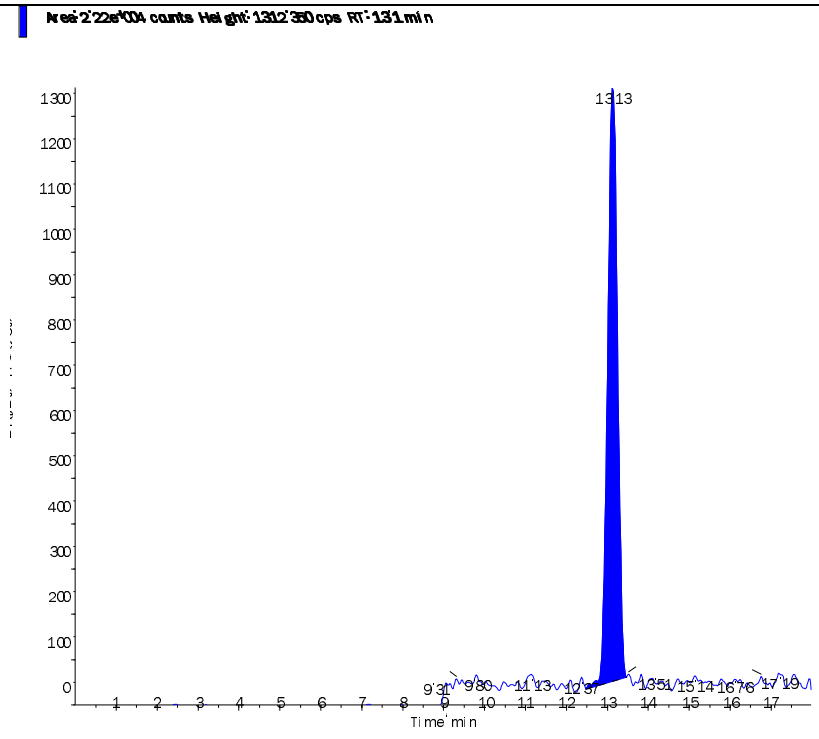
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.400e+05	13.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	6.970e+04	13.10	1.00	1.02
Perchlorate conf	2.220e+04	13.10	1.00	1.00

O18LP (Internal Standard)

RT (Exp. RT): 13.10(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.10 (13.40) min Calculated conc: 1.02 ng/ml Area Ratio: 0.291 Sample Type: (Quality Control)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.10 (13.40) min Calculated conc: 1.00 ng/ml Area Ratio: 0.093 Sample Type: (Quality Control)	

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Data File	LM23781.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	2/17/2014 2:50:19 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

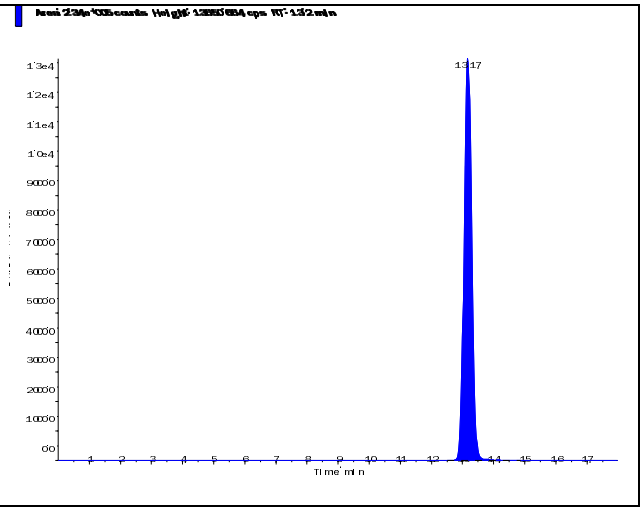
Sample Name	WG463400-07 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM23781.wiff	**Injection Volume**	10.00
Acquisition Date	2/17/2014 2:50:19 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG463400-07	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

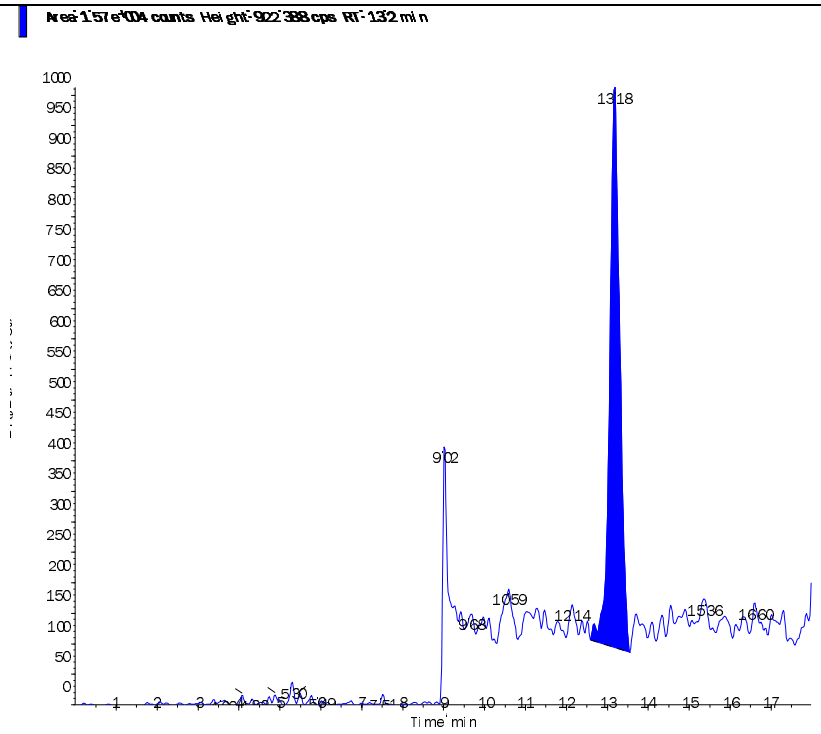
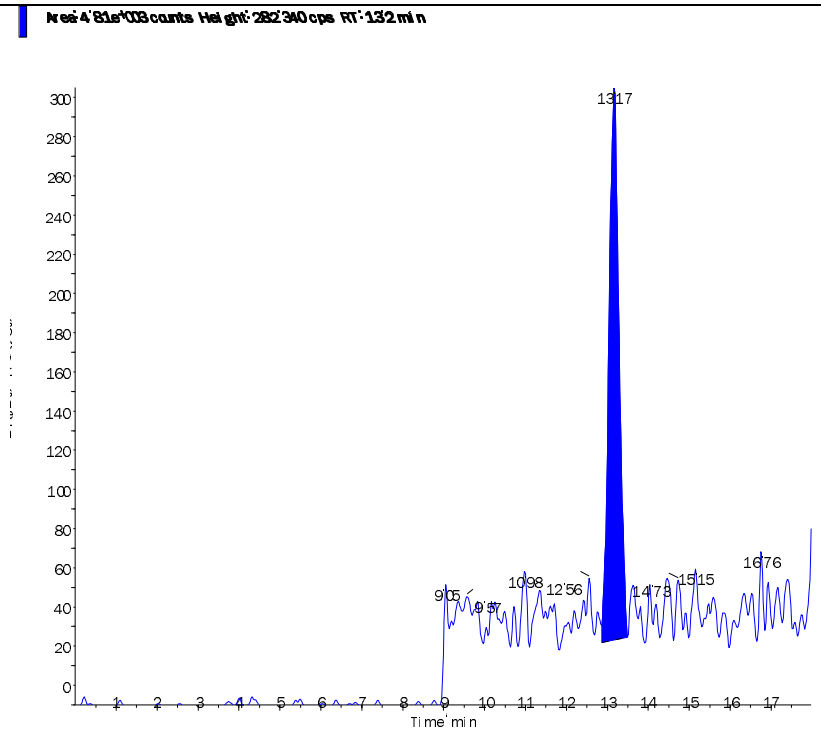
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.340e+05	13.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.570e+04	13.20	N/A	0.228
Perchlorate conf	4.810e+03	13.20	N/A	0.214

O18LP (Internal Standard)

RT (Exp. RT): 13.20(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.20 (13.40) min Calculated conc: 0.228 ng/ml Area Ratio: 0.067 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.20 (13.40) min Calculated conc: 0.214 ng/ml Area Ratio: 0.021 Sample Type: (Unknown)	

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Data File	LM23795.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	2/17/2014 7:15:29 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

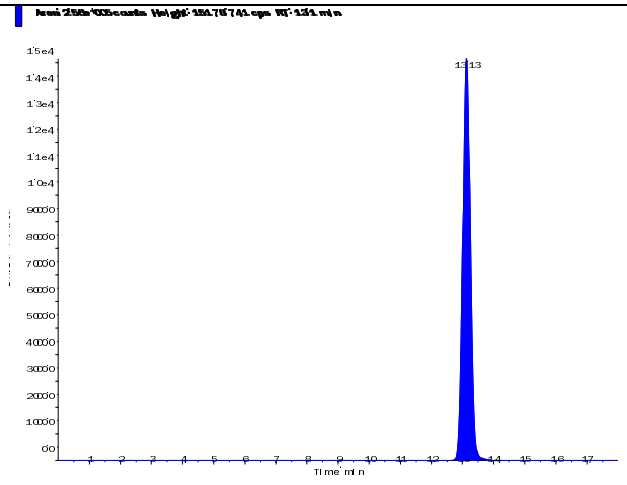
Sample Name	WG463400-08 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM23795.wiff	**Injection Volume**	10.00
Acquisition Date	2/17/2014 7:15:29 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG463400-08	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.560e+05	13.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.550e+04	13.10	N/A	0.206
Perchlorate conf	4.850e+03	13.10	N/A	0.196

O18LP (Internal Standard)

RT (Exp. RT): 13.10(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



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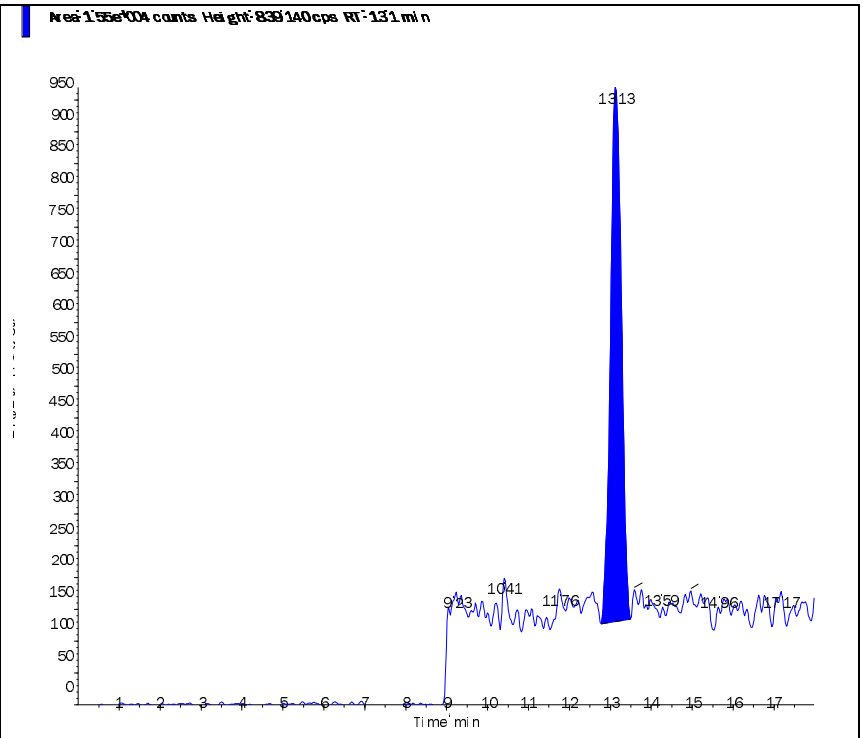
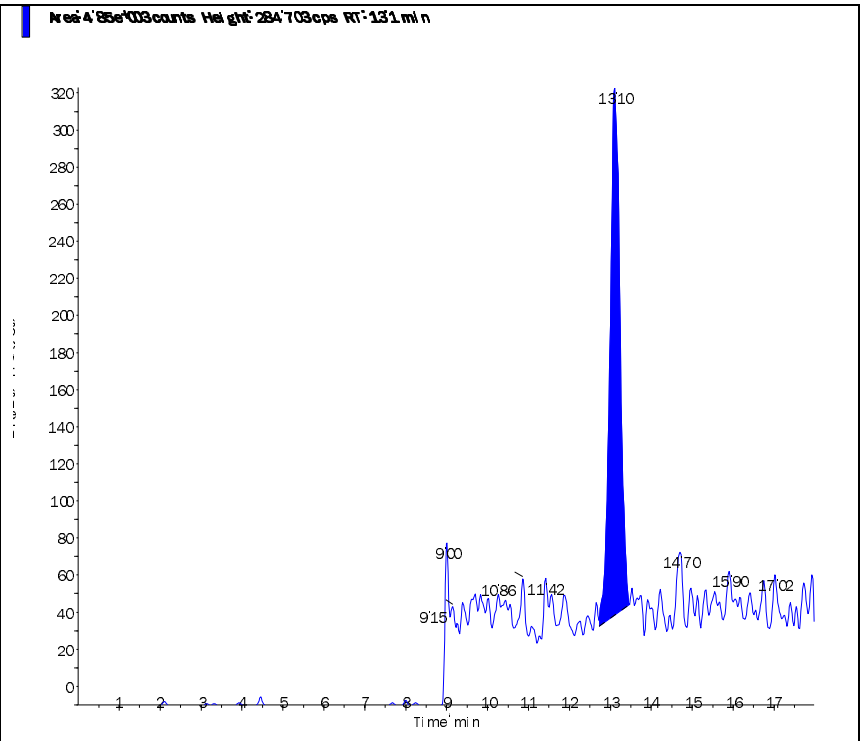
Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.10 (13.40) min Calculated conc: 0.206 ng/ml Area Ratio: 0.061 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.10 (13.40) min Calculated conc: 0.196 ng/ml Area Ratio: 0.019 Sample Type: (Unknown)	

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Data File	LM23807.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	2/17/2014 11:02:42 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

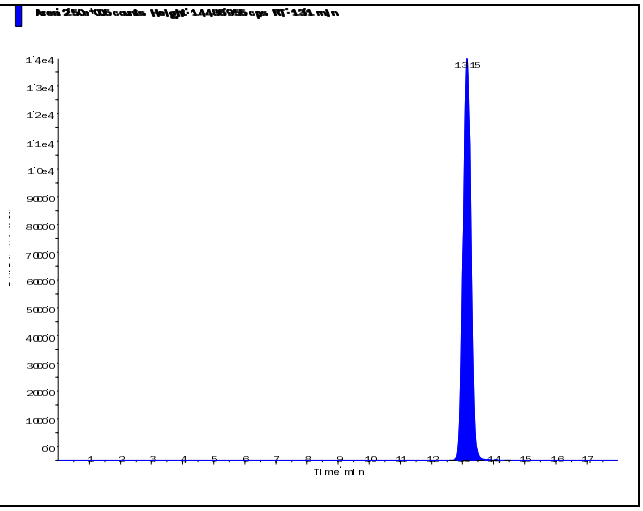
Sample Name	WG463400-09 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM23807.wiff	**Injection Volume**	10.00
Acquisition Date	2/17/2014 11:02:42 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG463400-09	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.500e+05	13.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.470e+04	13.20	N/A	0.199
Perchlorate conf	4.820e+03	13.10	N/A	0.20

O18LP (Internal Standard)

RT (Exp. RT): 13.10(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



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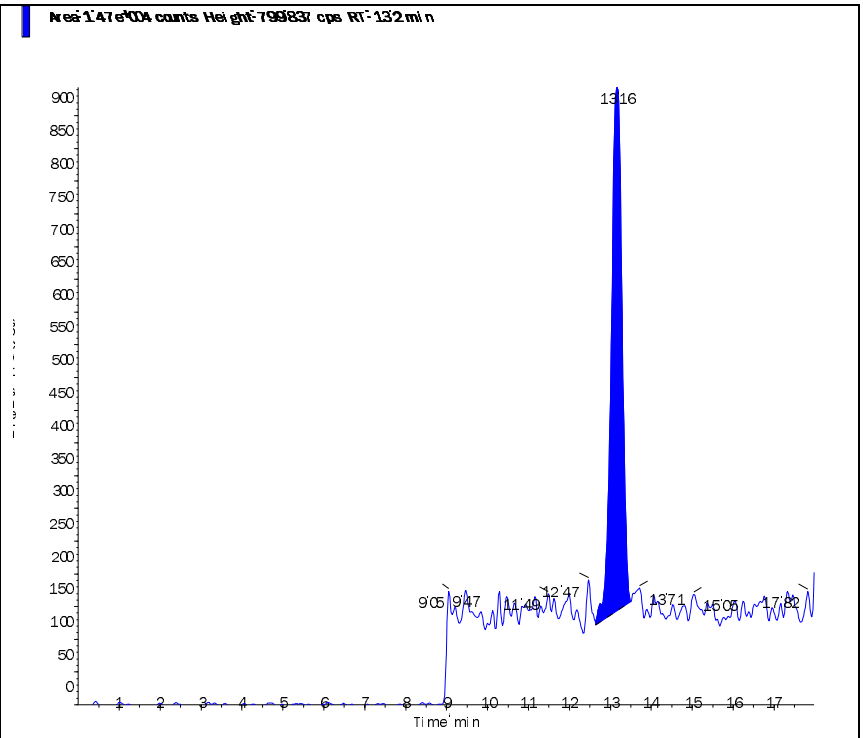
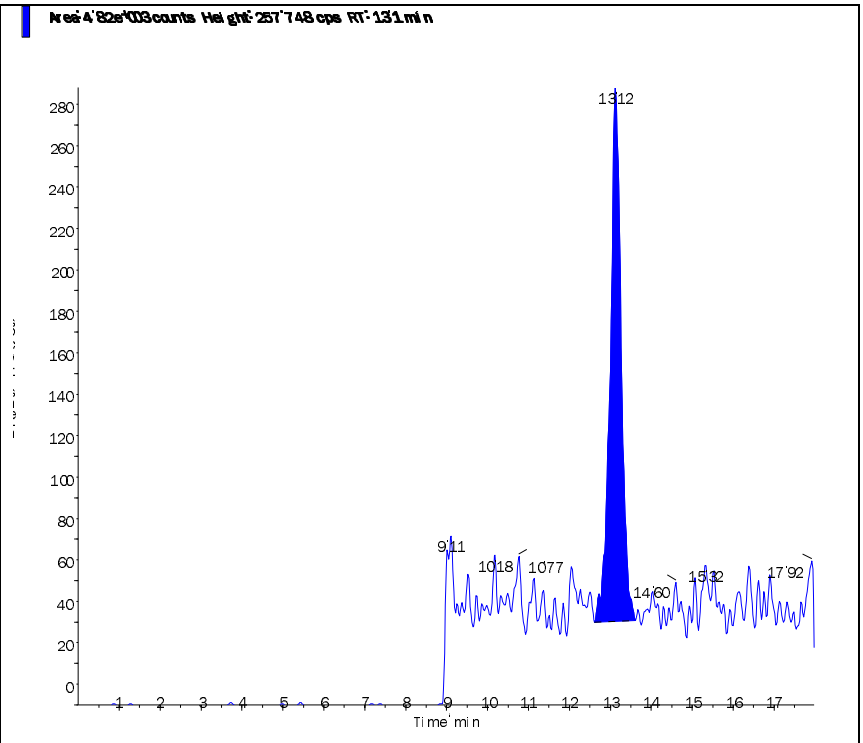
Perchlorate (98.8/83.3 amu) RT (Exp. RT): Calculated conc: Area Ratio: Sample Type:	13.20 (13.40) min 0.199 ng/ml 0.059 (Unknown)



Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): Calculated conc: Area Ratio: Sample Type:	13.10 (13.40) min 0.20 ng/ml 0.019 (Unknown)



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Data File	LM23779.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	2/17/2014 2:12:26 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

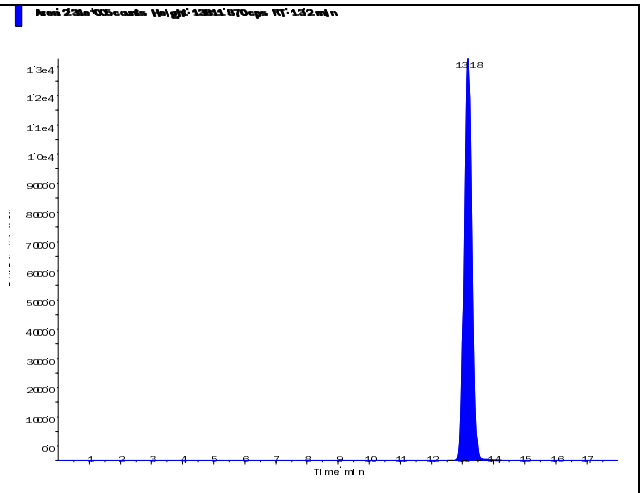
Sample Name	WG463411-01 CCB	**Injection Vial**	1.00
Data File	LM23779.wiff	**Injection Volume**	10.00
Acquisition Date	2/17/2014 2:12:26 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG463411-01	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

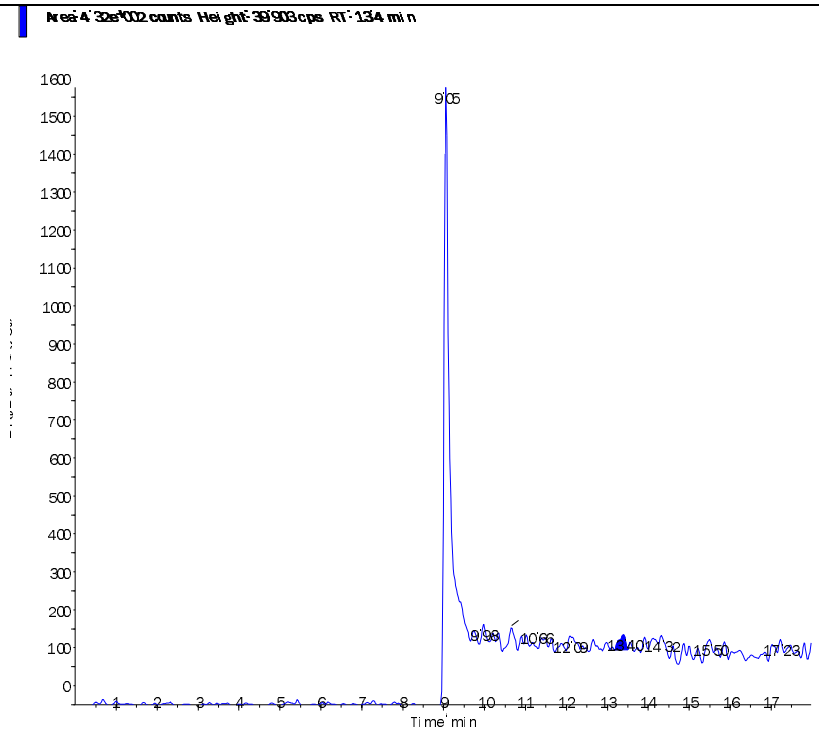
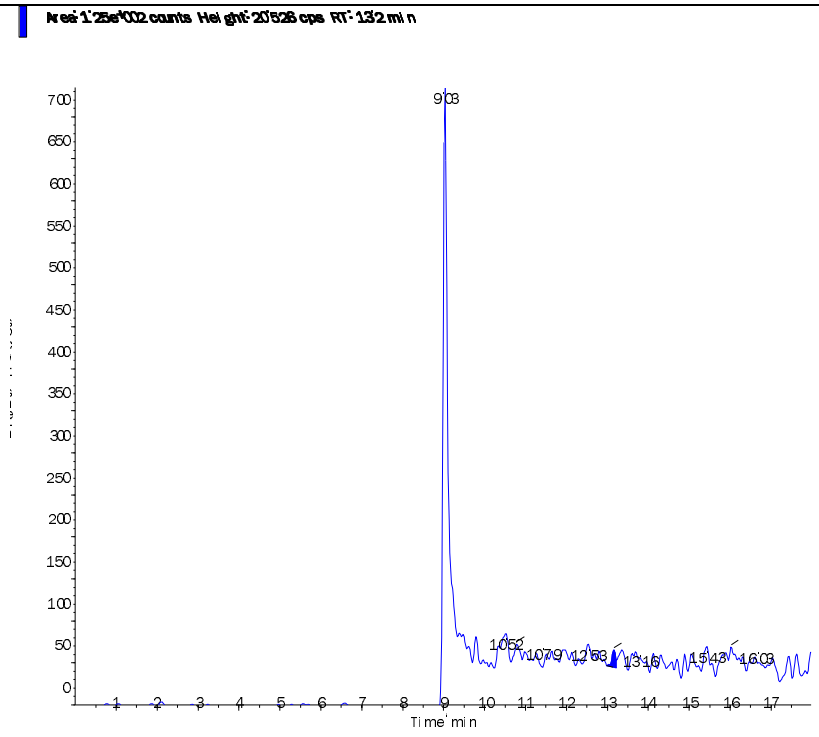
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.310e+05	13.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	4.320e+02	13.40	N/A	< 0
Perchlorate conf	1.250e+02	13.20	N/A	< 0

O18LP (Internal Standard)

RT (Exp. RT): 13.20(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: < 0 ng/ml Area Ratio: 0.002 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.20 (13.40) min Calculated conc: < 0 ng/ml Area Ratio: 0.001 Sample Type: (Unknown)	

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Data File	LM23796.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	2/17/2014 7:34:25 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

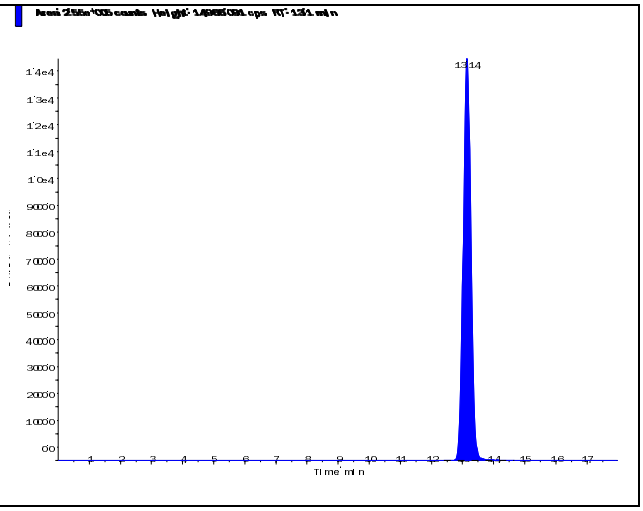
Sample Name	WG463411-04 CCB	**Injection Vial**	1.00
Data File	LM23796.wiff	**Injection Volume**	10.00
Acquisition Date	2/17/2014 7:34:25 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG463411-04	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.550e+05	13.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	4.620e+02	13.30	N/A	< 0
Perchlorate conf	3.740e+02	13.00	N/A	0.0055

O18LP (Internal Standard)

RT (Exp. RT): 13.10(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



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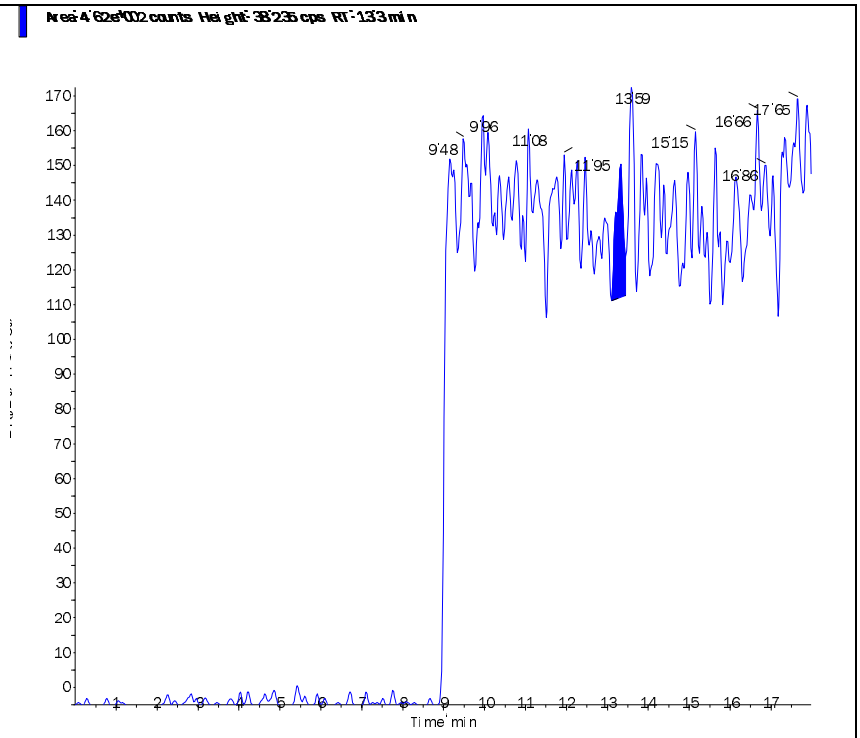
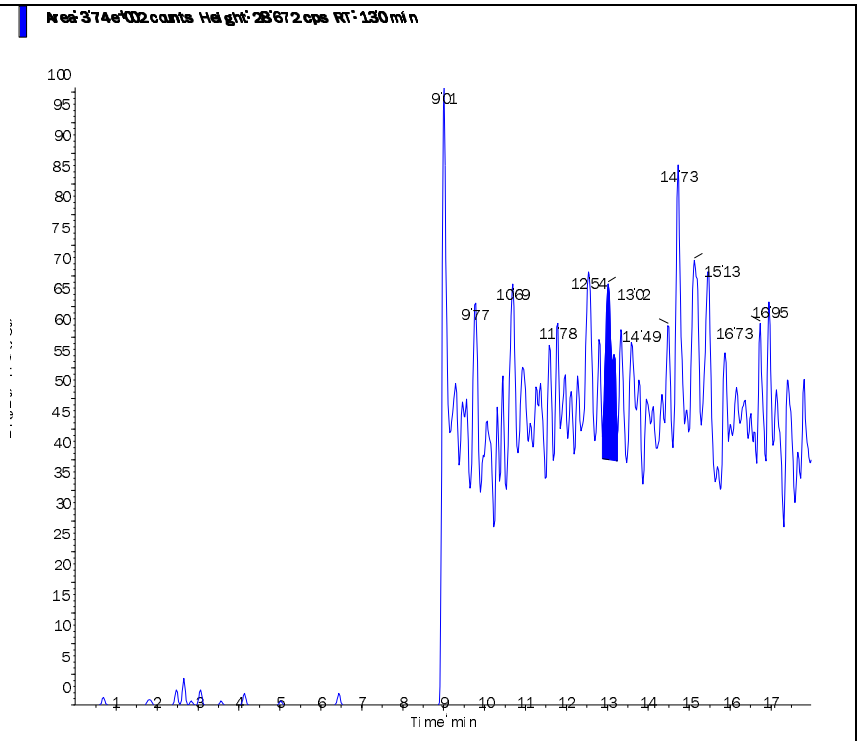
Created with Analyst Reporter
Printed: 2/18/2014 11:14 AM

Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.30 (13.40) min Calculated conc: < 0 ng/ml Area Ratio: 0.002 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.00 (13.40) min Calculated conc: 0.0055 ng/ml Area Ratio: 0.001 Sample Type: (Unknown)	

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Created with Analyst Reporter
Printed: 2/18/2014 11:19 AM

Data File	LM23808.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	2/17/2014 11:21:39 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

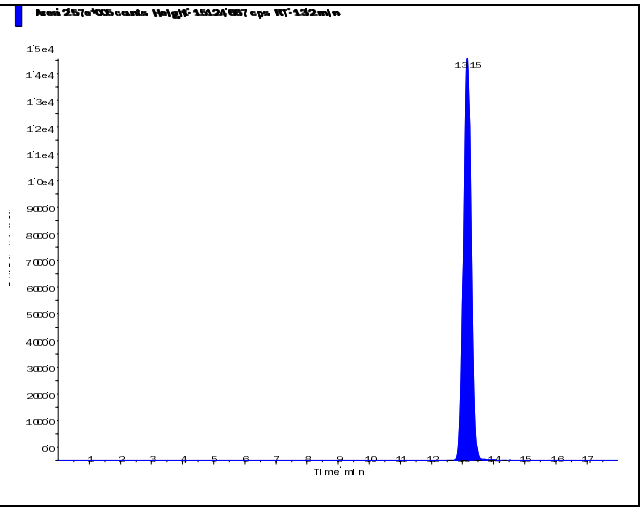
Sample Name	WG463411-06 CCB	**Injection Vial**	1.00
Data File	LM23808.wiff	**Injection Volume**	10.00
Acquisition Date	2/17/2014 11:21:39 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG463411-06	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.570e+05	13.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	3.480e+02	13.30	N/A	< 0
Perchlorate conf	2.970e+02	13.30	N/A	0.0021

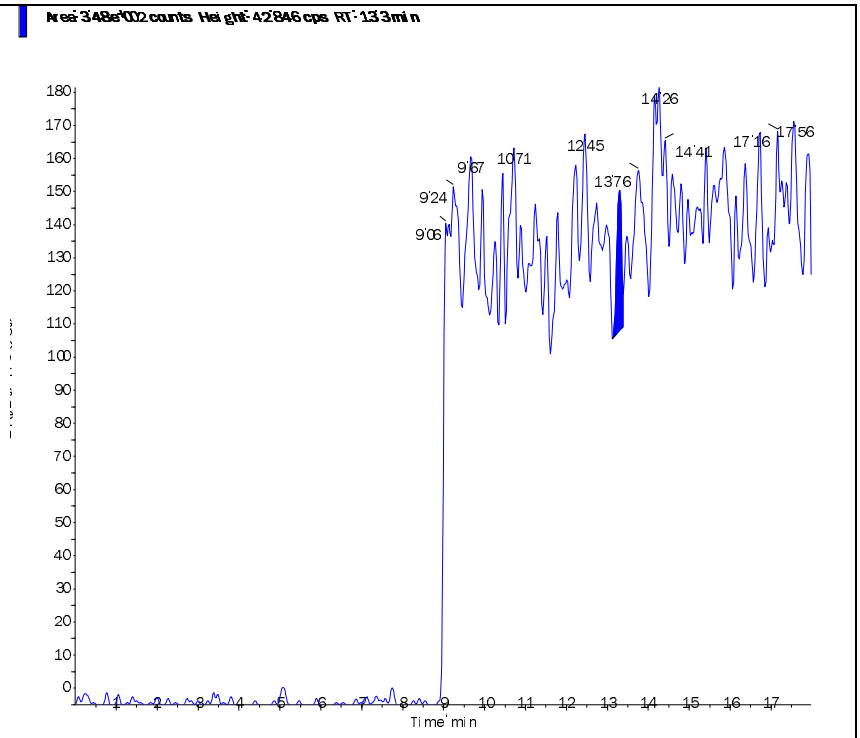
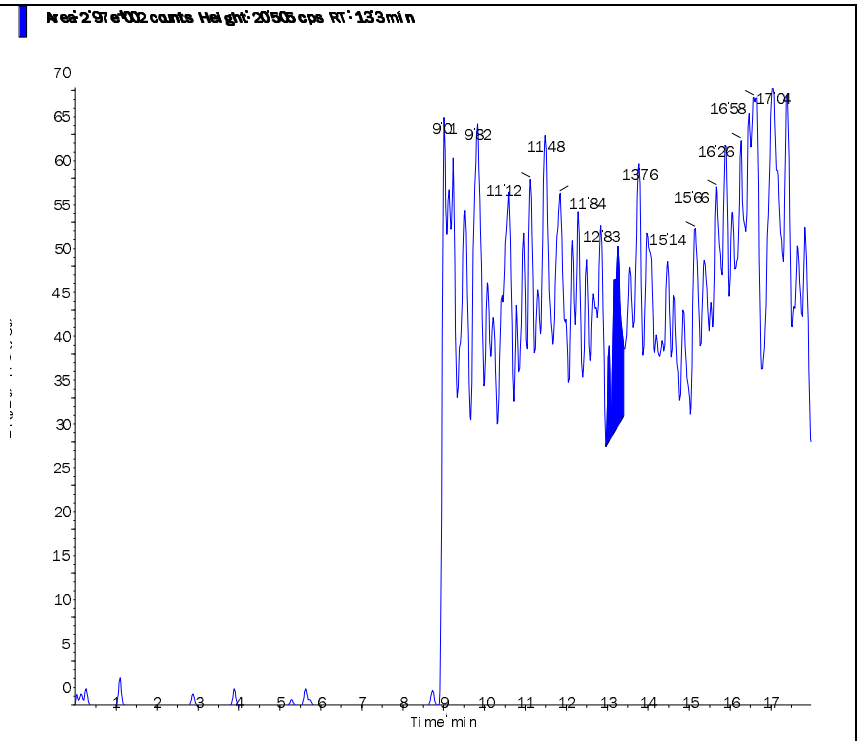
O18LP (Internal Standard)

RT (Exp. RT): 13.20(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Applied Biosystems | MDS SCIEX

Created with Analyst Reporter
Printed: 2/18/2014 11:19 AM

Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.30 (13.40) min Calculated conc: < 0 ng/ml Area Ratio: 0.001 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.30 (13.40) min Calculated conc: 0.0021 ng/ml Area Ratio: 0.001 Sample Type: (Unknown)	

Applied Biosystems | MDS SCIEX

Created with Analyst Reporter
Printed: 2/18/2014 11:10 AM

Data File	LM23782.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	2/17/2014 3:09:15 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

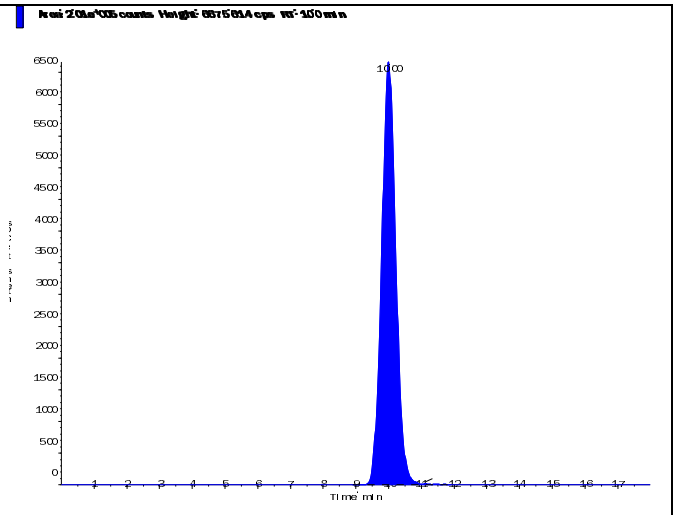
Sample Name	WG463400-01 MCT (0.2ug/L)	**Injection Vial**	4.00
Data File	LM23782.wiff	**Injection Volume**	10.00
Acquisition Date	2/17/2014 3:09:15 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG463400-01	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

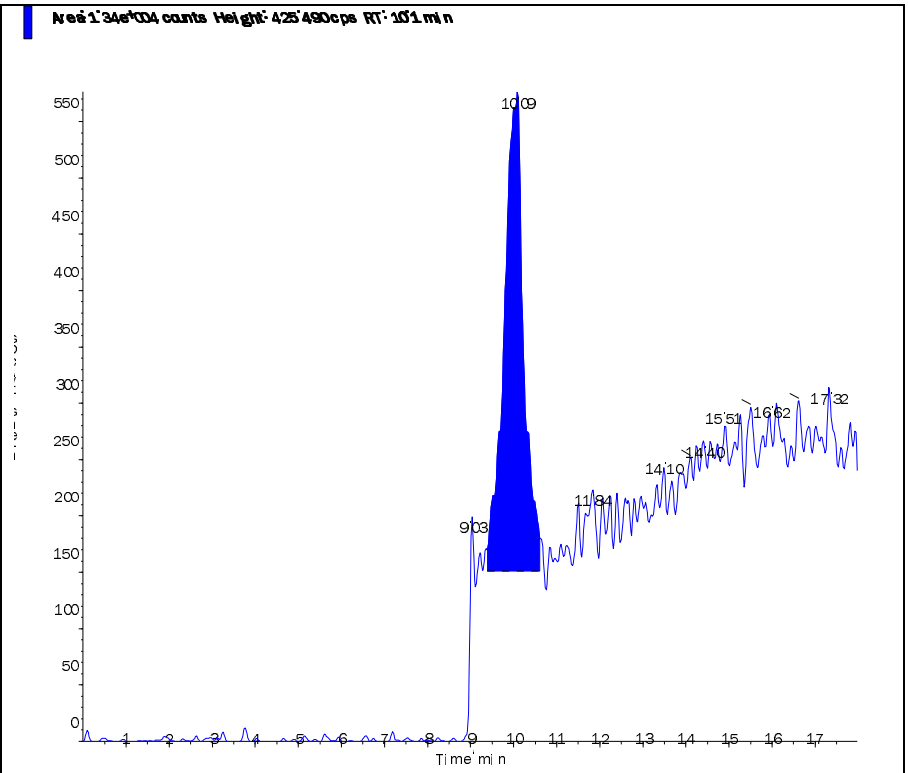
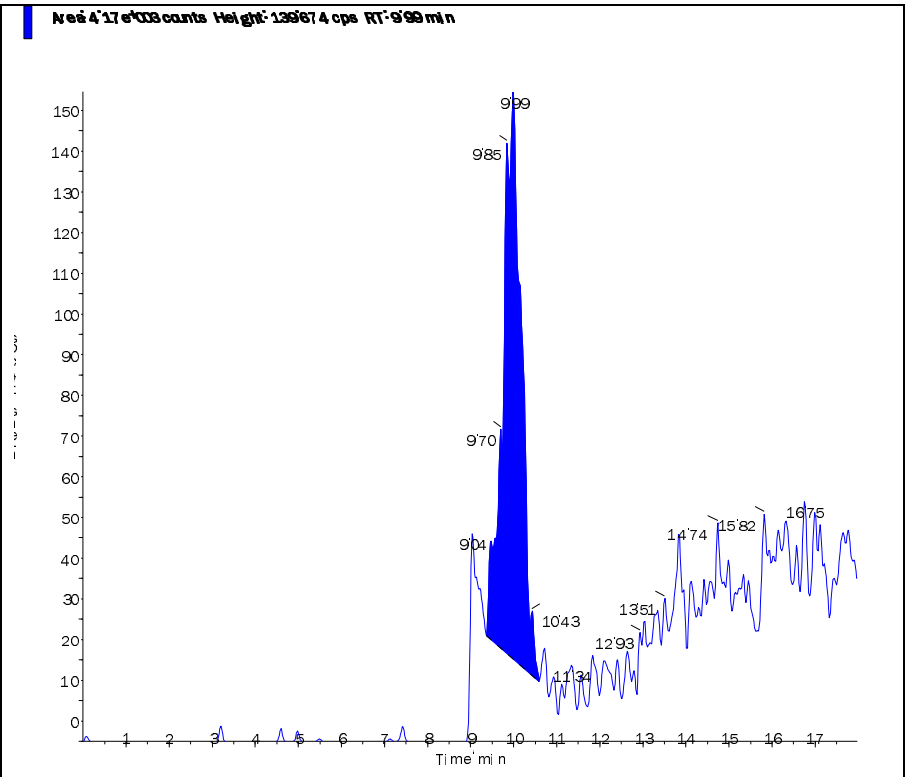
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.010e+05	10.00	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.340e+04	10.10	N/A	0.227
Perchlorate conf	4.170e+03	9.99	N/A	0.216

O18LP (Internal Standard)

RT (Exp. RT): 10.00(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)

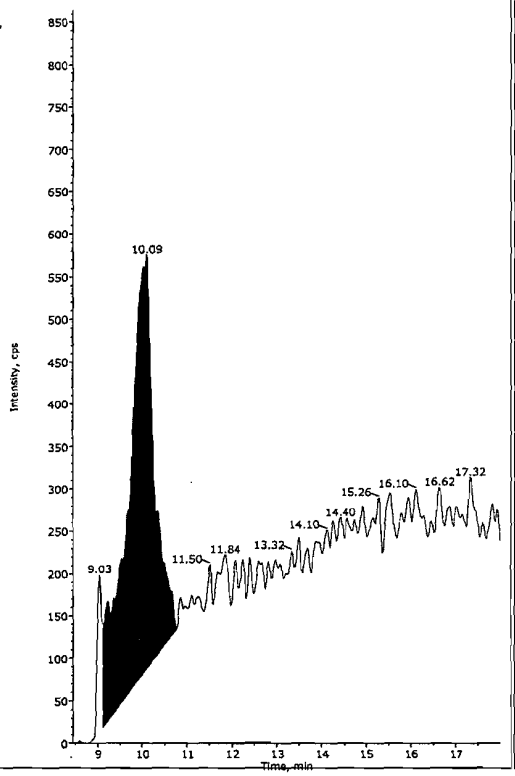


Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.10 (13.40) min Calculated conc: 0.227 ng/ml Area Ratio: 0.067 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 9.99 (13.40) min Calculated conc: 0.216 ng/ml Area Ratio: 0.021 Sample Type: (Unknown)	

Printing Time: 9:47:47 AM
Printing Date: Tuesday, February 18, 2014

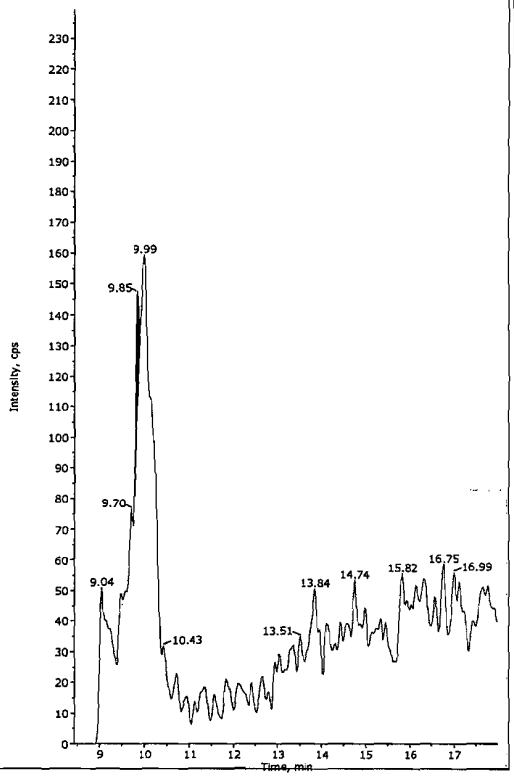
Sample Name: "WG463400-01 MCT (0.2ug/L)" Sample ID: "WG463400-01" File: "LM23782.wiff"
Peak Name: "Perchlorate" Mass(es): "98.8/83.3 amu"
Comment: "1,1 STD61802" Annotation: ""

Sample Index:	1
Sample Type:	Unknown
Concentration:	N/A
Calculated Conc:	0.360 ug/L
Acq. Date:	2/17/2014
Acq. Time:	3:09:15 PM
Modified:	No
Proc. Algorithm:	Analyst Classic
Bunching Factor:	3
Noise Threshold:	4.76 cps
Area Threshold:	23.83 cps
Num. Smooths:	5
Sep. Width:	0.20
Sep. Height:	0.01
Exp. Peak Ratio:	5.00
Exp. Adj. Ratio:	4.00
Exp. Val. Ratio:	3.00
RT Window:	30.000 sec
Expected RT:	13.4 min
Use Relative RT:	Yes
Int. Type:	Valley
Retention Time:	10.1 min
Area:	2.09e+004 counts
Height:	488.676 cps
Start Time:	9.113 min
End Time:	10.753 min



Sample Name: "WG463400-01 MCT (0.2ug/L)" Sample ID: "WG463400-01" File: "LM23782.wiff"
Peak Name: "Perchlorate conf" Mass(es): "100.8/85.2 amu"
Comment: "1,1 STD61802" Annotation: ""

Sample Index:	1
Sample Type:	Unknown
Concentration:	N/A
Calculated Conc:	< 0
Acq. Date:	2/17/2014
Acq. Time:	3:09:15 PM
Modified:	No
Proc. Algorithm:	Analyst Classic
Bunching Factor:	3
Noise Threshold:	2.40 cps
Area Threshold:	12.01 cps
Num. Smooths:	5
Sep. Width:	0.20
Sep. Height:	0.01
Exp. Peak Ratio:	5.00
Exp. Adj. Ratio:	4.00
Exp. Val. Ratio:	3.00
RT Window:	30.000 sec
Expected RT:	13.4 min
Use Relative RT:	Yes
Int. Type:	Base To Base
Retention Time:	9.85 min
Area:	1.92e+002 counts
Height:	34.224 cps
Start Time:	9.761 min
End Time:	9.903 min

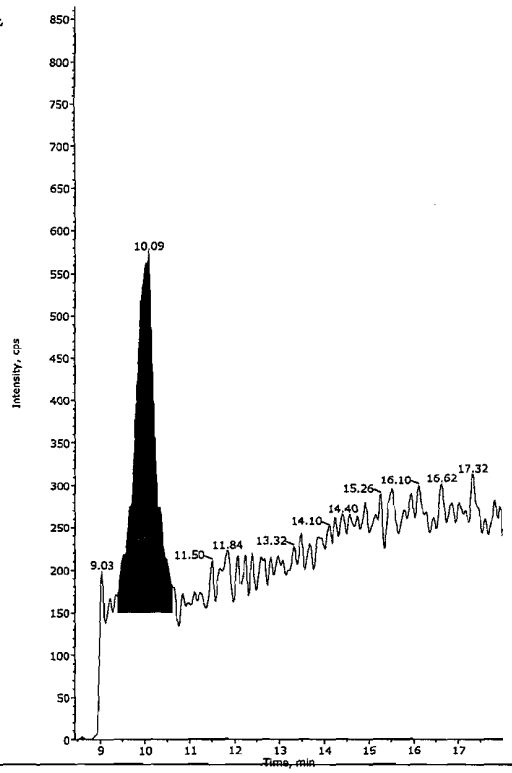


Collected by: N/A
Electronic Signature: no
Operator: lcms1

Printing Time: 9:58:53 AM
Printing Date: Tuesday, February 18, 2014

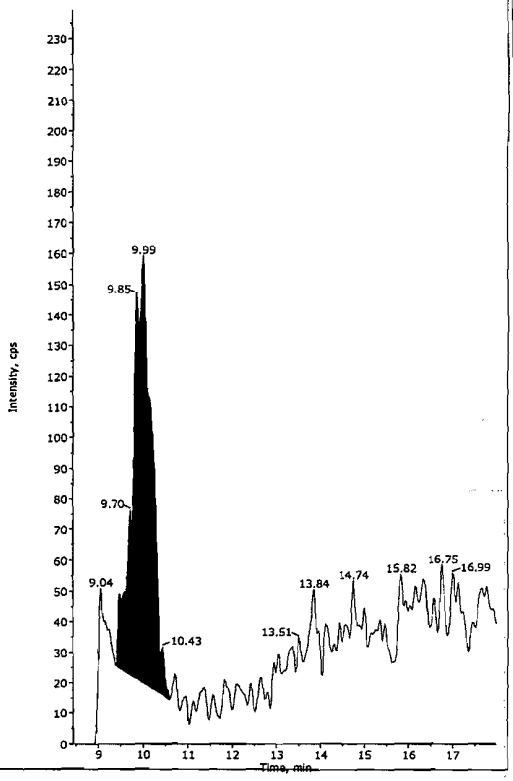
Sample Name: "WG463400-01 MCT (0.2ug/L)" Sample ID: "WG463400-01" File: "LM23782.wiff"
Peak Name: "Perchlorate" Mass(es): "98.8/83.3 amu"
Comment: "1,1 STD61802" Annotation: ""

Sample Index:	1
Sample Type:	Unknown
Concentration:	N/A
Calculated Conc:	0.227 ug/L
Acq. Date:	2/17/2014
Acq. Time:	3:09:15 PM
Modified:	Yes
Proc. Algorithm:	Analyst Classic
Bunching Factor:	3
Noise Threshold:	4.76 cps
Area Threshold:	23.82 cps
Num. Smooths:	5
Sep. Width:	0.20
Sep. Height:	0.01
Exp. Peak Ratio:	5.00
Exp. Adj. Ratio:	4.00
Exp. Val. Ratio:	3.00
RT Window:	30.000 sec
Expected RT:	13.4 min
Use Relative RT:	Yes
Int. Type:	Manual
Retention Time:	10.1 min
Area:	1.34e+004 counts
Height:	425.430 cps
Start Time:	9.397 min
End Time:	10.612 min



Sample Name: "WG463400-01 MCT (0.2ug/L)" Sample ID: "WG463400-01" File: "LM23782.wiff"
Peak Name: "Perchlorate conf" Mass(es): "100.8/85.2 amu"
Comment: "1,1 STD61802" Annotation: ""

Sample Index:	1
Sample Type:	Unknown
Concentration:	N/A
Calculated Conc:	0.216 ug/L
Acq. Date:	2/17/2014
Acq. Time:	3:09:15 PM
Modified:	Yes
Proc. Algorithm:	Analyst Classic
Bunching Factor:	2
Noise Threshold:	2.40 cps
Area Threshold:	12.01 cps
Num. Smooths:	5
Sep. Width:	0.20
Sep. Height:	0.01
Exp. Peak Ratio:	5.00
Exp. Adj. Ratio:	4.00
Exp. Val. Ratio:	3.00
RT Window:	30.000 sec
Expected RT:	13.4 min
Use Relative RT:	Yes
Int. Type:	Manual
Retention Time:	9.99 min
Area:	4.17e+003 counts
Height:	139.674 cps
Start Time:	9.356 min
End Time:	10.591 min



#4
JWR 02/18/14

mdc 2/18/14

Collected by: N/A
Electronic Signature: no
Operator: lcms1

2.1.1.5 Raw QC Data

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Created with Analyst Reporter
Printed: 2/18/2014 11:10 AM

Data File	LM23783.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	2/17/2014 3:28:10 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

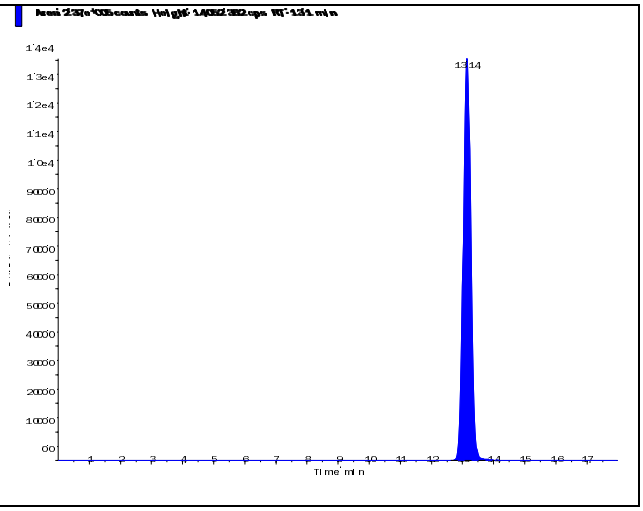
Sample Name	WG463400-02 BLANK	**Injection Vial**	5.00
Data File	LM23783.wiff	**Injection Volume**	10.00
Acquisition Date	2/17/2014 3:28:10 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG463400-02	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

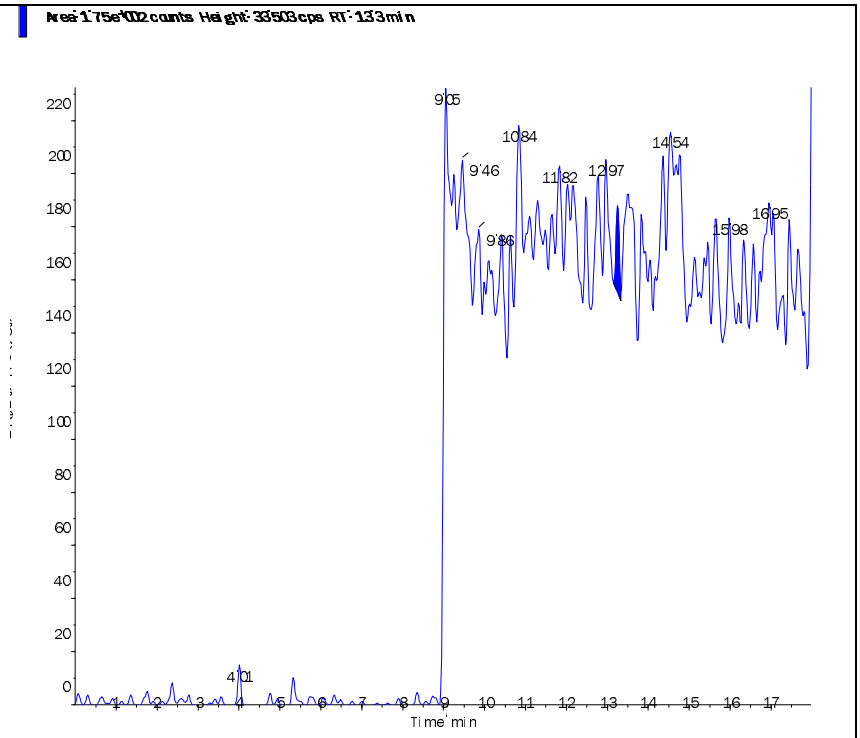
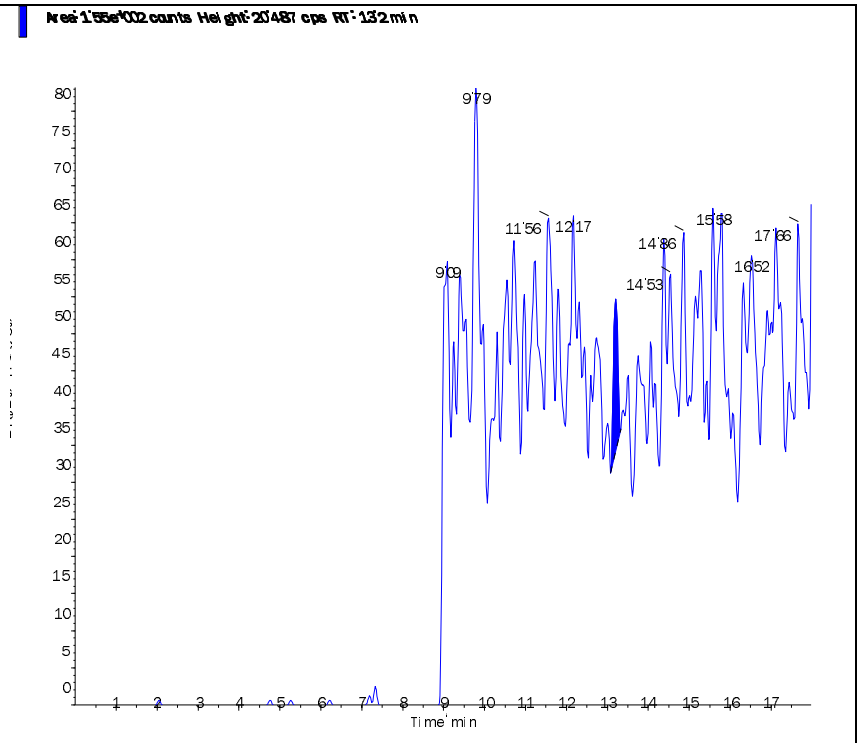
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.370e+05	13.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.750e+02	13.30	N/A	< 0
Perchlorate conf	1.550e+02	13.20	N/A	< 0

O18LP (Internal Standard)

RT (Exp. RT): 13.10(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.30 (13.40) min Calculated conc: < 0 ng/ml Area Ratio: 0.001 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.20 (13.40) min Calculated conc: < 0 ng/ml Area Ratio: 0.001 Sample Type: (Unknown)	

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Created with Analyst Reporter
Printed: 2/18/2014 11:11 AM

Data File	LM23784.wiff	**Result Table**	021714_JWR.rdb
Acquisition Date	2/17/2014 3:47:07 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

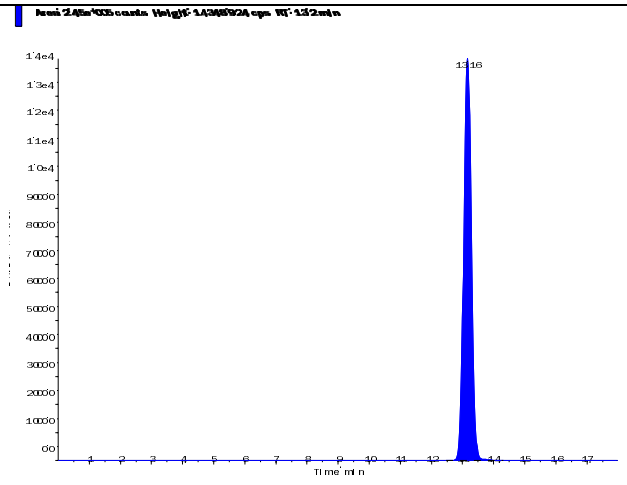
Sample Name	WG463400-03 LCS (0.2ug/L)	**Injection Vial**	6.00
Data File	LM23784.wiff	**Injection Volume**	10.00
Acquisition Date	2/17/2014 3:47:07 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	021714_JWR.rdb
Sample ID	WG463400-03	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

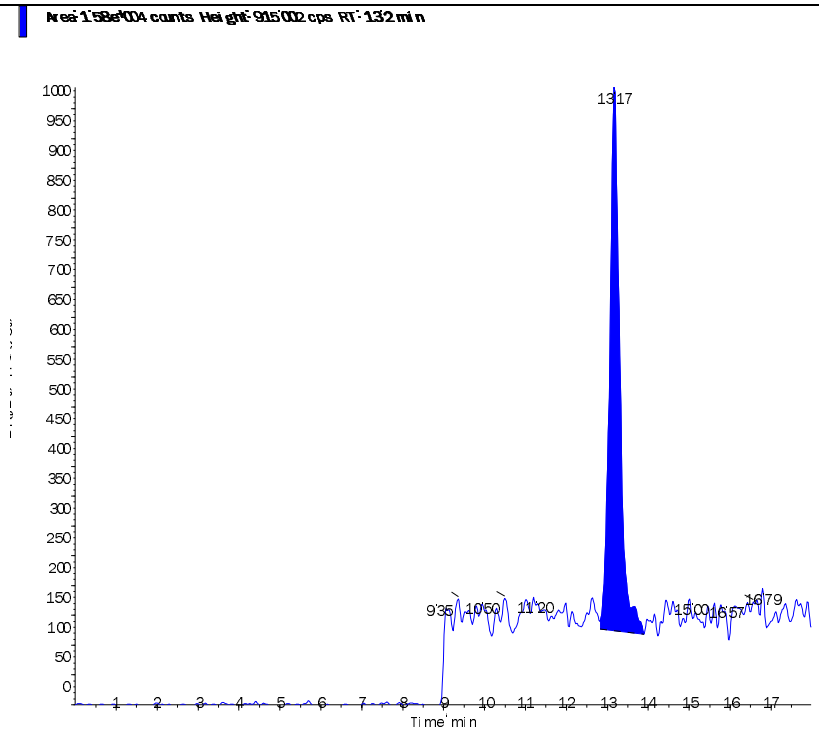
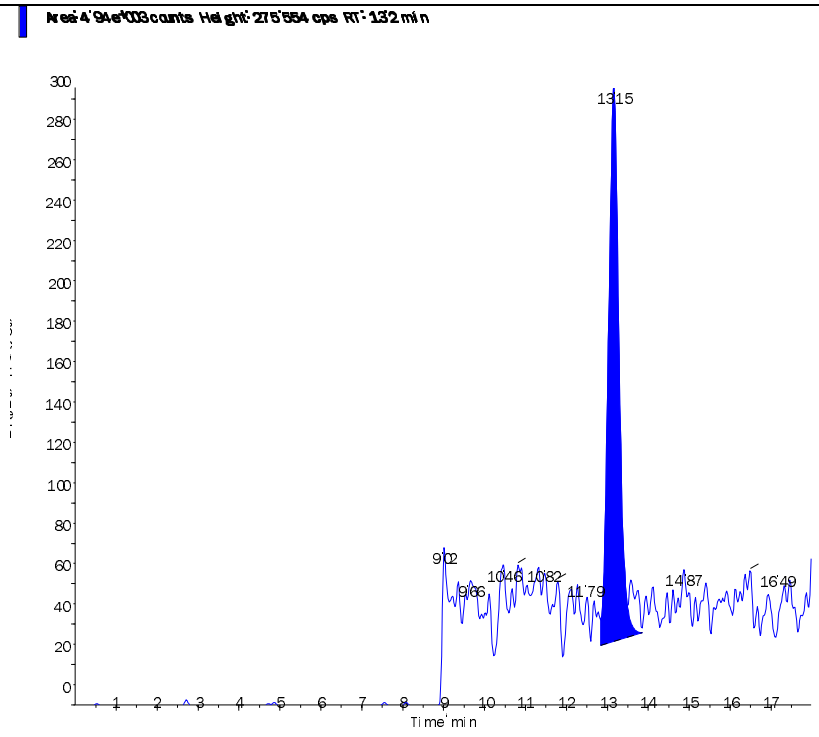
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.450e+05	13.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.580e+04	13.20	N/A	0.22
Perchlorate conf	4.940e+03	13.20	N/A	0.21

O18LP (Internal Standard)

RT (Exp. RT): 13.20(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.20 (13.40) min Calculated conc: 0.22 ng/ml Area Ratio: 0.065 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.20 (13.40) min Calculated conc: 0.21 ng/ml Area Ratio: 0.02 Sample Type: (Unknown)	

3.0 Attachments

Microbac Laboratories Inc.
Ohio Valley Division Analyst List
February 18, 2014

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001 - BIO-CHEM TESTING WVDEP 220	002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental	004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES	006 - ALCOSAN LABORATORIES
007 - ALS LABORATORIES	008 - BENCHMARK LABORATORIES
ADC - ANTHONY D. CANTER	ADG - APRIL D. GREENE
AJF - AMANDA J. FICKIESEN	AML - TONY M. LONG
AZH - AFTER HOURS	BAF - BRICE A. FENTON
BJO - BRIAN J. OGDEN	BKT - BRENDAN TORRENCE
BLG - BRENDA L. GREENWALT	BRG - BRENDA R. GREGORY
CAA - CASSIE A. AUGENSTEIN	CAF - CHERYL A. FLOWERS
CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLS - CARA L. STRICKLER	CLW - CHARISSA L. WINTERS
CPD - CHAD P. DAVIS	CRW - CHRISTINA R. WILSON
CSH - CHRIS S. HILL	CTB - CHRIS T. BUCINA
DAK - DEAN A. K	DCM - DAVID C. MERCKLE
DDE - DEBRA D. ELLIOTT	DEV - DAVID E. VANDENBERG
DIH - DEANNA I. HESSON	DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE	DLR - DIANNA L. RAUCH
DSM - DAVID S. MOSSOR	ECL - ERIC C. LAWSON
EDL - ERIN D. LONG	ENY - EMILY N. YOAK
EPT - ETHAN P. TIDD	ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN	HCB - HEIDI C. BROWN
HJR - HOLLY J. REED	JBK - JEREMY B. KINNEY
JDH - JUSTIN D. HESSON	JDS - JARED D. SMITH
JKS - JANE K. SCHAAD	JLL - JOHN L. LENT
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES
JYH - JI Y. HU	KDW - KATHRYN D. WELCH
KEB - KATIE E. BARNES	KHR - KIM H. RHODES
KRA - KATHY R. ALBERTSON	KRB - KAELY R. BECKER
KRP - KATHY R. PARSONS	KSC - KELLY S. CUNNINGHAM
LKN - LINDA K. NEDEFF	LLS - LARRY L. STEPHENS
LSB - LESLIE S. BUCINA	MBK - MORGAN B. KNOWLTON
MDA - MIKE D. ALBERTSON	MDC - MIKE D. COCHRAN
MES - MARY E. SCHILLING	MLW - MATTHEW L. WARREN
MMB - MAREN M. BEERY	MRT - MICHELLE R. TAYLOR
MSW - MATT S. WILSON	PDM - PIERCE D. MORRIS
PIT - MICROBAC WARRENDALE	PSW - PEGGY S. WEBB
QX - QIN XU	RAH - ROY A. HALSTEAD
REK - BOB E. KYER	RLB - BOB BUCHANAN
RM - RAYMOND MALEKE	RNP - RICK N. PETTY
RS - ROSEMARY SCOTT	RWC - RODNEY W. CAMPBELL
SAV - SARAH A. VANDENBERG	SEP - SUZANNE J. PAUGH
SLM - STEPHANIE L. MOSSBURG	SLP - SHERI L. PFALZGRAF
TLC - TYLER L. CORDELL	TMB - TIFFANY M. BAILEY
TMM - TAMMY M. MORRIS	TPA - TYLER P. AMRINE
VC - VICKI COLLIER	WJB - WILL J. BEASLEY
WTD - WADE T. DELONG	XXX - UNAVAILABLE OR SUBCONTRACT

Microbac Laboratories Inc.
List of Valid Qualifiers
February 18, 2014

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
H1	Sample analysis performed past holding time.
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value; the analyte concentration was less than the RL/LOQ.
J,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentativlely identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL/MDL).
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, H1	Not detected; Sample analysis performed past holding time.
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Analyte was not detected. The concentration is below the reported LOD.
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

AECOM

Chain of Custody Record

COC Number:

Laboratory:	Microbac POC: Kathy Albertson
Address:	158 Starlite Drive
	Marietta, OH 45750
Phone:	1-800-373-4071
Client:	AECOM
Address:	112 East Pecan Ste. 400
	San Antonio, TX 78205
Turn Around Time:	STANDARD
Project Name/Location:	Longhorn
Project Number:	60256135.0004AA

Project Manager:	Dave Wacker
Phone/Fax Number:	210-296-2000
Sampler (print):	Scott Beesinger
Signature:	Scott Beesinger

Mail to: Linda Raabe, 112 East Pecan STE. 400, San Antonio, TX 78205, 210-296-2000

Fed Ex Airbill No:

Program:

pH:

Site Name	Sample ID/Location ID	SBD	SED	Date	Time	Comp*	Grab	Matrix	Number of Containers	Perchlorate
Harrison Bayou & Goose Prarie Creek	HBW 7 - 020514			2/5/14	0805		X	W	1	X
	HBW 10 - 020514			2/5/14	0820		X	W	1	X
	HBW 1 - 020514			2/5/14	0835		X	W	1	X
	GPW 1 - 020514			2/5/14	0855		X	W	1	X
	GPW 3 - 020514			2/5/14	0908		X	W	1	X

ERPIMS REQUIRED FIELDS

SA CODE	Cooler ID	LOT CONTROL NUMBERS ABLOT	EBLOT	TBLOT

Comments: STANDARD TAT

	Date	Time	
Relinquished by: (Signature) Scott Beesinger	2/5/14	1400	Received by: (Signature)
Relinquished by: (Signature)	Date	Time	Received for Laboratory by: (Signature)

Microbac OVD
Received: 02/06/2014 09:53
By: BRIAN OGDEN
221000049120

*Homogenize all composite samples prior to analysis

Distribution: White to Laboratory, Canary to Project Manager, Pink QA/QC Manager

00193978

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L14020226
Account: 2551
Project: 2551.096
Samples: 5
Due Date: 17-FEB-2014

Samplenum	Container ID	Products
L14020226-01	315671	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	06-FEB-2014 14:57	RS		
2	ANALYZ	W1	SEM	14-FEB-2014 12:58	JWR	CLS	

Samplenum	Container ID	Products
L14020226-02	315672	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	06-FEB-2014 14:57	RS		
2	ANALYZ	W1	SEM	14-FEB-2014 12:58	JWR	CLS	

Samplenum	Container ID	Products
L14020226-03	315673	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	06-FEB-2014 14:57	RS		
2	ANALYZ	W1	SEM	14-FEB-2014 12:58	JWR	CLS	

Samplenum	Container ID	Products
L14020226-04	315674	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	06-FEB-2014 14:57	RS		
2	ANALYZ	W1	SEM	14-FEB-2014 12:58	JWR	CLS	

Samplenum	Container ID	Products
L14020226-05	315675	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	06-FEB-2014 14:57	RS		
2	ANALYZ	W1	SEM	14-FEB-2014 12:58	JWR	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

NELAP Addendum - November 13, 2013

Non-NELAP LIMS Product and Description

The following is a list of those tests that are not included in the Microbac – OVL NELAP Scope of Accreditation:

Heat of Combustion (BTU)
Total Halide by Bomb Combustion (TX)
Particle Sizing - 200 Mesh (PS200)
Specific Gravity/Density (SPGRAV)
Total Residual Chlorine (CL-TRL)
Total Volatile Solids (all forms) (TVS)
Total Coliform Bacteria (all methods)
Fecal Coliform Bacteria (all methods)
Sulfite (SO3)
Thiodiglycol (TDG-LCMS)

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVL HPLC02/HPLC-UV

Nitroglycerin
Nitroguanidine
Acetic acid
Butyric acid
Lactic acid
Propionic acid
Pyruvic acid

OVL KNITRO-C-WUV-VIS

Nitrocellulose

OVL MSS01/GC-MS

1,4-Phenylenediamine
1-Methylnaphthalene
1,4-Dioxane
Atrazine
Benzaldehyde
Biphenyl
Caprolactam
Hexamethylphosphoramide (HMPA)
Pentachlorobenzene
Pentachloroethane

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVL MSV0I/GC-MS

1, 1, 2-Trichloro-1,2,2-trifluoroethane
1,3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
T-amylmethylether (TAME)
Tetrahydrofuran (THF)

OVL RSKOI/GC-FID

Isobutane
n-Butane
Propane
Propylene
Propyne

OVL HPLC07/HPLC-MS-MS

Hexamethylphosphoramide (XMPA-LCMS)

SOLID AND HAZARDOUS CHEMICALS

OVL HPLCOS-HPLC-UV

Nitroguanidine

OVL KNITRO-C-S/UV-VIS

Nitrocellulose

OVL MSS0I/GC-MS

1-Methylnaphthalene
Benzaldehyde
Biphenyl
Caprolactam
Pentachloroethane

NELAP Accreditation by Laboratory SOP

SOLID AND HAZARDOUS CHEMICALS

OVL MSV0I/GC-MS

1.3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
lsoprene
Methylacetate
Methylcyclohexane
n-Hexane
T-amylmethylether (TAME)

Microbac

Laboratory Report Number: L14040302

Kayla Teague
AECOM Technical Services, Inc.
16000 Dallas Parkway
Dallas, TX 75248

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Kathy Albertson – Team Chemist/Data Specialist
(740) 373-4071
Kathy.Albertson@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on May 01 2014

David L. Vandenberg

David Vandenberg – Managing Director

State of Origin: TX
Accrediting Authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: DOD Ver 4.1

Microbac

Lab Report #: L14040302
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
0019198	I	1.0		J2317154619	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	NA

Microbac

Lab Report #: L14040302
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
PW 133-040214	L14040302-01	04/02/2014 12:05	04/03/2014 10:24
PW 134-040214	L14040302-02	04/02/2014 13:05	04/03/2014 10:24

Microbac Laboratories ● Ohio Valley Division
158 Starlite Drive, Marietta, OH 45750 ● T: (740)373-4071 F: (740)373-4835
www.microbac.com

Microbac REPORT L14040302
PREPARED FOR AECOM Technical Services, Inc.
WORK ID:

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1.0 Summary Data

1.1 Narratives

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14040302
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG473483	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-05-01 00:00:00		

Laboratory Data Package Cover Page

	R1	Field chain-of-custody documentation;
	R2	Sample identification cross-reference;
	R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a.if required for the project, tentatively identified compounds (TICs).
	R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
	R5	Test reports/summary forms for blank samples;
	R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
	R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
	R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
	R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
	R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Mike Cochran		Semivolatiles Supervisor	2014-05-01 14:42:12

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14040302
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG473483	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-05-01 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification	X				
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports					
Were all samples prepared and analyzed within holding times?	X				
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?			X		
Were % moisture (or solids) reported for all soil and sediment samples?			X		
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?			X		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
Test reports/summary forms for blank samples	X				
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	X				

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14040302
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG473483	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-05-01 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?			X		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			X		
Were MS/MSD analyzed at the appropriate frequency?			X		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			X		
Were MS/MSD RPDs within laboratory QC limits?			X		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			X		
Were analytical duplicates analyzed at the appropriate frequency?			X		
Were RPDs or relative standard deviations within the laboratory QC limits?			X		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14040302
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG473483	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-05-01 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?	X				
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?	X				
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?	X				
Were ion abundance data within the method-required QC limits?	X				
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?	X				
Raw data (NELAC Section 5.5.10)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?	X				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?			X		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
Method detection limit (MDL) studies					

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14040302
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG473483	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-05-01 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter “R” must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter “S” should be retained and made available upon request for the appropriate retention period;

2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

3. NA = Not applicable;

4. NR = Not reviewed;

5. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

The Exception Report for each “No” or “Not Reviewed (NR)” item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14040302
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG473483	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-05-01 00:00:00		

the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [ ] This laboratory meets an exception under 30 TAC §25.6 and was last inspection by [ ] TCEQ or [ ] _____ on **(enter date of last inspection**). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report

1.2 Certificate of Analysis

Microbac

Lab Report #: L14040302
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14040302-01	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	PW 133-040214	**Prep Method:**	6850	**Prep Date:**	04/28/2014 19:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	12/18/2013 19:20
Workgroup #:	WG473483	**Analyst:**	JWR	**Run Date:**	04/28/2014 21:51
Collect Date:	04/02/2014 12:05	**Dilution:**	1	**File ID:**	1LM.LM24553
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.988		0.400	0.200	0.100

Certificate of Analysis

Sample #:	L14040302-02	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	PW 134-040214	**Prep Method:**	6850	**Prep Date:**	04/28/2014 19:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	12/18/2013 19:20
Workgroup #:	WG473483	**Analyst:**	JWR	**Run Date:**	04/28/2014 22:10
Collect Date:	04/02/2014 13:05	**Dilution:**	1	**File ID:**	1LM.LM24554
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.863		0.400	0.200	0.100

2.0 Full Sample Data Package

2.1 General Chromatography Data

2.1.1 6850 LC/MS Data

2.1.1.1 Summary Data

Microbac

Lab Report #: L14040302
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14040302-01	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	PW 133-040214	**Prep Method:**	6850	**Prep Date:**	04/28/2014 19:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	12/18/2013 19:20
Workgroup #:	WG473483	**Analyst:**	JWR	**Run Date:**	04/28/2014 21:51
Collect Date:	04/02/2014 12:05	**Dilution:**	1	**File ID:**	1LM.LM24553
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.988		0.400	0.200	0.100

Certificate of Analysis

Sample #:	L14040302-02	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	PW 134-040214	**Prep Method:**	6850	**Prep Date:**	04/28/2014 19:30
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	12/18/2013 19:20
Workgroup #:	WG473483	**Analyst:**	JWR	**Run Date:**	04/28/2014 22:10
Collect Date:	04/02/2014 13:05	**Dilution:**	1	**File ID:**	1LM.LM24554
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.863		0.400	0.200	0.100

2.1.1.2 QC Summary Data

Example Calculation 6850 - Perchlorate

Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of internal standard (IS) = Rx/Ristd

x = amount ratio = concentration analyte/concentration internal standard (IS) = Cx / Cistd

m = slope from curve (1.45)

b = intercept from curve (-0.00242)

y = 1.45x + -0.00242

Step 2: Substitute the value for y

where y = 12600/226000 = 0.055752

Step 3: Solve for x

x = (y - b)/m = 0.0040119

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(x) = (5 ug/L)(0.040119) = 0.200594 ug/L

Example Calculation - Water:

Slope from curve, m:	1.45
Intercept from curve, b:	-0.00242
Response of analyte, Rx:	12600
Response of Internal Standard , Ristd:	226000
Concentration of IS, Cistd (ug/L):	5.00
Response Ratio:	0.05575
Amount Ratio:	0.04012
Analyte Concentration, Cx (ug/L) :	0.200594

Example Calculation - Soil:

Analyte Concentration, Cx (ug/L):	0.20059
Amount of soil extracted (g):	5.00
Final volume of extract (mL):	50.00
Percent solids (Pct wt.)	100
Concentration in soil (ug/kg):	2.005938

Perchlorate Conductivity Check
(perchlorate1)

Conductivity Probe
Calibration Check: 1411 /1410 µs/cm

Working MCT Level: 10,000 µs/cm

Sample	Conductivity (µs/cm)	Pretreatment or Dilution Needed
WG473483-01 MCT	9,780	
-02 Blank	0.0	
-03 LCS	0.0	
L14040302-01	196	
-02	99.6	
L14040766-01	705	
-02	687	
-03	631	
L14040767-01	774	
-02	527	
-03	613	
L14040872-01	3,060	
L14040873-01	2,360	
L14041004-01	3,000	
-02	2,920	
L14041041-01	112.5	
-02	114.4	
-03	109.7	
-04	108.5	
-05	69.6	
-06	159.4	
L14041042-01	113.0	
-02	175.9	

Analyst: John Richards

Date/Time: 04/29/14 13:00

DCN#102288

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 121813_JWR.TXT

Analyst1: JWR Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 130402254

Eluent ID#:

Column 1 ID: KP-RPPX250 Column 2 ID: NA

Workgroups: Analytical WG456903 (waters)

Internal STD: COA17210 Surrogate STD: NA Calibration STD STD61802 (12/18/2013)

CCV STD: STD61802 LCS STD: STD61802 MS/MSD STD: STD61802

Comments: ICAL WG456864 : Alternate Source STD61185
Samples L13120673(-04,-05,-06) were analyzed at dilutions based on their historical results. Samples L13120673(-01,-02,-07,-08,-10) had no historical results. Samples with no historical results are initially screened at a 100x dilution in order to prevent overloading the analytical column and/or detector.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM23230	WG456864-01 CCB	1	1		12/18/13 17:07
2	1LM.LM23231	WG456864-02 STD (0.1 ug/L)	1	1	STD61802	12/18/13 17:26
3	1LM.LM23232	WG456864-03 STD (0.2 ug/L)	1	1	STD61802	12/18/13 17:45
4	1LM.LM23233	WG456864-04 STD (0.5 ug/L)	1	1	STD61802	12/18/13 18:04
5	1LM.LM23234	WG456864-05 STD (1.0 ug/L)	1	1	STD61802	12/18/13 18:23
6	1LM.LM23235	WG456864-06 STD (2.0 ug/L)	1	1	STD61802	12/18/13 18:42
7	1LM.LM23236	WG456864-07 STD (5.0 ug/L)	1	1	STD61802	12/18/13 19:01
8	1LM.LM23237	WG456864-08 STD (10 ug/L)	1	1	STD61802	12/18/13 19:20
9	1LM.LM23238	WG456864-09 SSCV (1.0 ug/L)	1	1	STD61185	12/18/13 19:39
10	1LM.LM23239	WG456905-01 CCB	1	1		12/18/13 19:58
11	1LM.LM23240	WG456905-02 CCV (1.0ug/L)	1	1	STD61802	12/18/13 20:17
12	1LM.LM23241	WG456903-07 MRL (0.2ug/L)	1	1	STD61802	12/18/13 20:36
13	1LM.LM23242	WG456903-01 MCT (0.2ug/L)	1	1	STD61802	12/18/13 20:55
14	1LM.LM23243	WG456903-02 BLANK	1	1		12/18/13 21:14
15	1LM.LM23244	WG456903-03 LCS (0.2ug/L)	1	1	STD61802	12/18/13 21:33
16	1LM.LM23245	L13120643-01	1	1		12/18/13 21:51
17	1LM.LM23246	L13120643-02	1	1		12/18/13 22:10
18	1LM.LM23247	L13120643-03 RS	1	1		12/18/13 22:29
19	1LM.LM23248	L13120643-04 MS	1	1	STD61802	12/18/13 22:48
20	1LM.LM23249	L13120643-05 MSD	1	1	STD61802	12/18/13 23:07
21	1LM.LM23250	L13120643-06	1	1		12/18/13 23:26
22	1LM.LM23251	L13120643-07	1	1		12/18/13 23:45
23	1LM.LM23252	WG456905-03 CCV (1.0ug/L)	1	1	STD61802	12/19/13 00:04
24	1LM.LM23253	WG456903-08 MRL (0.2ug/L)	1	1	STD61802	12/19/13 00:23
25	1LM.LM23254	WG456905-04 CCB	1	1		12/19/13 00:42
26	1LM.LM23255	L13120643-08	1	1		12/19/13 01:01
27	1LM.LM23256	L13120643-09	1	1		12/19/13 01:20
28	1LM.LM23257	L13120643-10	1	1		12/19/13 01:39
29	1LM.LM23258	L13120643-11	1	1		12/19/13 01:58
30	1LM.LM23259	L13120644-01	1	1		12/19/13 02:17
31	1LM.LM23260	L13120673-01 (100x)	1	100		12/19/13 02:36
32	1LM.LM23261	L13120673-02 (100x) (NR)	1	100		12/19/13 02:55

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Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 121813_JWR.TXT

Analyst1: JWR Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 130402254

Eluent ID#:

Column 1 ID: KP-RPPX250 Column 2 ID: NA

Workgroups: Analytical WG456903 (waters)

Internal STD: COA17210 Surrogate STD: NA STD61802 (12/18/2013)

CCV STD: STD61802 LCS STD: STD61802 STD61802

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
33	1LM.LM23262	L13120673-04 (5,000x)	1	5000		12/19/13 03:13
34	1LM.LM23263	L13120673-05 (10,000x)	1	10000		12/19/13 03:32
35	1LM.LM23264	L13120673-06 (10,000x)	1	10000		12/19/13 03:51
36	1LM.LM23265	WG456905-05 CCV (1.0ug/L)	1	1	STD61802	12/19/13 04:10
37	1LM.LM23266	WG456903-09 MRL (0.2ug/L)	1	1	STD61802	12/19/13 04:29
38	1LM.LM23267	WG456905-06 CCB	1	1		12/19/13 04:48
39	1LM.LM23268	L13120673-07 (100x) (NR)	1	100		12/19/13 05:07
40	1LM.LM23269	L13120673-08 (100x) (NR)	1	100		12/19/13 05:26
41	1LM.LM23270	L13120673-10 (100x) (NR)	1	100		12/19/13 05:45
42	1LM.LM23271	WG456905-07 CCV (1.0ug/L)	1	1	STD61802	12/19/13 06:04
43	1LM.LM23272	WG456903-10 MRL (0.2ug/L)	1	1	STD61802	12/19/13 06:23
44	1LM.LM23273	WG456905-08 CCB	1	1		12/19/13 06:42
45	1LM.LM23274	WG456905-09 CCV (1.0ug/L)	1	1	STD61802	12/19/13 14:20
46	1LM.LM23275	WG456903-11 MRL (0.2ug/L)	1	1	STD61802	12/19/13 14:39
47	1LM.LM23276	WG456905-10 CCB	1	1		12/19/13 14:58
48	1LM.LM23277	L13120673-02 (RR 100,000x)	1	100000		12/19/13 15:17
49	1LM.LM23278	L13120673-07 (RR 4x)	1	4		12/19/13 15:36
50	1LM.LM23279	L13120673-08 (RR Neat)	1	1		12/19/13 15:55
51	1LM.LM23280	L13120673-10 (RR 10,000x)	1	10000		12/19/13 16:14
52	1LM.LM23281	WG456905-11 CCV (1.0ug/L)	1	1	STD61802	12/19/13 16:33
53	1LM.LM23282	WG456903-12 MRL (0.2ug/L)	1	1	STD61802	12/19/13 16:52
54	1LM.LM23283	WG456905-12 CCB	1	1		12/19/13 17:11

Comments

Seq.	Rerun	Dil.	Reason	Analytes
32	X	100000	Over Calibration Range	
	L13120673-02 (100x) (NR) : This sample was reanalyzed at a 100,000x dilution on the end of this run.			
39	X	4	Analyzed too dilute	
	L13120673-07 (100x) (NR) : This sample was reanalyzed at a 4x dilution on the end of this run.			
40	X	1	Analyzed too dilute	
	L13120673-08 (100x) (NR) : This sample was reanalyzed neat on the end of this run.			
41	X	10000	Over Calibration Range	
	L13120673-10 (100x) (NR) : This sample was reanalyzed at a 10,000x dilution on the end of this run.			

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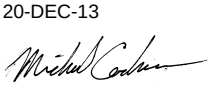

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 042814_JWR.TXT

Analyst1: JWR Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 130402254

Eluent ID#:

Workgroups: Column 1 ID: KP-RPPX250 Column 2 ID: NA

Analytical WG473483 (waters)

Internal STD: COA17210 Surrogate STD: NA Calibration STD STD61802 (12/18/2013)

CCV STD: STD63472 LCS STD: STD63472 MS/MSD STD: STD63472

Comments: Sample L14040873-01 was analyzed at a dilution based on its historical results.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM24547	WG473484-01 CCB	1	1		04/28/14 19:57
2	1LM.LM24548	WG473484-02 CCV (1.0ug/L)	1	1	STD63472	04/28/14 20:16
3	1LM.LM24549	WG473483-07 MRL (0.2ug/L)	1	1	STD63472	04/28/14 20:35
4	1LM.LM24550	WG473483-01 MCT (0.2ug/L)(NR)	1	1	STD63472	04/28/14 20:54
5	1LM.LM24551	WG473483-02 BLANK	1	1		04/28/14 21:13
6	1LM.LM24552	WG473483-03 LCS (0.2ug/L)	1	1	STD63472	04/28/14 21:32
7	1LM.LM24553	L14040302-01	1	1		04/28/14 21:51
8	1LM.LM24554	L14040302-02	1	1		04/28/14 22:10
9	1LM.LM24555	L14040766-01	1	1		04/28/14 22:29
10	1LM.LM24556	L14040766-02	1	1		04/28/14 22:48
11	1LM.LM24557	L14040766-03 REF	1	1		04/28/14 23:07
12	1LM.LM24558	L14040766-03 MS	1	1	STD63472	04/28/14 23:26
13	1LM.LM24559	L14040766-03 MSD	1	1	STD63472	04/28/14 23:45
14	1LM.LM24560	WG473484-03 CCV (1.0ug/L)	1	1	STD63472	04/29/14 00:03
15	1LM.LM24561	WG473483-08 MRL (0.2ug/L)	1	1	STD63472	04/29/14 00:22
16	1LM.LM24562	WG473484-04 CCB	1	1		04/29/14 00:41
17	1LM.LM24563	L14040767-01	1	1		04/29/14 01:00
18	1LM.LM24564	L14040767-02	1	1		04/29/14 01:19
19	1LM.LM24565	L14040767-03	1	1		04/29/14 01:38
20	1LM.LM24566	L14040872-01 (NR)	1	1		04/29/14 01:57
21	1LM.LM24567	L14040873-01 (10,000x)	1	10000		04/29/14 02:16
22	1LM.LM24568	L14041004-01	1	1		04/29/14 02:35
23	1LM.LM24569	L14041004-02	1	1		04/29/14 02:54
24	1LM.LM24570	WG473484-05 CCV (1.0ug/L)	1	1	STD63472	04/29/14 03:13
25	1LM.LM24571	WG473483-09 MRL (0.2ug/L)	1	1	STD63472	04/29/14 03:32
26	1LM.LM24572	WG473484-06 CCB	1	1		04/29/14 03:51
27	1LM.LM24573	L14041041-01	1	1		04/29/14 04:10
28	1LM.LM24574	L14041041-02	1	1		04/29/14 04:29
29	1LM.LM24575	L14041041-03	1	1		04/29/14 04:47
30	1LM.LM24576	L14041041-04	1	1		04/29/14 05:06
31	1LM.LM24577	L14041041-05 (NR)	1	1		04/29/14 05:25
32	1LM.LM24578	L14041041-06	1	1		04/29/14 05:44
33	1LM.LM24579	L14041042-01	1	1		04/29/14 06:03

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Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 042814_JWR.TXT

Analyst1: JWR Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 130402254

Eluent ID#:

Column 1 ID: KP-RPPX250 Column 2 ID: NA

Workgroups: Analytical WG473483 (waters)

Internal STD: COA17210 Surrogate STD: NA STD61802 (12/18/2013)

CCV STD: STD63472 LCS STD: STD63472 STD63472

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
34	1LM.LM24580	L14041042-02	1	1		04/29/14 06:22
35	1LM.LM24581	WG473484-07 CCV (1.0ug/L)	1	1	STD63472	04/29/14 06:41
36	1LM.LM24582	WG473483-10 MRL (0.2ug/L)	1	1	STD63472	04/29/14 07:00
37	1LM.LM24583	WG473484-08 CCB	1	1		04/29/14 07:19
38	1LM.LM24584	WG473484-09 CCV (1.0ug/L)	1	1	STD63472	04/29/14 17:51
39	1LM.LM24585	WG473483-11 MRL (0.2ug/L)	1	1	STD63472	04/29/14 18:10
40	1LM.LM24586	WG473484-10 CCB	1	1		04/29/14 18:29
41	1LM.LM24587	WG473483-01 MCT (0.2ug/L)(Rerun)	1	1	STD63472	04/29/14 18:48
42	1LM.LM24588	Blank Rinse	1	1	STD63472	04/29/14 19:07
43	1LM.LM24589	L14040872-01 Rerun 5x (NR)	1	5		04/29/14 19:26
44	1LM.LM24590	L14040872-01 Rerun 2x (NR)	1	2		04/29/14 19:45
45	1LM.LM24591	L14040872-01 Rerun Neat	1	1		04/29/14 20:03
46	1LM.LM24592	Blank Rinse	1	1		04/29/14 20:22
47	1LM.LM24593	L14041041-05 Rerun 10x	1	10		04/29/14 20:41
48	1LM.LM24594	WG473484-11 CCV (1.0ug/L)	1	1	STD63472	04/29/14 21:00
49	1LM.LM24595	WG473483-12 MRL (0.2ug/L)	1	1	STD63472	04/29/14 21:19
50	1LM.LM24596	WG473484-12 CCB	1	1		04/29/14 21:38

Comments

Seq.	Rerun	Dil.	Reason	Analytes
4				
	WG473483-01 MCT (0.2ug/L)(NR) : Due to excessive baseline noise that could not be resolved from the perchlorate peak, this MCT was reanalyzed on the end of this run from the same autosampler vial.			
12				
	L14040766-03 MS : The MS %Rec is 132%, which is above the advisory limit of 120%. The result for the parent sample was 0.0880 ug/L, which is below the detection limit of 0.100 ug/L, and therefore assigned a value of zero. The MS/MSD are spiked at the reporting limit concentration of 0.200 ug/L. Although the parent sample result is below the detection limit, it is a significant amount when compared to the spiked amount added to the MS/MSD. If the numerical value for the parent sample were included in the MS %Rec calculation, the MS %Rec would be 87.5%, which is within the advisory limits.			
13				
	L14040766-03 MSD : The MSD %Rec is 133%, which is above the advisory limit of 120%. The result for the parent sample was 0.0880 ug/L, which is below the detection limit of 0.100 ug/L, and therefore assigned a value of zero. The MS/MSD are spiked at the reporting limit concentration of 0.200 ug/L. Although the parent sample result is below the detection limit, it is a significant amount when compared to the spiked amount added to the MS/MSD. If the numerical value for the parent sample were included in the MSD %Rec calculation, the MSD %Rec would be 88.5%, which is within the advisory limits.			
20	X		Internal standard failure	
	L14040872-01 (NR) : The Internal Standard Area for this sample injection was below 50% of the Average ICAL IS-Area. This sample was reanalyzed at a 5x and 2x dilution in order to determine if the sample's matrix is interfering with the internal standard. This sample was also reanalyzed neat immediately following the 5x and 2x dilutions on the end of this run.			
31	X	10	Over Calibration Range	
	L14041041-05 (NR) : This sample was reanalyzed at a 10x dilution on the end of this run.			

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Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 042814_JWR.TXT

Analyst1: JWR Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 130402254

Eluent ID#:

Column 1 ID: KP-RPPX250 Column 2 ID: NA

Workgroups: Analytical WG473483 (waters)

Internal STD: COA17210 Surrogate STD: NA STD61802 (12/18/2013)

CCV STD: STD63472 LCS STD: STD63472 STD63472

Comments

Seq.	Rerun	Dil.	Reason	Analytes
43				
	L14040872-01 Rerun 5x (NR) : Results for this dilution are not needed.			
44				
	L14040872-01 Rerun 2x (NR) : Results for this dilution are not needed.			

Page: 3 Approved: 30-APR-14

Microbac Laboratories Inc.

Data Checklist

Date: 18-DEC-2013
Analyst: JWR
Analyst: NA
Method: 6850
Instrument: LCMS1
Curve Workgroup: WG456864
Runlog ID: 57868
Analytical Workgroups: L13120643, 0644, 0673

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	ND
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Interference check sample (ICS) (LCMS)	MCT
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	X
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	
Check for completeness	X
Primary Reviewer	JWR
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
19-DEC-2013

John Richards

Secondary Reviewer:
20-DEC-2013

Michael Cochran

CHECKLIST1 - Modified 03/05/2008
Generated: DEC-20-2013 07:56:23

Microbac

Microbac Laboratories Inc.

Data Checklist

Date: 28-APR-2014
Analyst: JWR
Analyst: NA
Method: 6850
Instrument: LCMS1
Curve Workgroup: NA
Runlog ID: 60568
Analytical Workgroups: L14040302, 0766, 0767, 0872, 0873, 1004, 1041, 1042

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	ND
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Interference check sample (ICS) (LCMS)	MCT
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	X
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	
Check for completeness	X
Primary Reviewer	JWR
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
30-APR-2014

Secondary Reviewer:
30-APR-2014

CHECKLIST1 - Modified 03/05/2008
Generated: APR-30-2014 19:20:06

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 6850 AAB#: WG473483

Login Number: L14040302

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
PW 133-040214	01	04/02/14					04/28/2014	26.3	28		04/28/14	.1	28	
PW 134-040214	02	04/02/14					04/28/2014	26.3	28		04/28/14	.1	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 3512271
Report generated 05/01/2014 09:24

METHOD BLANK SUMMARY

Login Number: L14040302
Blank File ID: 1LM.LM24551
Prep Date: 04/28/14 19:30
Analyzed Date: 04/28/14 21:13
Analyst: JWR

Work Group: WG473483
Blank Sample ID: WG473483-02
Instrument ID: LCMS1
Method: 6850

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
QCMRL	WG473483-07	1LM.LM24549	04/28/14 20:35	01
LCS	WG473483-03	1LM.LM24552	04/28/14 21:32	01
PW 133-040214	L14040302-01	1LM.LM24553	04/28/14 21:51	01
PW 134-040214	L14040302-02	1LM.LM24554	04/28/14 22:10	01
QCMRL	WG473483-08	1LM.LM24561	04/29/14 00:22	01
QCMRL	WG473483-09	1LM.LM24571	04/29/14 03:32	01
QCMRL	WG473483-10	1LM.LM24582	04/29/14 07:00	01
QCMRL	WG473483-11	1LM.LM24585	04/29/14 18:10	01
MCT	WG473483-01	1LM.LM24587	04/29/14 18:48	01
QCMRL	WG473483-12	1LM.LM24595	04/29/14 21:19	01

Report Name: BLANK_SUMMARY
PDF File ID: 3512272
Report generated 05/01/2014 09:24

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L14040302 Prep Date: 04/28/14 19:30 Sample ID: WG473483-02
Instrument ID: LCMS1 Run Date: 04/28/14 21:13 Prep Method: 6850
File ID: 1LM.LM24551 Analyst: JWR Method: 6850
Workgroup (AAB#): WG473483 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-18-DEC-13

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Perchlorate	0.100	0.400	0.100	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 3512273
01-MAY-2014 09:24

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L14040302 Run Date: 04/28/2014 Sample ID: WG473483-03
Instrument ID: LCMS1 Run Time: 21:32 Prep Method: 6850
File ID: 1LM.LM24552 Analyst: JWR Method: 6850
Workgroup (AAB#): WG473483 Matrix: Water Units: ug/L
QC Key: DOD4 Lot#: STD63472 Cal ID: LCMS1-18-DEC-13

Analytes	Expected	Found	% Rec	LCS Limits	Q
Perchlorate	0.200	0.205	103	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 3512274
Report generated: 05/01/2014 09:24

Login Number: L14040302 **Instrument ID:** LCMS1
Analytical Method: 6850 **Initial Calibration Date:** 18-DEC-13 19:20
ICAL Workgroup: WG456864 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
Perchlorate		1.443	2.71	1.00000	

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008
PDF File ID: 3513025
Report generated 05/01/2014 09:25

Login Number: L14040302
Analytical Method: 6850
Instrument ID: LCMS1
Initial Calibration Date: 18-DEC-13 19:20
Column ID: F

Analyte	WG456864-02			WG456864-03			WG456864-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	0.100	8410.00000	1.534	0.200	16200.0000	1.465	0.500	39200.0000	1.440

INT_CAL - Modified 03/06/2008
PDF File ID: 3513025
Report generated 05/01/2014 09:25

Login Number: L14040302
Analytical Method: 6850
Instrument ID: LCMS1
Initial Calibration Date: 18-DEC-13 19:20
Column ID: F

Analyte	WG456864-05			WG456864-06			WG456864-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	1.00	78800.0000	1.435	2.00	157000.000	1.414	5.00	393000.000	1.409

INT_CAL - Modified 03/06/2008
PDF File ID: 3513025
Report generated 05/01/2014 09:25

Login Number: L14040302
Analytical Method: 6850
Instrument ID: LCMS1
Initial Calibration Date: 18-DEC-13 19:20
Column ID: F

Analyte	WG456864-08		
	CONC	RESP	RF
Perchlorate	10.0	784000.000	1.406

INT_CAL - Modified 03/06/2008
PDF File ID: 3513025
Report generated 05/01/2014 09:25

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L14040302 Run Date: 12/18/2013 Sample ID: WG456864-09
Instrument ID: LCMS1 Run Time: 19:39 Method: 6850
File ID: 1LM.LM23238 Analyst: JWR QC Key: DOD4
ICal Workgroup: WG456864 Cal ID: LCMS1 - 18-DEC-13

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Perchlorate		1.00	0.978	ug/L	1.39	2.20	15	

* Exceeds %D Limit

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 3513026
Report generated 05/01/2014 09:25

Login Number: L14040302 Run Date: 04/28/2014 Sample ID: WG473484-01
Instrument ID: LCMS1 Run Time: 19:57 Method: 6850
File ID: 1LM.LM24547 Analyst: JWR Units: ug/L
Workgroup (AAB#): WG473483 Cal ID: LCMS1 - 18-DEC-13
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3512277
Report generated 05/01/2014 09:25

Login Number: L14040302 Run Date: 04/29/2014 Sample ID: WG473484-04
Instrument ID: LCMS1 Run Time: 00:41 Method: 6850
File ID: 1LM.LM24562 Analyst: JWR Units: ug/L
Workgroup (AAB#): WG473483 Cal ID: LCMS1 - 18-DEC-13
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3512277
Report generated 05/01/2014 09:25

Login Number: L14040302 Run Date: 04/29/2014 Sample ID: WG473484-06
Instrument ID: LCMS1 Run Time: 03:51 Method: 6850
File ID: 1LM.LM24572 Analyst: JWR Units: ug/L
Workgroup (AAB#): WG473483 Cal ID: LCMS1 - 18-DEC-13
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3512277
Report generated 05/01/2014 09:25

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number:	L14040302	Run Date:	04/29/2014	Sample ID:	WG473484-08
Instrument ID:	LCMS1	Run Time:	07:19	Method:	6850
File ID:	1LM.LM24583	Analyst:	JWR	Units:	ug/L
Workgroup (AAB#):	WG473483	Cal ID:	LCMS1 - 18-DEC-13		
Matrix:	WATER	QAPP:	DOD4		

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3512277
Report generated 05/01/2014 09:25

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number:	L14040302	**Run Date:**	04/29/2014	**Sample ID:**	WG473484-10
Instrument ID:	LCMS1	**Run Time:**	18:29	**Method:**	6850
File ID:	1LM.LM24586	**Analyst:**	JWR	**Units:**	ug/L
Workgroup (AAB#):	WG473483	**Cal ID:**	LCMS1 - 18-DEC-13		
Matrix:	WATER	**QAPP:**	DOD4		

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3512277
Report generated 05/01/2014 09:25

Login Number: L14040302 Run Date: 04/29/2014 Sample ID: WG473484-12
Instrument ID: LCMS1 Run Time: 21:38 Method: 6850
File ID: 1LM.LM24596 Analyst: JWR Units: ug/L
Workgroup (AAB#): WG473483 Cal ID: LCMS1 - 18-DEC-13
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3512277
Report generated 05/01/2014 09:25

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L14040302 **Run Date:** 04/28/2014 **Sample ID:** WG473484-02
Instrument ID: LCMS1 **Run Time:** 20:16 **Method:** 6850
File ID: 1LM.LM24548 **Analyst:** JWR **QC Key:** DOD4
Workgroup (AAB#): WG473483 **Cal ID:** LCMS1 - 18-DEC-13
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.05	ug/L	1.48	5.00	15	

*** Exceeds %D Criteria**

CCV - Modified 03/05/2008
PDF File ID: 3512276
Report generated 05/01/2014 09:25

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L14040302 **Run Date:** 04/29/2014 **Sample ID:** WG473484-03
Instrument ID: LCMS1 **Run Time:** 00:03 **Method:** 6850
File ID: 1LM.LM24560 **Analyst:** JWR **QC Key:** DOD4
Workgroup (AAB#): WG473483 **Cal ID:** LCMS1 - 18-DEC-13
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.02	ug/L	1.45	2.00	15	

*** Exceeds %D Criteria**

CCV - Modified 03/05/2008
PDF File ID: 3512276
Report generated 05/01/2014 09:25

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L14040302 **Run Date:** 04/29/2014 **Sample ID:** WG473484-05
Instrument ID: LCMS1 **Run Time:** 03:13 **Method:** 6850
File ID: 1LM.LM24570 **Analyst:** JWR **QC Key:** DOD4
Workgroup (AAB#): WG473483 **Cal ID:** LCMS1 - 18-DEC-13
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.00	ug/L	1.43	0	15	

*** Exceeds %D Criteria**

CCV - Modified 03/05/2008
PDF File ID: 3512276
Report generated 05/01/2014 09:25

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L14040302 **Run Date:** 04/29/2014 **Sample ID:** WG473484-07
Instrument ID: LCMS1 **Run Time:** 06:41 **Method:** 6850
File ID: 1LM.LM24581 **Analyst:** JWR **QC Key:** DOD4
Workgroup (AAB#): WG473483 **Cal ID:** LCMS1 - 18-DEC-13
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	0.989	ug/L	1.40	1.10	15	

*** Exceeds %D Criteria**

CCV - Modified 03/05/2008
PDF File ID: 3512276
Report generated 05/01/2014 09:25

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L14040302 **Run Date:** 04/29/2014 **Sample ID:** WG473484-09
Instrument ID: LCMS1 **Run Time:** 17:51 **Method:** 6850
File ID: 1LM.LM24584 **Analyst:** JWR **QC Key:** DOD4
Workgroup (AAB#): WG473483 **Cal ID:** LCMS1 - 18-DEC-13
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.03	ug/L	1.46	3.00	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 3512276
Report generated 05/01/2014 09:25

Login Number: L14040302 Run Date: 04/29/2014 Sample ID: WG473484-11
Instrument ID: LCMS1 Run Time: 21:00 Method: 6850
File ID: 1LM.LM24594 Analyst: JWR QC Key: DOD4
Workgroup (AAB#): WG473483 Cal ID: LCMS1 - 18-DEC-13
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	0.967	ug/L	1.37	3.30	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 3512276
Report generated 05/01/2014 09:25

Login Number: L14040302 Run Date: 04/28/2014 Sample ID: WG473483-07
Instrument ID: LCMS1 Run Time: 20:35 Prep Method: 6850
File ID: 1LM.LM24549 Analyst: JWR Method: 6850
Workgroup (AAB#): WG473483 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-18-DEC-13

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.225	113	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3512275
Report generated 05/01/2014 09:25

Login Number: L14040302 Run Date: 04/29/2014 Sample ID: WG473483-08
Instrument ID: LCMS1 Run Time: 00:22 Prep Method: 6850
File ID: 1LM.LM24561 Analyst: JWR Method: 6850
Workgroup (AAB#): WG473483 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-18-DEC-13

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.191	95.5	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3512275
Report generated 05/01/2014 09:25

Login Number: L14040302 Run Date: 04/29/2014 Sample ID: WG473483-09
Instrument ID: LCMS1 Run Time: 03:32 Prep Method: 6850
File ID: 1LM.LM24571 Analyst: JWR Method: 6850
Workgroup (AAB#): WG473483 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-18-DEC-13

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.193	96.5	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3512275
Report generated 05/01/2014 09:25

Login Number: L14040302 Run Date: 04/29/2014 Sample ID: WG473483-10
Instrument ID: LCMS1 Run Time: 07:00 Prep Method: 6850
File ID: 1LM.LM24582 Analyst: JWR Method: 6850
Workgroup (AAB#): WG473483 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-18-DEC-13

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.211	106	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3512275
Report generated 05/01/2014 09:25

Login Number: L14040302 Run Date: 04/29/2014 Sample ID: WG473483-11
Instrument ID: LCMS1 Run Time: 18:10 Prep Method: 6850
File ID: 1LM.LM24585 Analyst: JWR Method: 6850
Workgroup (AAB#): WG473483 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-18-DEC-13

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.193	96.5	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3512275
Report generated 05/01/2014 09:25

Login Number: L14040302 Run Date: 04/29/2014 Sample ID: WG473483-12
Instrument ID: LCMS1 Run Time: 21:19 Prep Method: 6850
File ID: 1LM.LM24595 Analyst: JWR Method: 6850
Workgroup (AAB#): WG473483 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-18-DEC-13

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.172	86.0	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3512275
Report generated 05/01/2014 09:25

Microbac Laboratories Inc.
INTERNAL STANDARD AREA SUMMARY
(COMPARED TO AVERAGE OF ICAL)

Login Number: L14040302
Instrument ID: LCMS1
Workgroup (AAB#): WG473483

ICAL CCV Number: WG456864-05
CAL ID: LCMS1-18-DEC-13
Matrix: WATER

Sample Number	Dilution	Tag	IS-1
WG456864	NA	NA	276000
Upper Limit	NA	NA	414000
Lower Limit	NA	NA	138000
L14040302-01	1.00	01	229000
L14040302-02	1.00	01	229000
WG473483-02	1.00	01	222000
WG473483-03	1.00	01	227000

IS-1 - O18LP

Underline = Response outside limits

INTERNAL_STD_AVG_ICAL - Modified 03/10/2010
PDF File ID: 3512278
Report generated 05/01/2014 09:25

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**	6850	**Samplenum:**	L14040302-01
Instrument:	LCMS1	**Prep Date:**	04/28/2014 19:30	**File ID:**	1LM.LM24553
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/28/2014 21:51	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	64400	19900	3.24	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**	6850	**Samplenum:**	L14040302-02
Instrument:	LCMS1	**Prep Date:**	04/28/2014 19:30	**File ID:**	1LM.LM24554
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/28/2014 22:10	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	56200	18400	3.05	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG456864-02
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23231
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	12/18/2013 17:26	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	8410	2790	3.01	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG456864-03
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23232
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	12/18/2013 17:45	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	16200	5210	3.11	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG456864-04
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23233
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	12/18/2013 18:04	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	39200	12700	3.09	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG456864-05
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23234
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	12/18/2013 18:23	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	78800	25700	3.07	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG456864-06
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23235
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	12/18/2013 18:42	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	157000	51500	3.05	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG456864-07
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23236
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	12/18/2013 19:01	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	393000	129000	3.05	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG456864-08
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23237
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	12/18/2013 19:20	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	784000	253000	3.10	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG456864-09
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM23238
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	12/18/2013 19:39	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	81000	26800	3.02	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**	6850	**Samplenum:**	WG473483-01
Instrument:	LCMS1	**Prep Date:**	04/28/2014 19:30	**File ID:**	1LM.LM24587
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/29/2014 18:48	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	13500	4610	2.93	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**	6850	**Samplenum:**	WG473483-02
Instrument:	LCMS1	**Prep Date:**	04/28/2014 19:30	**File ID:**	1LM.LM24551
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/28/2014 21:13	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	0.000	269	0.000	2.3	3.8	*

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**	6850	**Samplenum:**	WG473483-03
Instrument:	LCMS1	**Prep Date:**	04/28/2014 19:30	**File ID:**	1LM.LM24552
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/28/2014 21:32	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	13700	4730	2.90	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**	6850	**Samplenum:**	WG473483-07
Instrument:	LCMS1	**Prep Date:**	04/28/2014 19:30	**File ID:**	1LM.LM24549
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/28/2014 20:35	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	15400	4550	3.38	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**	6850	**Samplenum:**	WG473483-08
Instrument:	LCMS1	**Prep Date:**	04/28/2014 19:30	**File ID:**	1LM.LM24561
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/29/2014 00:22	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	14400	4840	2.98	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**	6850	**Samplenum:**	WG473483-09
Instrument:	LCMS1	**Prep Date:**	04/28/2014 19:30	**File ID:**	1LM.LM24571
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/29/2014 03:32	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	13900	4910	2.83	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**	6850	**Samplenum:**	WG473483-10
Instrument:	LCMS1	**Prep Date:**	04/28/2014 19:30	**File ID:**	1LM.LM24582
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/29/2014 07:00	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	14900	4270	3.49	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**	6850	**Samplenum:**	WG473483-11
Instrument:	LCMS1	**Prep Date:**	04/28/2014 19:30	**File ID:**	1LM.LM24585
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/29/2014 18:10	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	13000	4620	2.81	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**	6850	**Samplenum:**	WG473483-12
Instrument:	LCMS1	**Prep Date:**	04/28/2014 19:30	**File ID:**	1LM.LM24595
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/29/2014 21:19	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	11900	4570	2.60	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG473484-01
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24547
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/28/2014 19:57	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	0.000	259	0.000	2.3	3.8	*

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG473484-02
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24548
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/28/2014 20:16	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	66300	21600	3.07	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG473484-03
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24560
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/29/2014 00:03	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	66600	21900	3.04	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG473484-04
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24562
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/29/2014 00:41	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	633	308	2.06	2.3	3.8	*

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG473484-05
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24570
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/29/2014 03:13	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	67000	21700	3.09	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG473484-06
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24572
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/29/2014 03:51	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	0.000	0.000	0.000	2.3	3.8	*

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG473484-07
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24581
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/29/2014 06:41	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	67300	22600	2.98	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG473484-08
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24583
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/29/2014 07:19	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	701	0.000	0.000	2.3	3.8	*

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG473484-09
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24584
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/29/2014 17:51	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	66200	23300	2.84	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG473484-10
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24586
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/29/2014 18:29	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	455	170	2.68	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG473484-11
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24594
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/29/2014 21:00	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	62800	21500	2.92	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14040302	**Prep Method:**		**Samplenum:**	WG473484-12
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM24596
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG473483	**Analysis Date:**	04/29/2014 21:38	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	1690	134	12.6	2.3	3.8	*

2.1.1.3 Sample Data

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Printed: 4/30/2014 7:00 PM

Data File	LM24553.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/28/2014 9:51:21 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

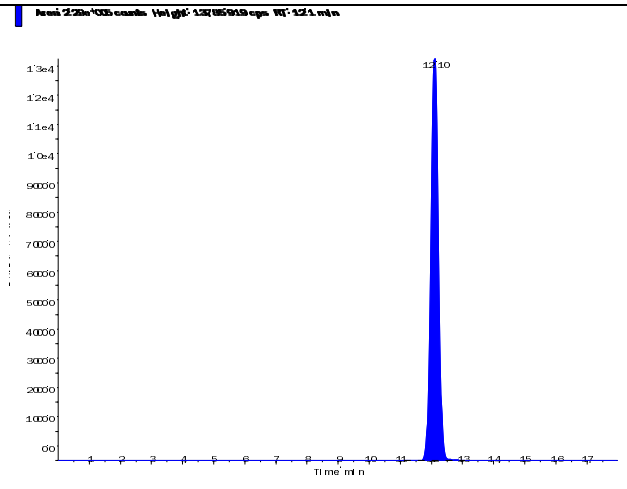
Sample Name	L14040302-01	**Injection Vial**	7.00
Data File	LM24553.wiff	**Injection Volume**	10.00
Acquisition Date	4/28/2014 9:51:21 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	L14040302-01	**Dilution Factor**	1.00
Sample Comment	1,1 (Hist)	**Weight to Volume**	0.00

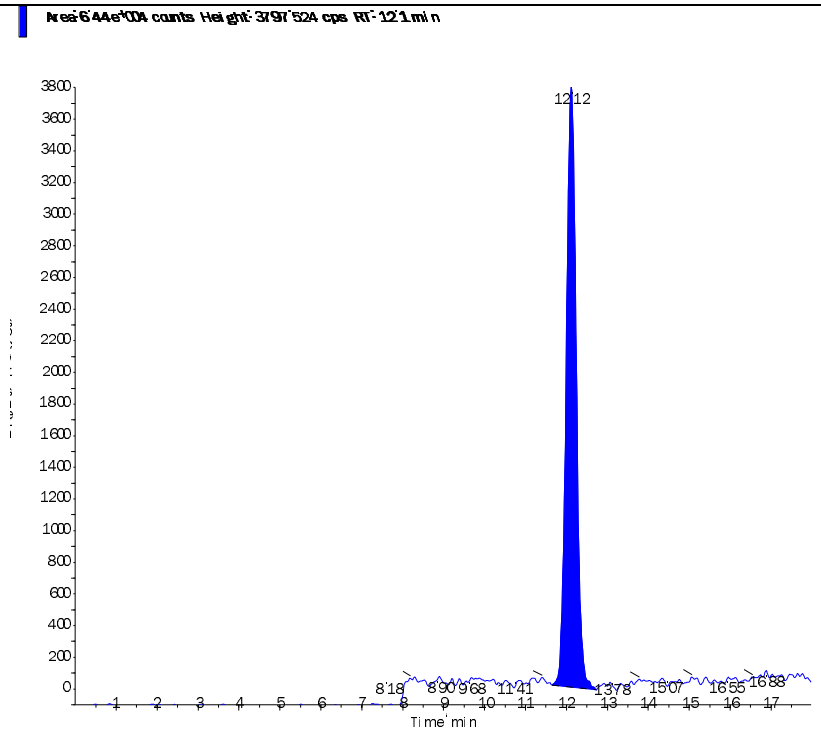
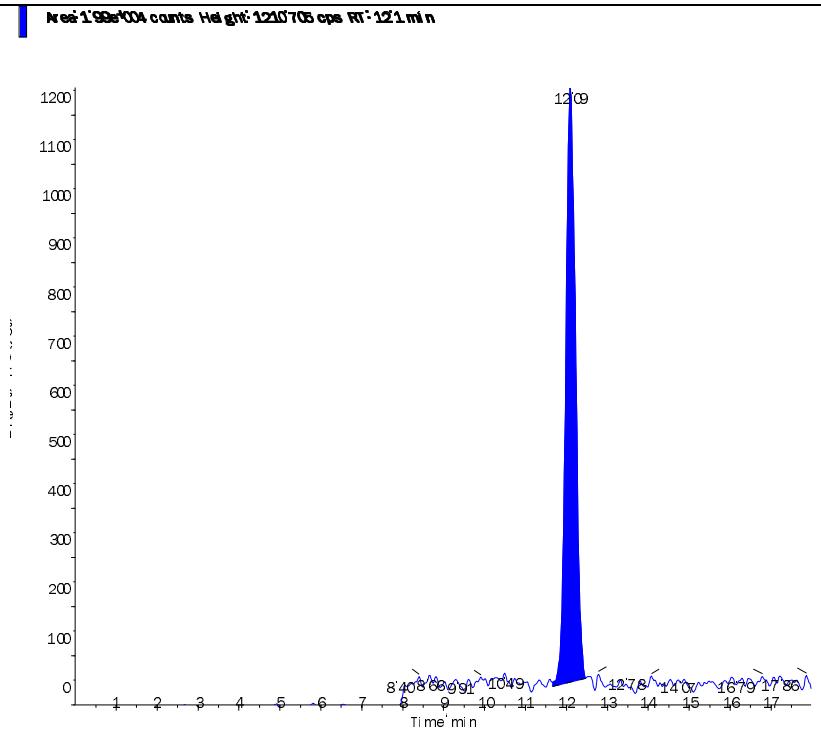
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.290e+05	12.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	6.440e+04	12.10	N/A	0.988
Perchlorate conf	1.990e+04	12.10	N/A	0.939

O18LP (Internal Standard)

RT (Exp. RT): 12.10(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 12.10 (13.40) min Calculated conc: 0.988 ng/ml Area Ratio: 0.281 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 12.10 (13.40) min Calculated conc: 0.939 ng/ml Area Ratio: 0.087 Sample Type: (Unknown)	

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Printed: 4/30/2014 7:00 PM

Data File	LM24554.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/28/2014 10:10:20 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

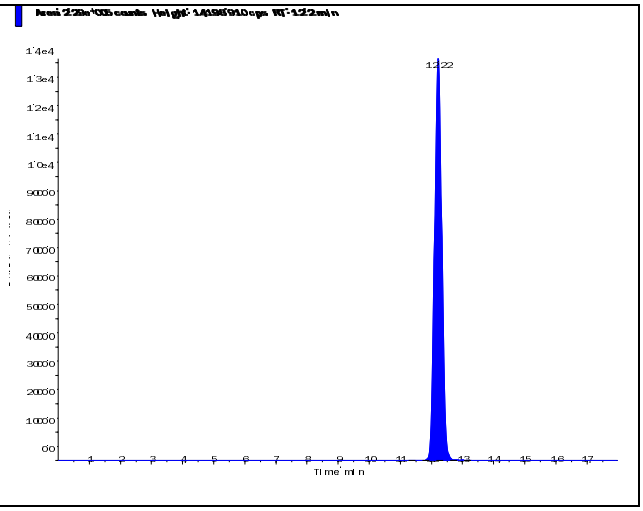
Sample Name	L14040302-02	**Injection Vial**	8.00
Data File	LM24554.wiff	**Injection Volume**	10.00
Acquisition Date	4/28/2014 10:10:20 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	L14040302-02	**Dilution Factor**	1.00
Sample Comment	1,1 (Hist)	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.290e+05	12.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	5.620e+04	12.20	N/A	0.863
Perchlorate conf	1.840e+04	12.20	N/A	0.866

O18LP (Internal Standard)

RT (Exp. RT): 12.20(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



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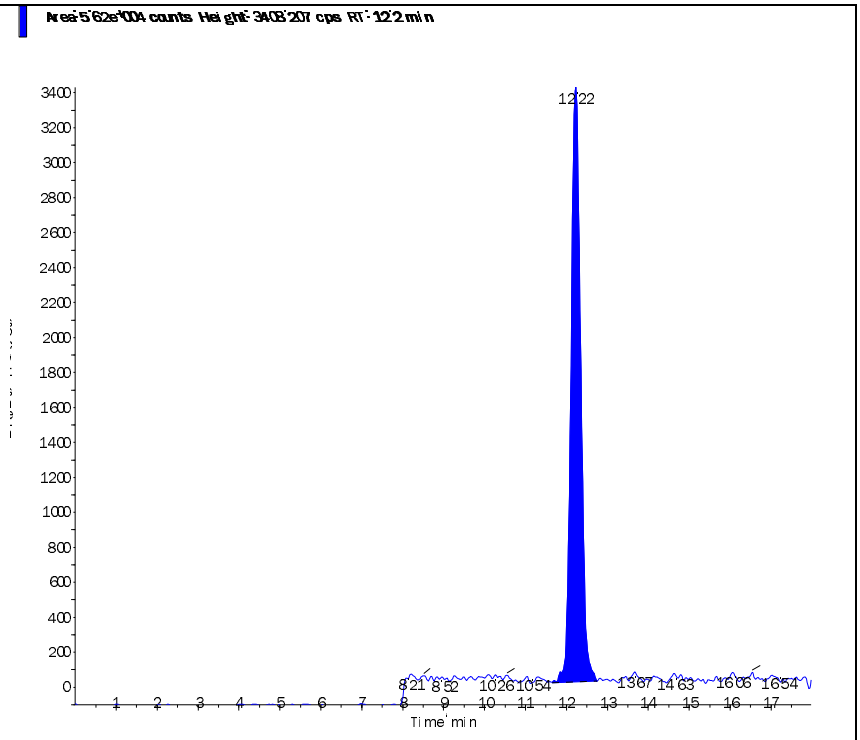
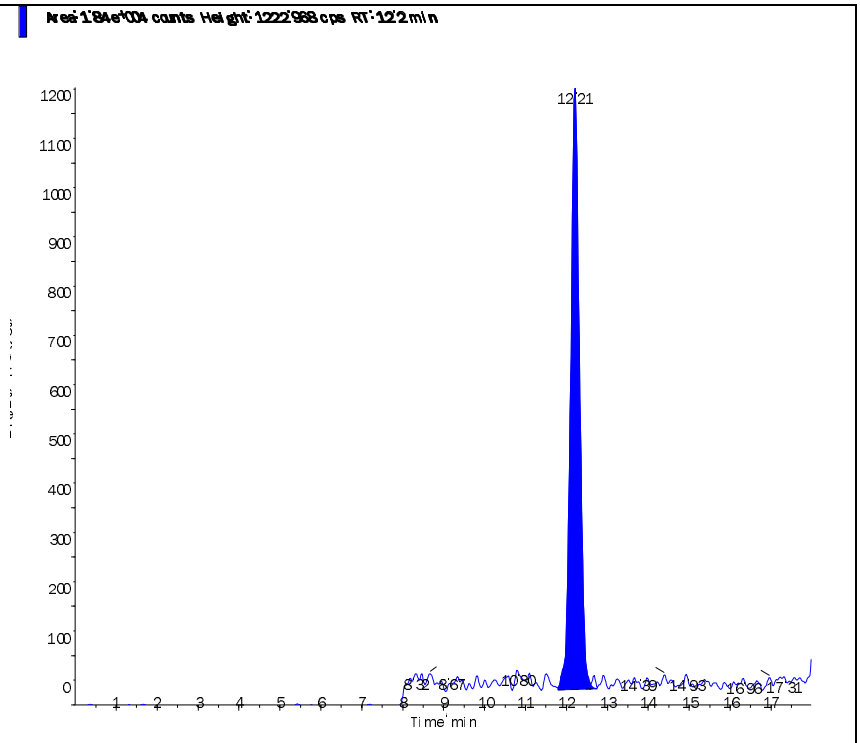
Created with Analyst Reporter
Printed: 4/30/2014 7:00 PM

Perchlorate (98.8/83.3 amu) RT (Exp. RT): 12.20 (13.40) min Calculated conc: 0.863 ng/ml Area Ratio: 0.245 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 12.20 (13.40) min Calculated conc: 0.866 ng/ml Area Ratio: 0.08 Sample Type: (Unknown)	

2.1.1.4 Standards Data

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Data File	LM23230.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	12/18/2013 5:07:55 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

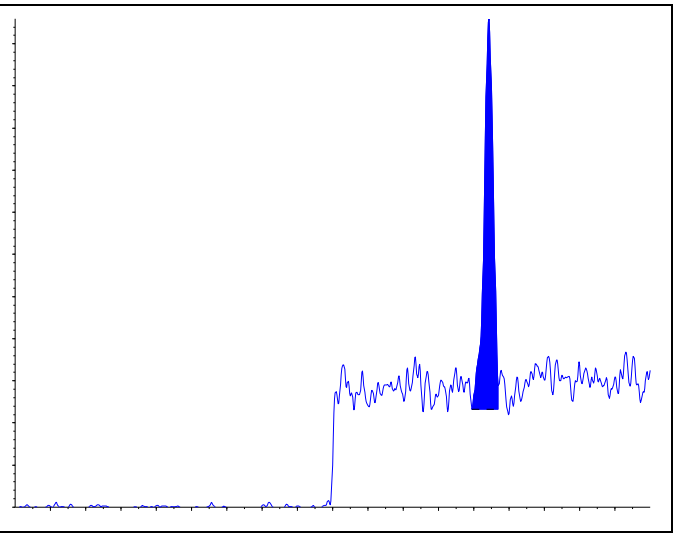
Sample Name	WG456864-01 CCB	**Injection Vial**	1.00
Data File	LM23230.wiff	**Injection Volume**	10.00
Acquisition Date	12/18/2013 5:07:55 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG456864-01	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.690e+05	13.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.350e+02	13.30	N/A	< 0
Perchlorate conf	1.420e+02	13.50	N/A	< 0

O18LP (Internal Standard)

RT (Exp. RT): 13.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



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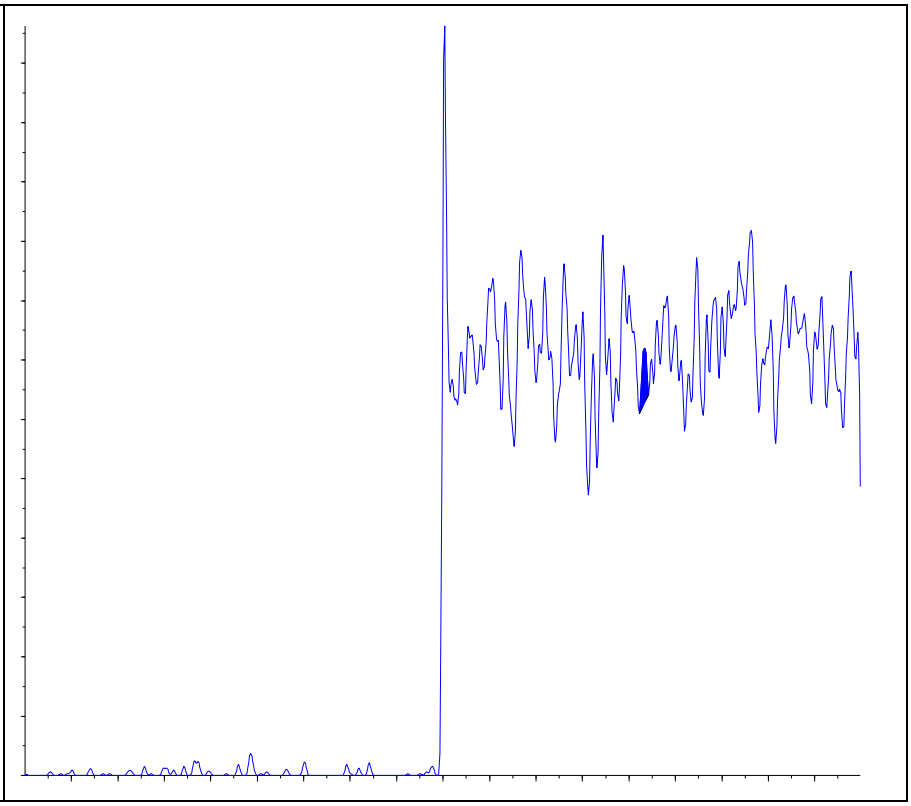
Created with Analyst Reporter
Printed: 4/30/2014 6:56 PM

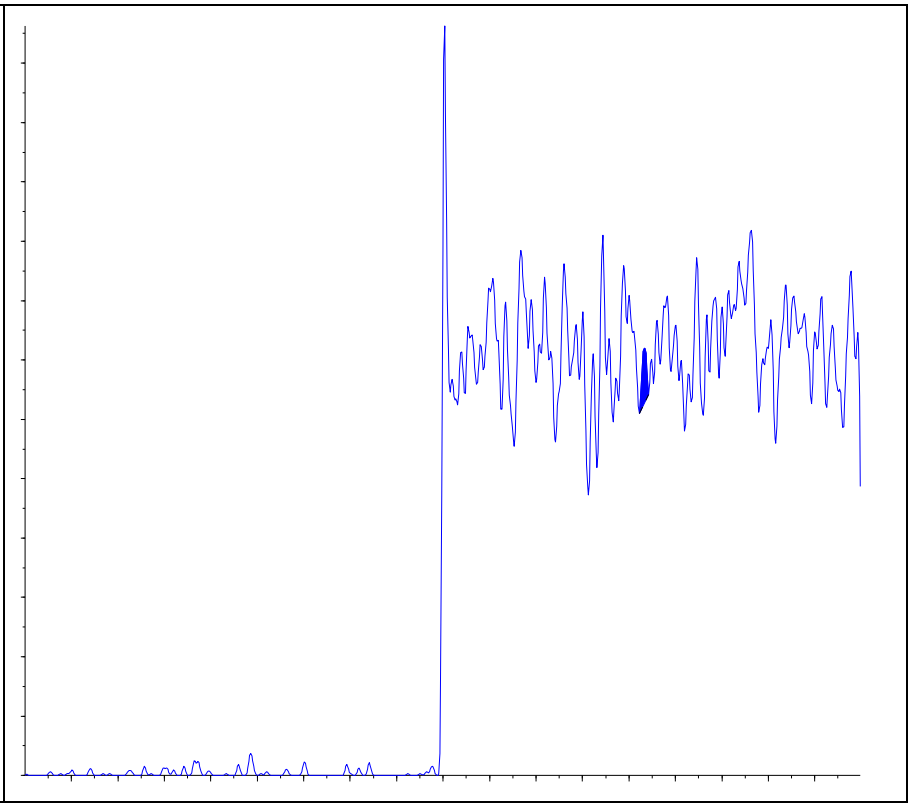
Perchlorate (98.8/83.3 amu)

RT (Exp. RT):	13.30 (13.40) min
Calculated conc:	< 0 ng/ml
Area Ratio:	0.001
Sample Type:	(Unknown)



Perchlorate conf (100.8/85.2 amu)

RT (Exp. RT):	13.50 (13.40) min
Calculated conc:	< 0 ng/ml
Area Ratio:	0.001
Sample Type:	(Unknown)



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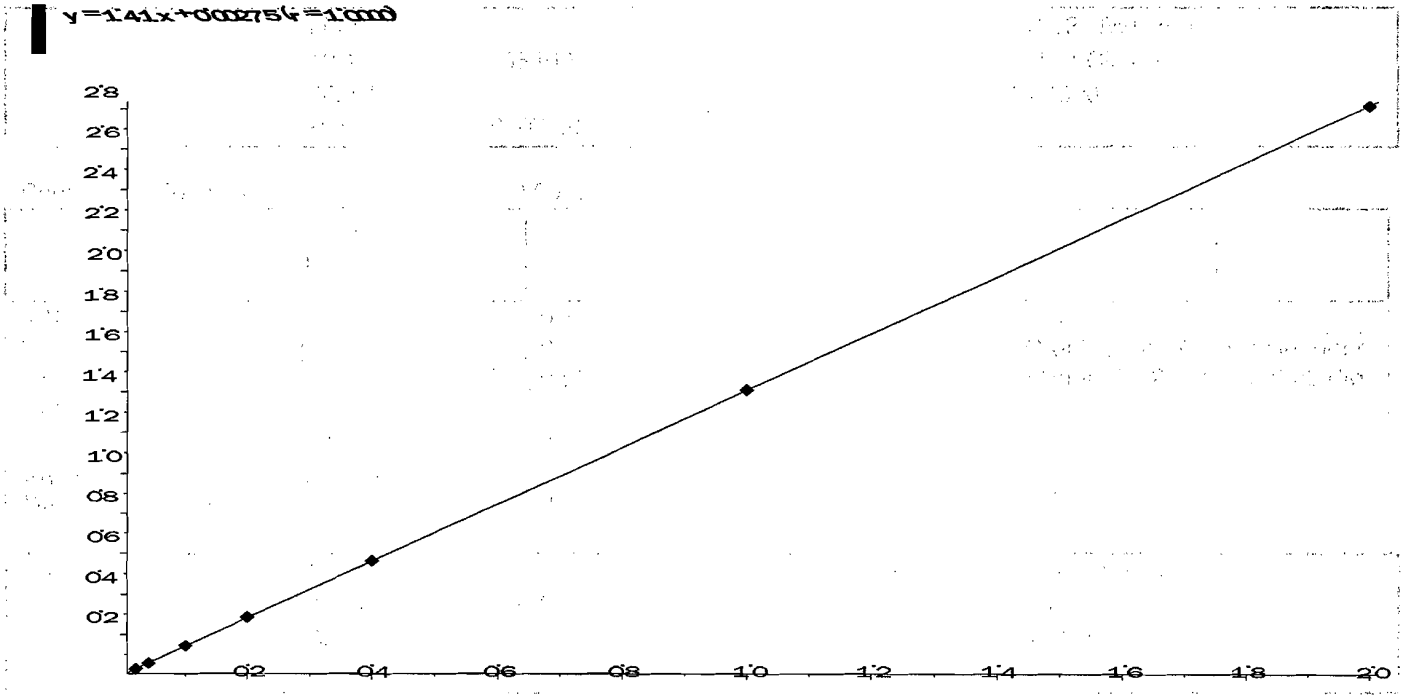
Created with Analyst Reporter
Printed: 12/19/2013 6:20 PM

Analyte Name: **Perchlorate**
Internal Standard: O18LP

Data File	LM23230.wiff	**Result Table**	121813_JWR.rdb
Acquisition Date	12/18/2013 5:07:55 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

Regression Equation: y = 1.41 x + 0.00275 (r = 1.0000)

Expected Concentration	Number of Values	Mean Calculated Concentration	% Accuracy	Std. Deviation	%CV
0.10	1	0.10	99.3	N/A	N/A
0.20	1	0.20	99.3	N/A	N/A
0.50	1	0.50	100.4	N/A	N/A
1.00	1	1.01	101.1	N/A	N/A
2.00	1	2.00	100.0	N/A	N/A
5.00	1	5.00	100.0	N/A	N/A
10.00	1	9.99	99.9	N/A	N/A



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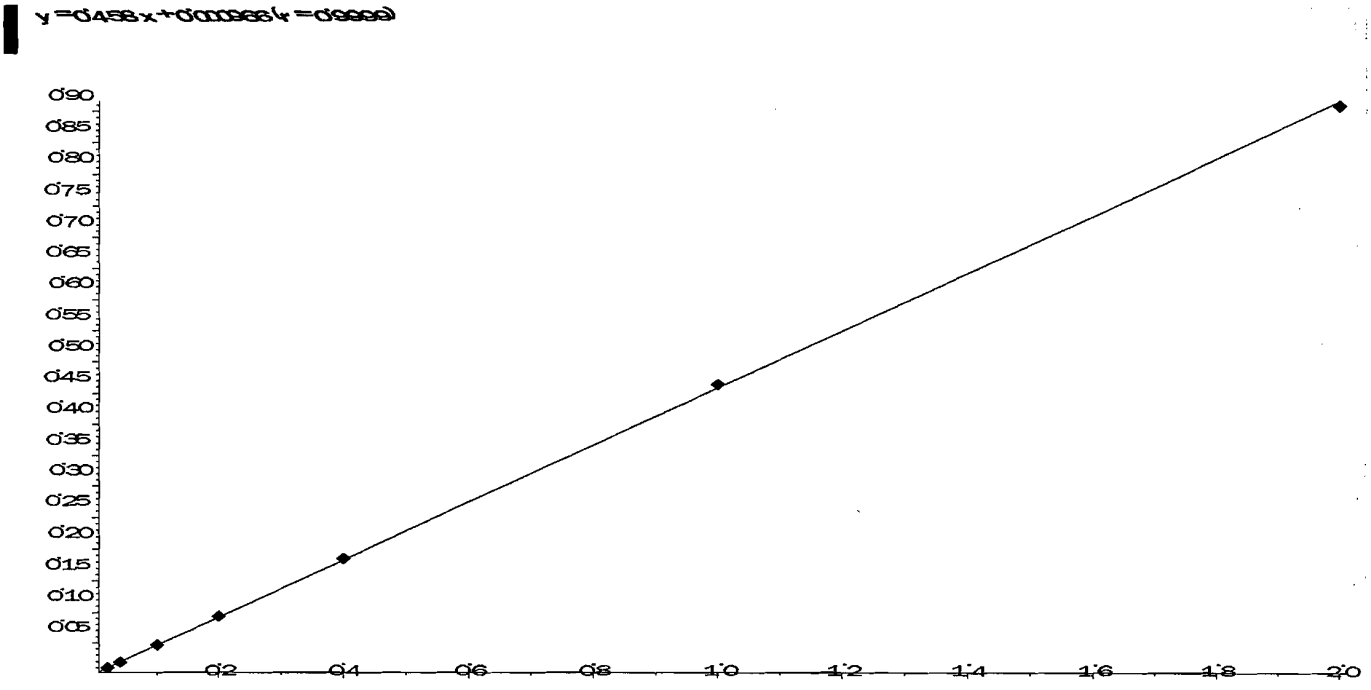
Created with Analyst Reporter
Printed: 12/19/2013 6:20 PM

Analyte Name: **Perchlorate conf**
Internal Standard: O18LP

Data File	LM23230.wiff	**Result Table**	121813_JWR.rdb
Acquisition Date	12/18/2013 5:07:55 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

Regression Equation: y = 0.458 x + 0.000966 (r = 0.9999)

Expected Concentration	Number of Values	Mean Calculated Concentration	% Accuracy	Std. Deviation	%CV
0.10	1	0.10	100.5	N/A	N/A
0.20	1	0.20	97.6	N/A	N/A
0.50	1	0.50	99.5	N/A	N/A
1.00	1	1.01	101.2	N/A	N/A
2.00	1	2.02	100.8	N/A	N/A
5.00	1	5.06	101.2	N/A	N/A
10.00	1	9.92	99.2	N/A	N/A



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Created with Analyst Reporter
Printed: 4/30/2014 6:56 PM

Data File	LM23231.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	12/18/2013 5:26:51 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

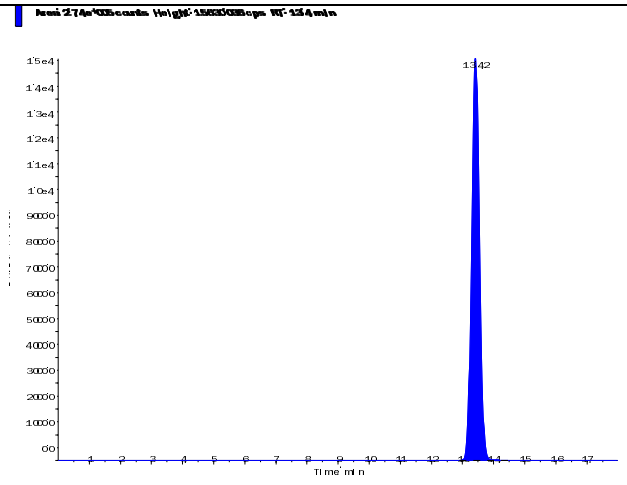
Sample Name	WG456864-02 STD (0.1 ug/L)	**Injection Vial**	2.00
Data File	LM23231.wiff	**Injection Volume**	10.00
Acquisition Date	12/18/2013 5:26:51 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG456864-02	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

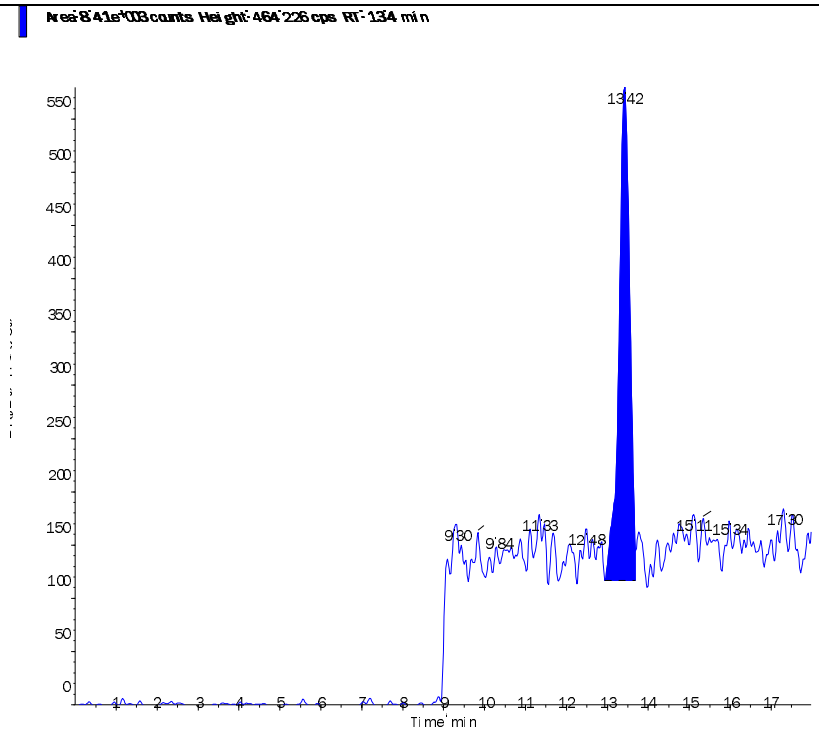
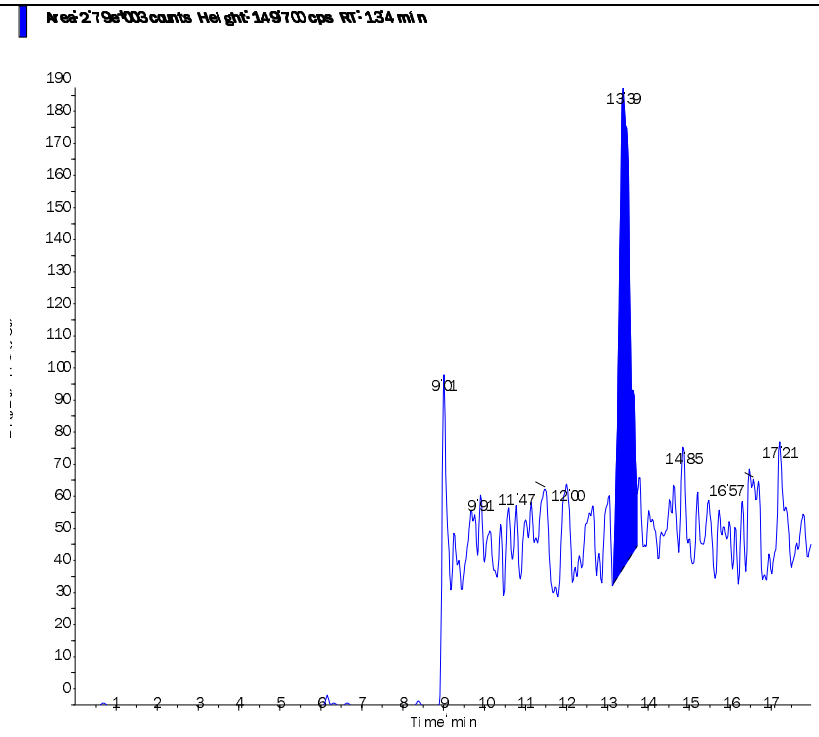
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.740e+05	13.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	8.410e+03	13.40	0.10	0.0993
Perchlorate conf	2.790e+03	13.40	0.10	0.101

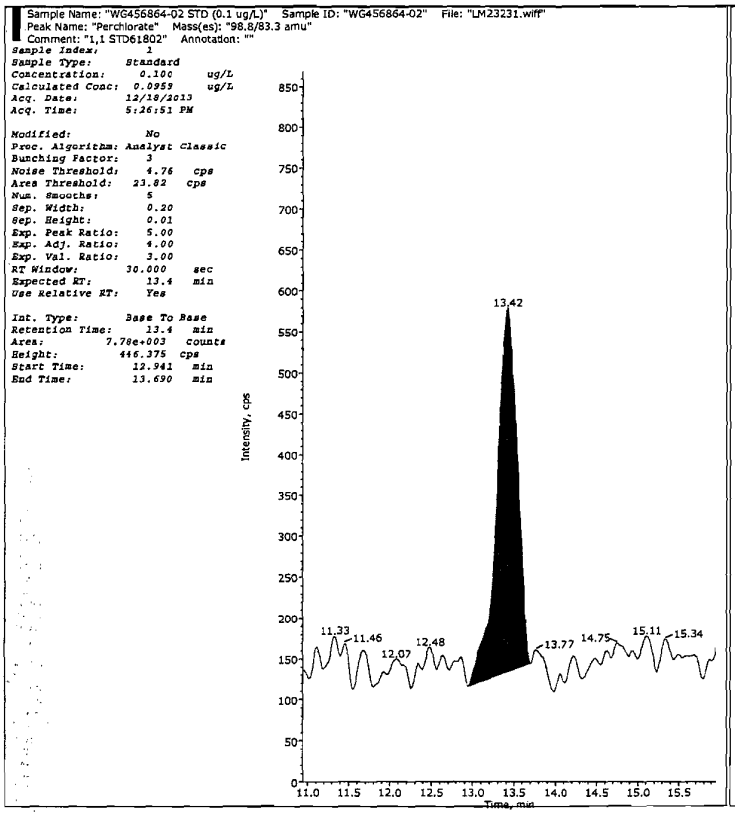
O18LP (Internal Standard)

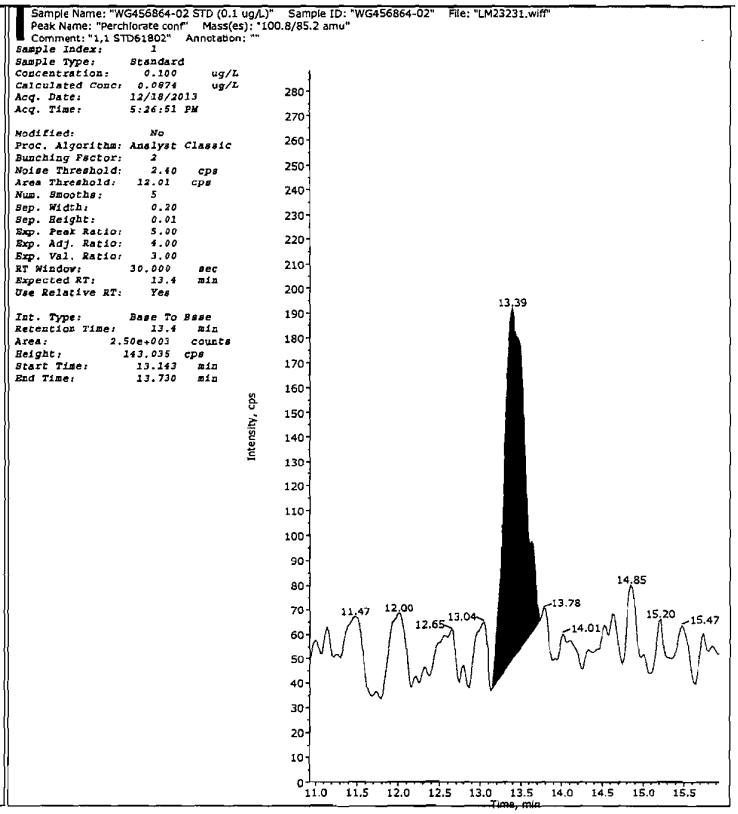
RT (Exp. RT): 13.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 0.0993 ng/ml Area Ratio: 0.031 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 0.101 ng/ml Area Ratio: 0.01 Sample Type: (Standard)	

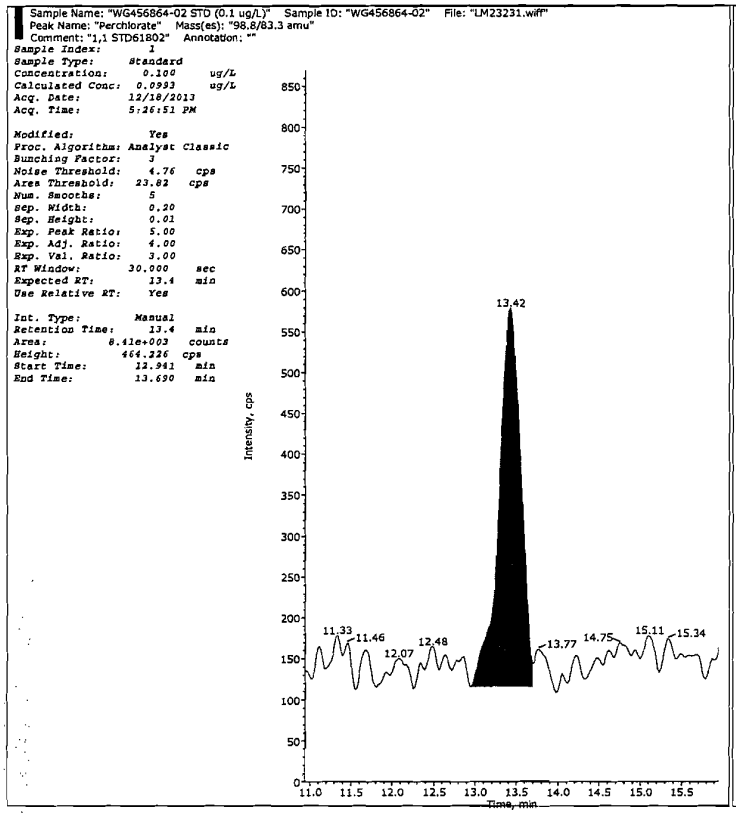
Printing Time: 11:12:16 AM
Printing Date: Thursday, December 19, 2013

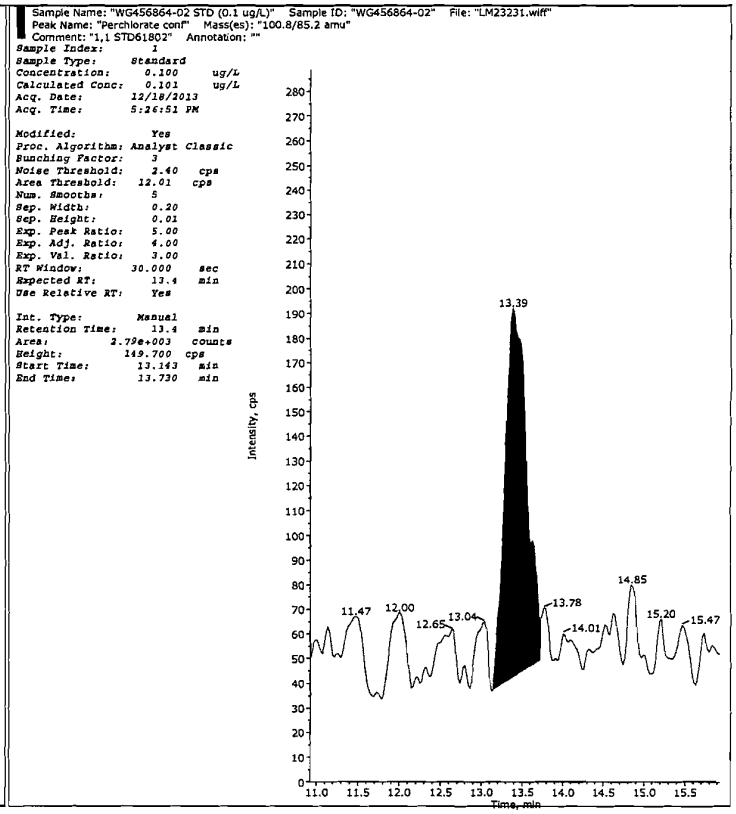




Collected by: N/A
Electronic Signature: no
Operator: lcms1

Printing Time: 11:19:41 AM
Printing Date: Thursday, December 19, 2013





#4
SWR 12/19/13
pdw 12/20/13

Collected by: N/A
Electronic Signature: no
Operator: lcms1

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Created with Analyst Reporter
Printed: 4/30/2014 6:56 PM

Data File	LM23232.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	12/18/2013 5:45:47 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

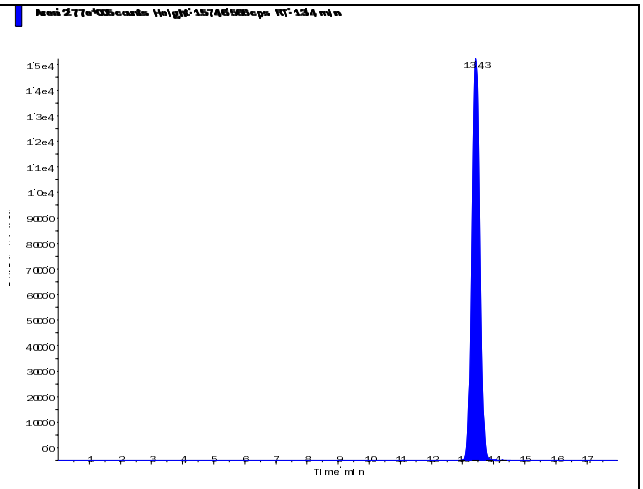
Sample Name	WG456864-03 STD (0.2 ug/L)	**Injection Vial**	3.00
Data File	LM23232.wiff	**Injection Volume**	10.00
Acquisition Date	12/18/2013 5:45:47 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG456864-03	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.770e+05	13.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.620e+04	13.40	0.20	0.199
Perchlorate conf	5.210e+03	13.40	0.20	0.195

O18LP (Internal Standard)

RT (Exp. RT): 13.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



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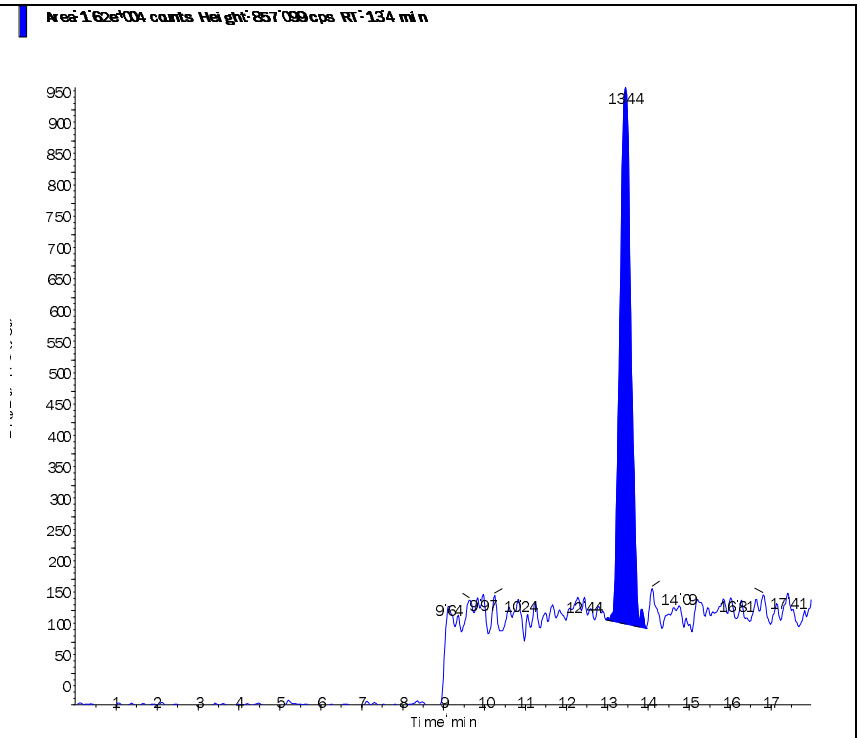
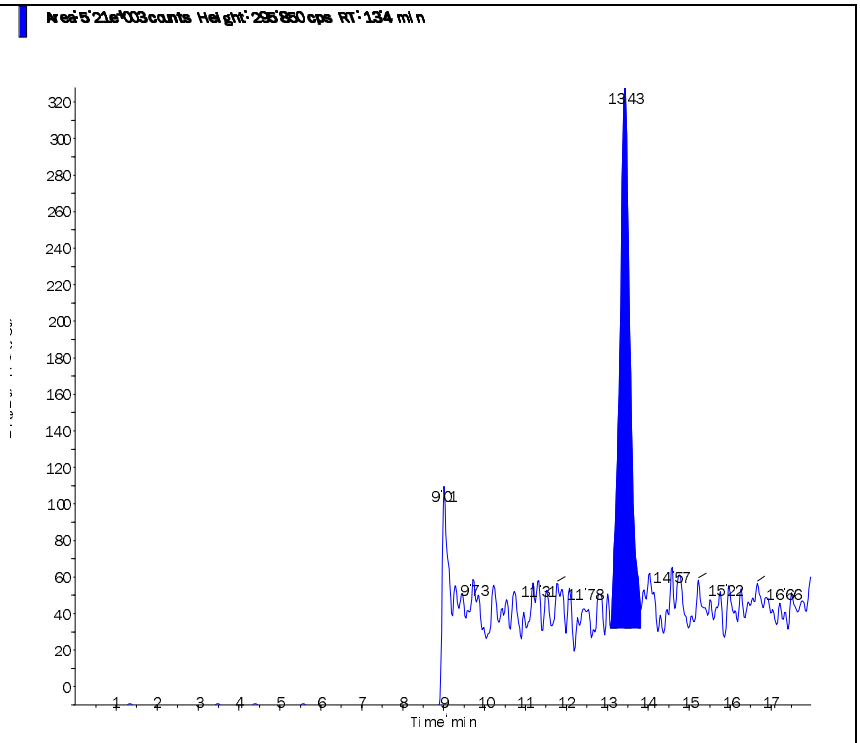
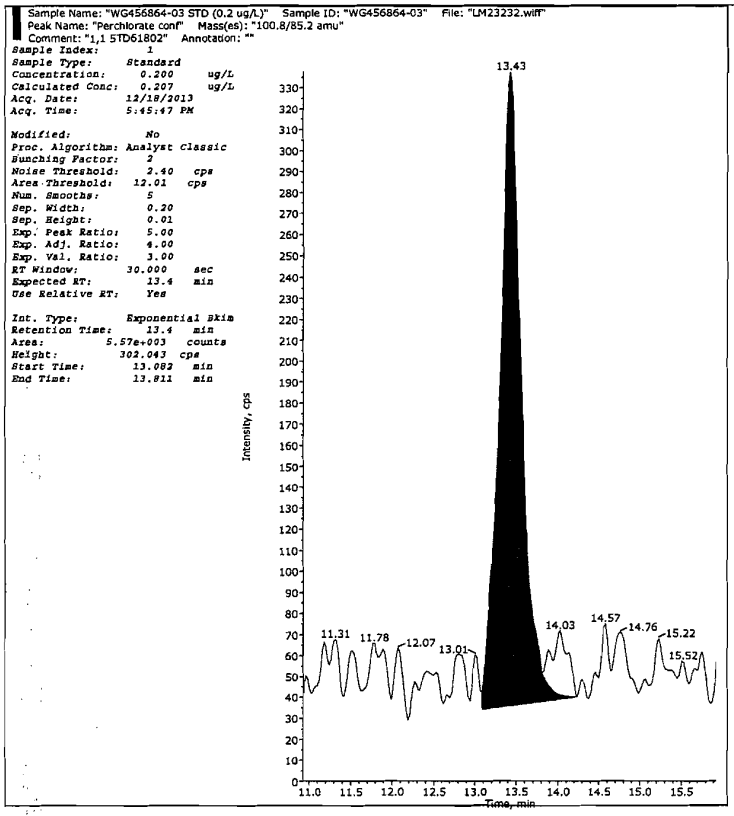
Created with Analyst Reporter
Printed: 4/30/2014 6:56 PM

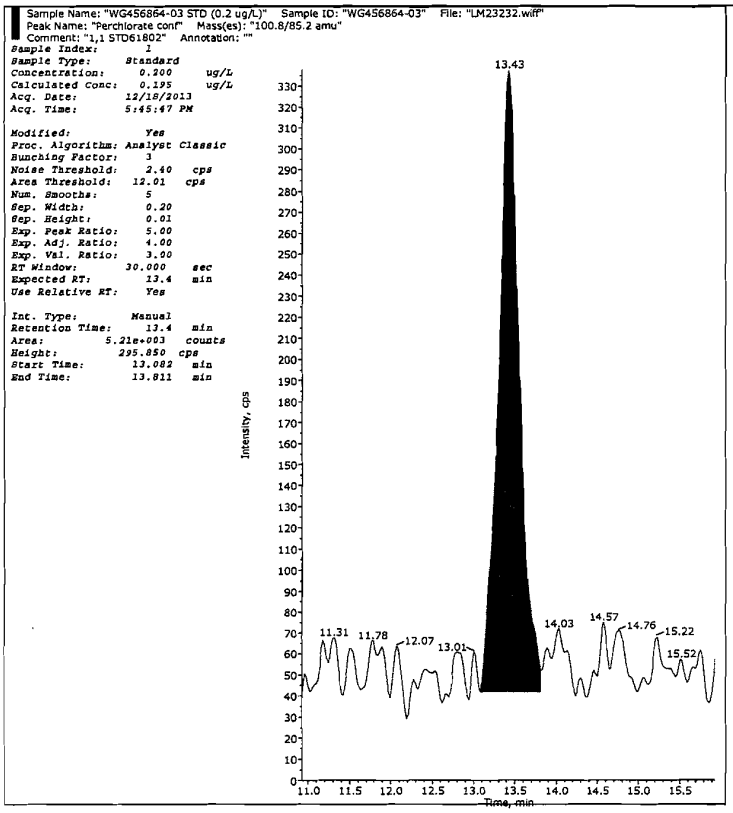
Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 0.199 ng/ml Area Ratio: 0.059 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 0.195 ng/ml Area Ratio: 0.019 Sample Type: (Standard)	

Printing Time: 11:14:10 AM
Printing Date: Thursday, December 19, 2013



Collected by: N/A
Electronic Signature: no
Operator: lcms1

Printing Time: 11:20:28 AM
Printing Date: Thursday, December 19, 2013



#4
JWR 12/19/13
mlc 12/20/13

Collected by: N/A
Electronic Signature: no
Operator: lcms1

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Created with Analyst Reporter
Printed: 4/30/2014 6:57 PM

Data File	LM23233.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	12/18/2013 6:04:43 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

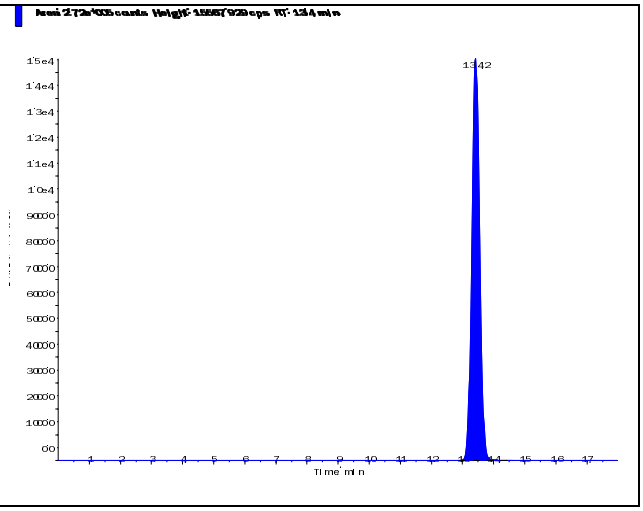
Sample Name	WG456864-04 STD (0.5 ug/L)	**Injection Vial**	4.00
Data File	LM23233.wiff	**Injection Volume**	10.00
Acquisition Date	12/18/2013 6:04:43 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG456864-04	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

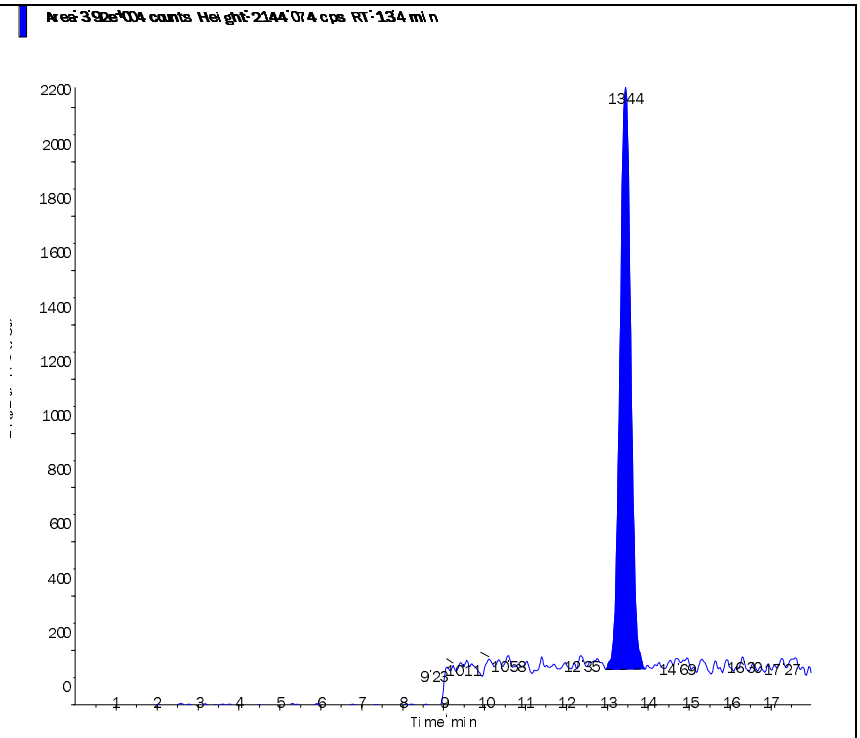
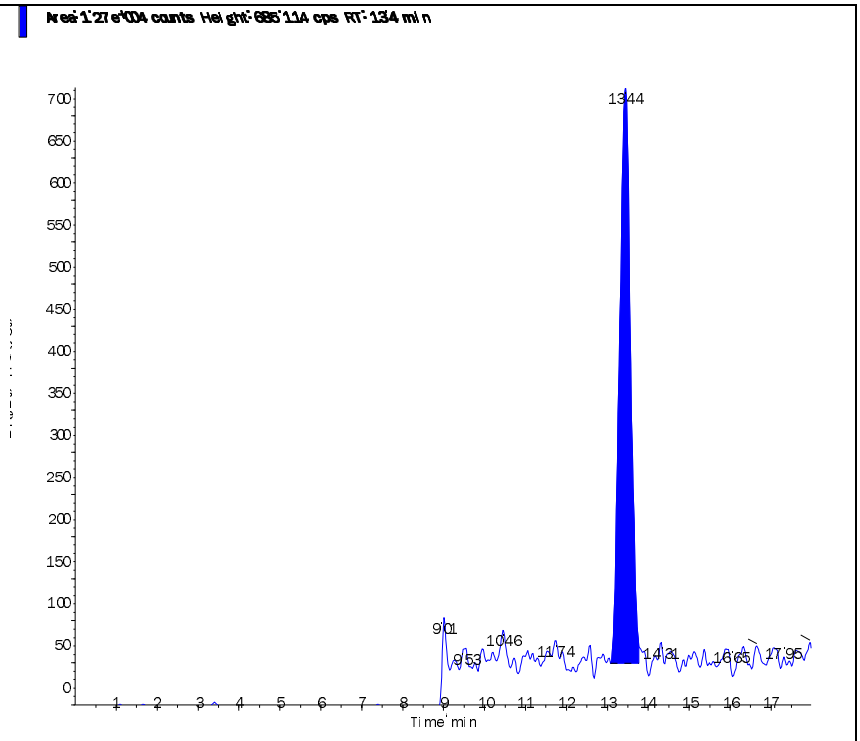
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.720e+05	13.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	3.920e+04	13.40	0.50	0.502
Perchlorate conf	1.270e+04	13.40	0.50	0.497

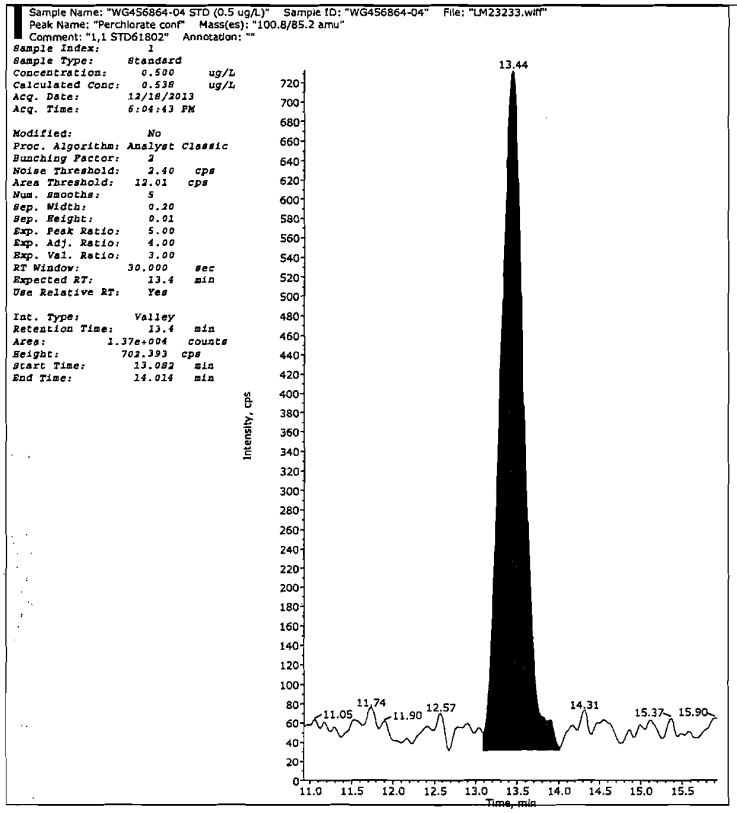
O18LP (Internal Standard)

RT (Exp. RT): 13.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



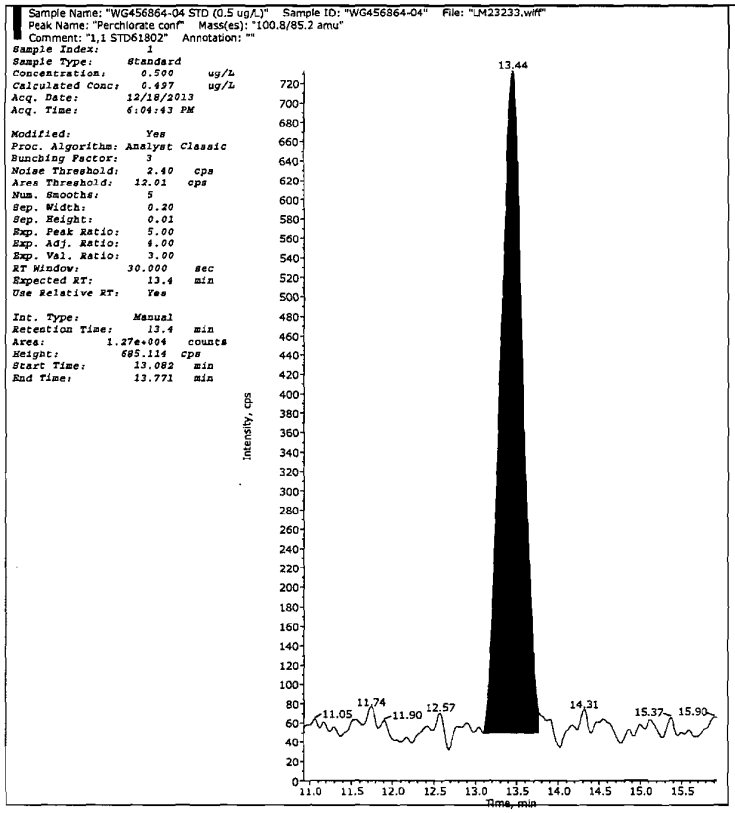
Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 0.502 ng/ml Area Ratio: 0.144 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 0.497 ng/ml Area Ratio: 0.047 Sample Type: (Standard)	

Printing Time: 11:30:08 AM
Printing Date: Thursday, December 19, 2013



Collected by: N/A
Electronic Signature: no
Operator: lcms1

Printing Time: 11:32:22 AM
Printing Date: Thursday, December 19, 2013



#4
JWR 12/19/13
mlc 12/20/13

Collected by: N/A
Electronic Signature: no
Operator: lcms1

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Created with Analyst Reporter
Printed: 4/30/2014 6:57 PM

Data File	LM23234.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	12/18/2013 6:23:41 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

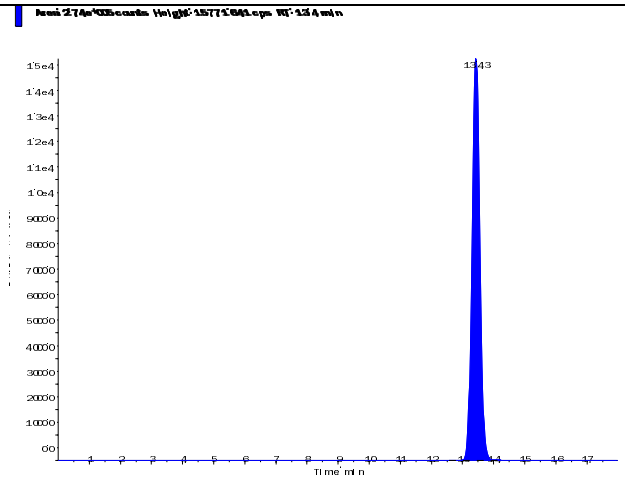
Sample Name	WG456864-05 STD (1.0 ug/L)	**Injection Vial**	5.00
Data File	LM23234.wiff	**Injection Volume**	10.00
Acquisition Date	12/18/2013 6:23:41 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG456864-05	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

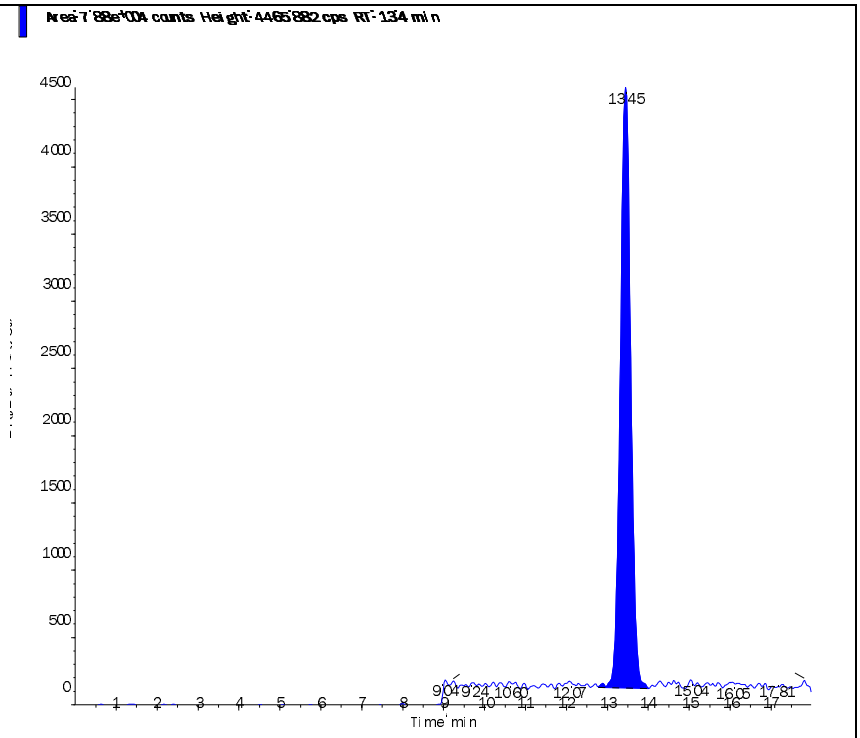
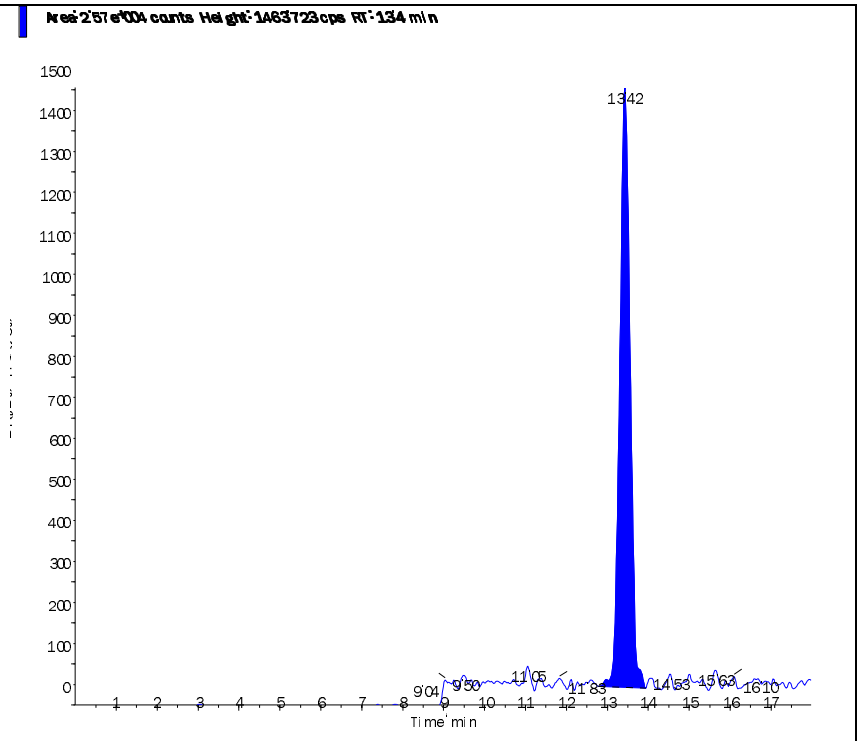
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.740e+05	13.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.880e+04	13.40	1.00	1.01
Perchlorate conf	2.570e+04	13.40	1.00	1.01

O18LP (Internal Standard)

RT (Exp. RT): 13.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 1.01 ng/ml Area Ratio: 0.287 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 1.01 ng/ml Area Ratio: 0.094 Sample Type: (Standard)	

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Printed: 4/30/2014 6:57 PM

Data File	LM23235.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	12/18/2013 6:42:37 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

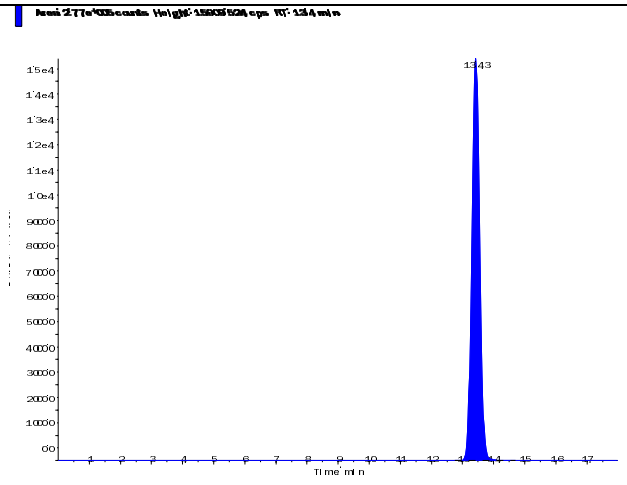
Sample Name	WG456864-06 STD (2.0 ug/L)	**Injection Vial**	6.00
Data File	LM23235.wiff	**Injection Volume**	10.00
Acquisition Date	12/18/2013 6:42:37 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG456864-06	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

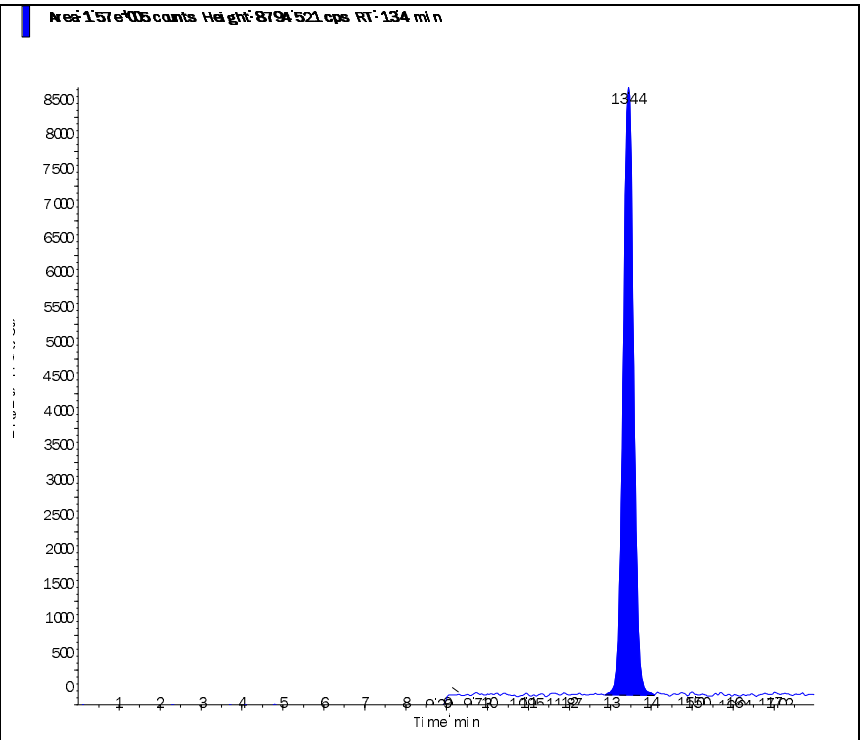
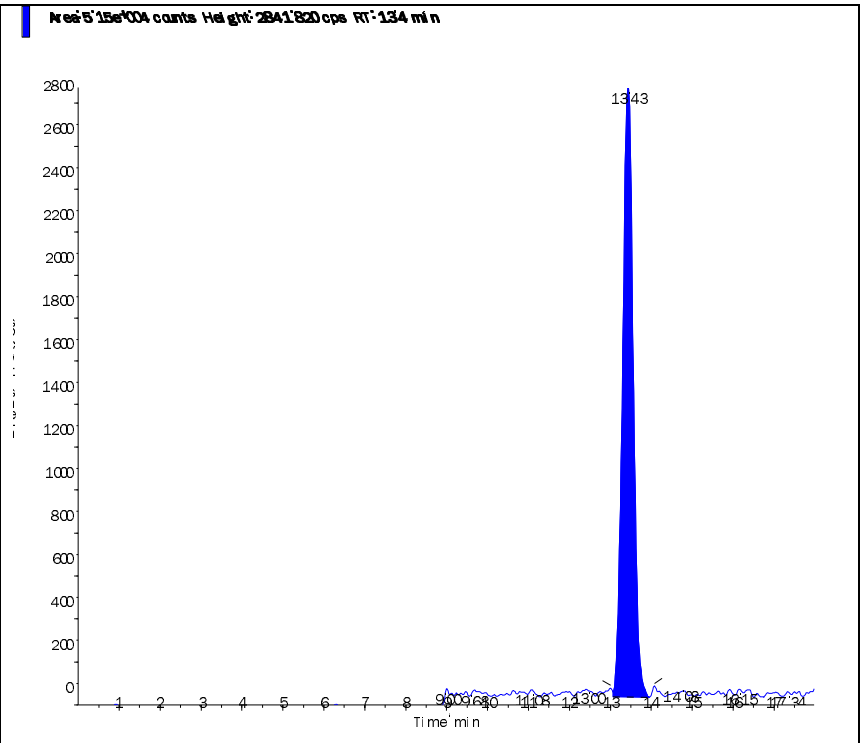
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.770e+05	13.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.570e+05	13.40	2.00	2.00
Perchlorate conf	5.150e+04	13.40	2.00	2.02

O18LP (Internal Standard)

RT (Exp. RT): 13.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 2.00 ng/ml Area Ratio: 0.566 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 2.02 ng/ml Area Ratio: 0.186 Sample Type: (Standard)	

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Printed: 4/30/2014 6:57 PM

Data File	LM23236.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	12/18/2013 7:01:33 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

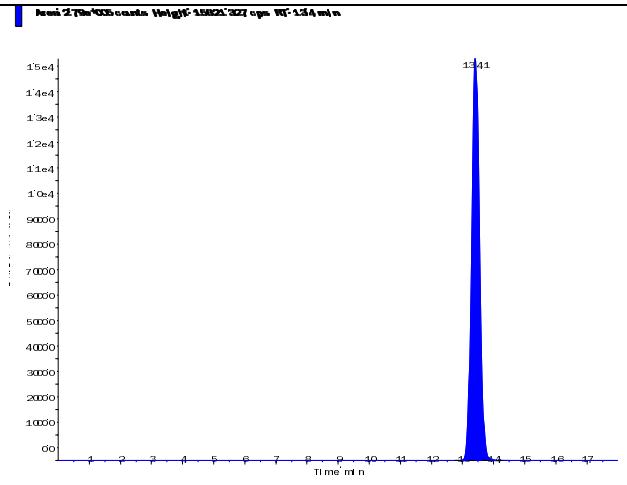
Sample Name	WG456864-07 STD (5.0 ug/L)	**Injection Vial**	7.00
Data File	LM23236.wiff	**Injection Volume**	10.00
Acquisition Date	12/18/2013 7:01:33 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG456864-07	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

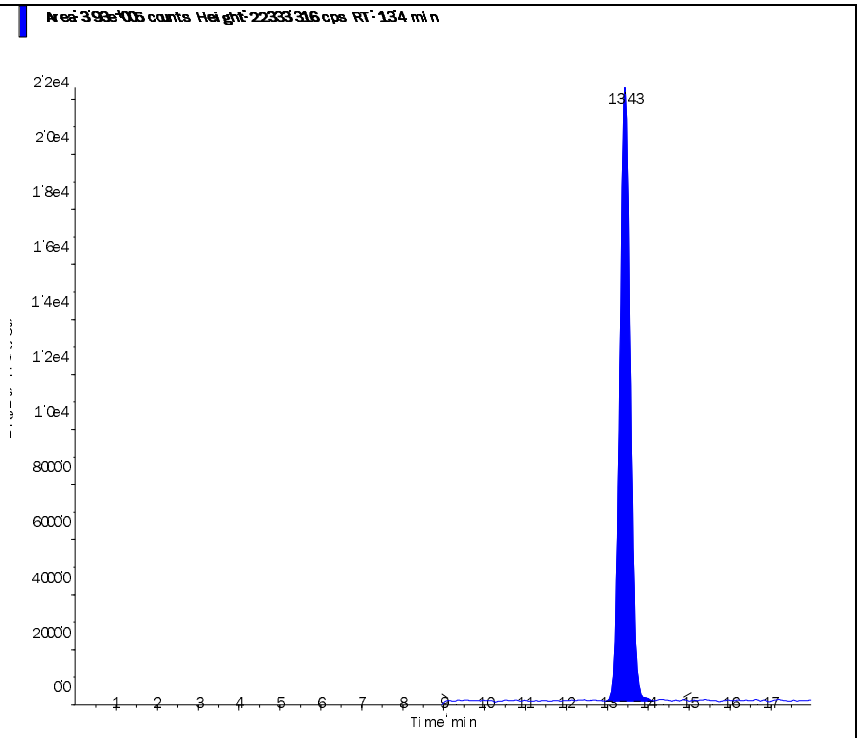
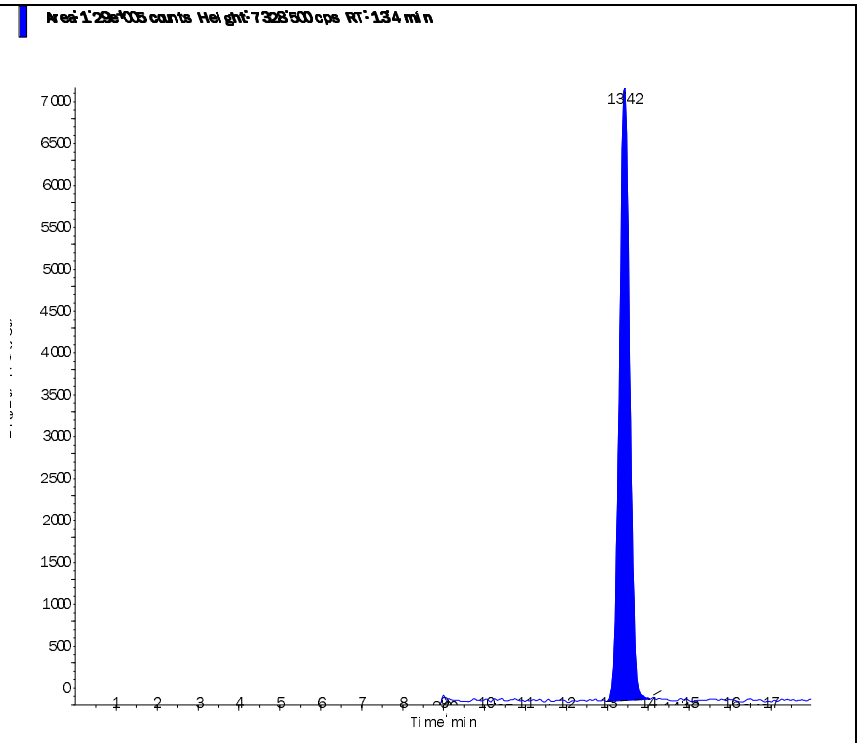
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.790e+05	13.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	3.930e+05	13.40	5.00	5.00
Perchlorate conf	1.290e+05	13.40	5.00	5.06

O18LP (Internal Standard)

RT (Exp. RT): 13.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 5.00 ng/ml Area Ratio: 1.409 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 5.06 ng/ml Area Ratio: 0.464 Sample Type: (Standard)	

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Printed: 4/30/2014 6:57 PM

Data File	LM23237.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	12/18/2013 7:20:30 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

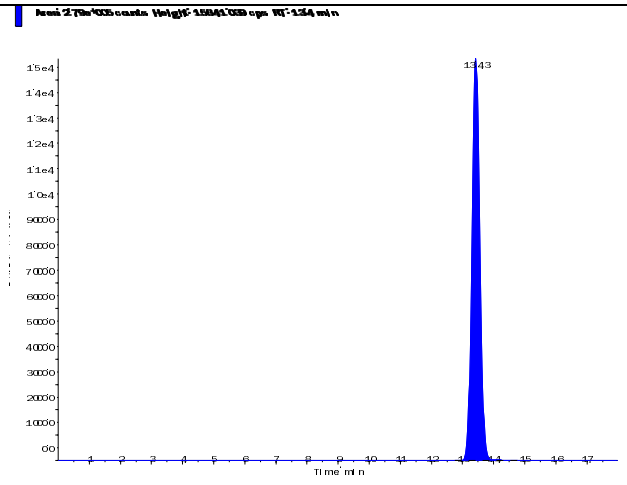
Sample Name	WG456864-08 STD (10 ug/L)	**Injection Vial**	8.00
Data File	LM23237.wiff	**Injection Volume**	10.00
Acquisition Date	12/18/2013 7:20:30 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG456864-08	**Dilution Factor**	1.00
Sample Comment	1,1 STD61802	**Weight to Volume**	0.00

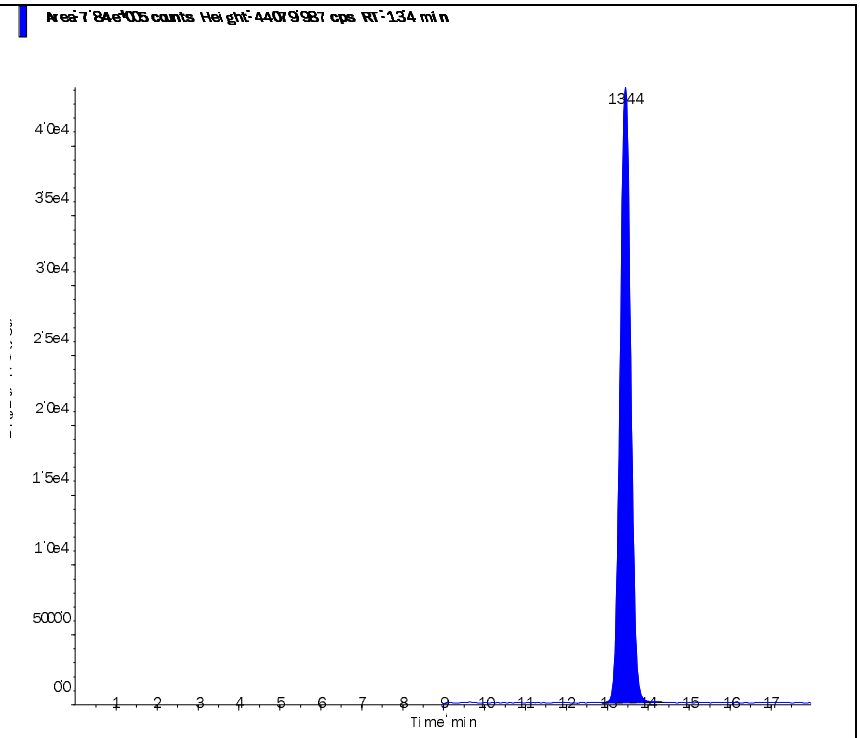
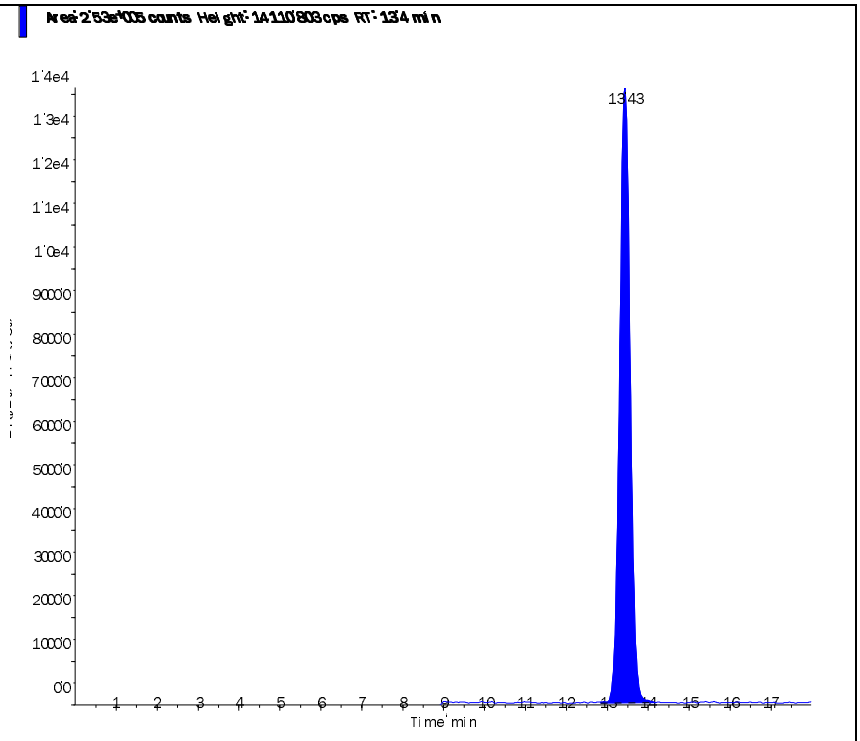
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.790e+05	13.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.840e+05	13.40	10.00	9.99
Perchlorate conf	2.530e+05	13.40	10.00	9.92

O18LP (Internal Standard)

RT (Exp. RT): 13.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 9.99 ng/ml Area Ratio: 2.812 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 9.92 ng/ml Area Ratio: 0.909 Sample Type: (Standard)	

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Created with Analyst Reporter
Printed: 12/19/2013 6:24 PM

Data File	LM23238.wiff	**Result Table**	121813_JWR.rdb
Acquisition Date	12/18/2013 7:39:25 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

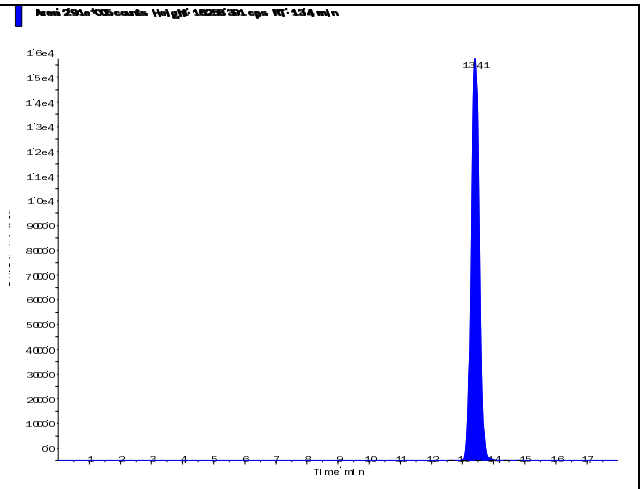
Sample Name	WG456864-09 SSCV (1.0 ug/L)	**Injection Vial**	9.00
Data File	LM23238.wiff	**Injection Volume**	10.00
Acquisition Date	12/18/2013 7:39:25 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	121813_JWR.rdb
Sample ID	WG456864-09	**Dilution Factor**	1.00
Sample Comment	1,1 STD61185	**Weight to Volume**	0.00

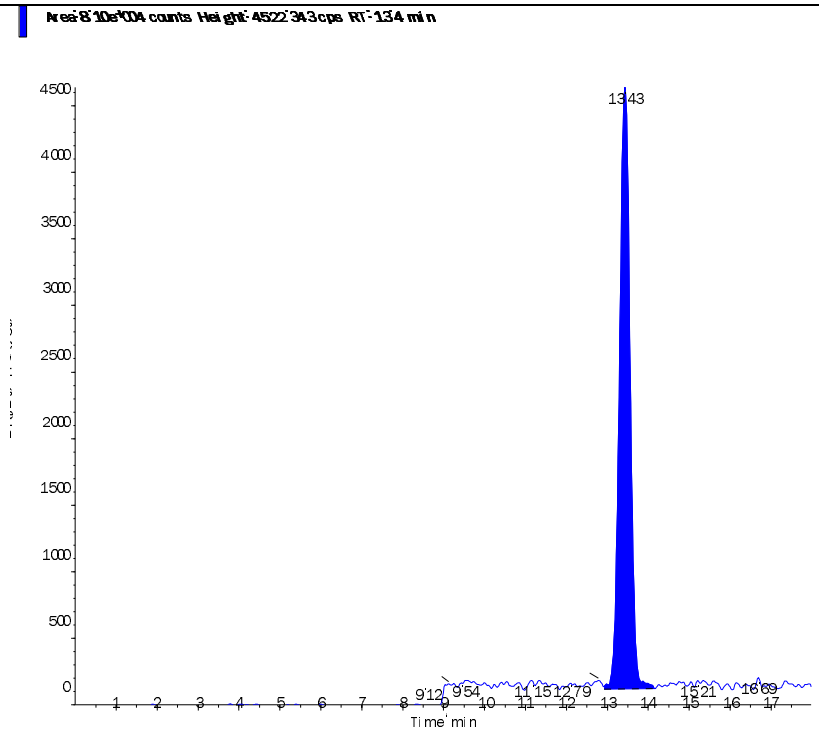
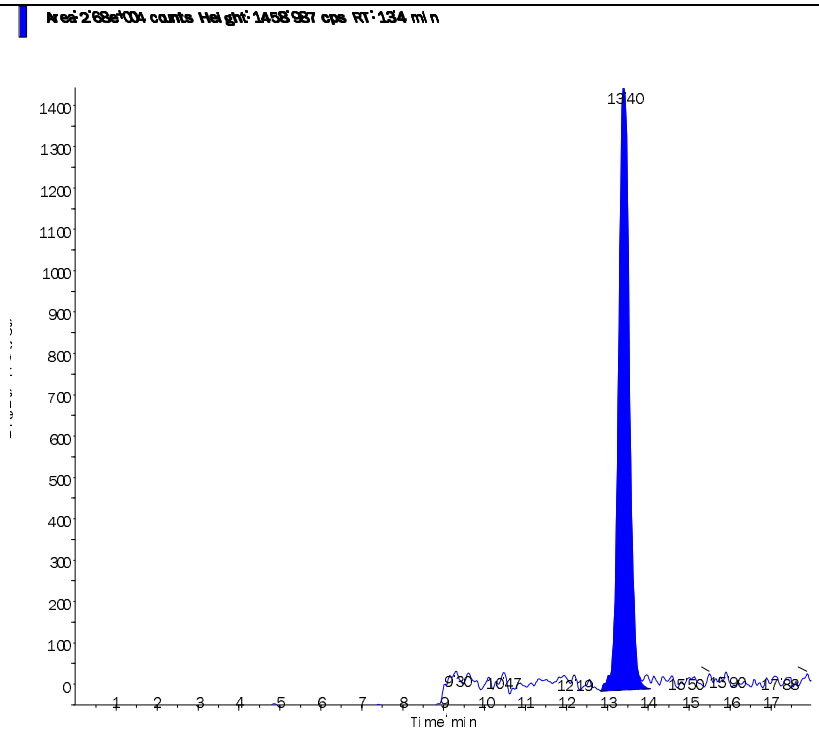
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.910e+05	13.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	8.100e+04	13.40	1.00	0.978
Perchlorate conf	2.680e+04	13.40	1.00	0.994

O18LP (Internal Standard)

RT (Exp. RT): 13.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 0.978 ng/ml Area Ratio: 0.278 Sample Type: (Quality Control)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 13.40 (13.40) min Calculated conc: 0.994 ng/ml Area Ratio: 0.092 Sample Type: (Quality Control)	

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Printed: 4/30/2014 6:58 PM

Data File	LM24548.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/28/2014 8:16:43 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

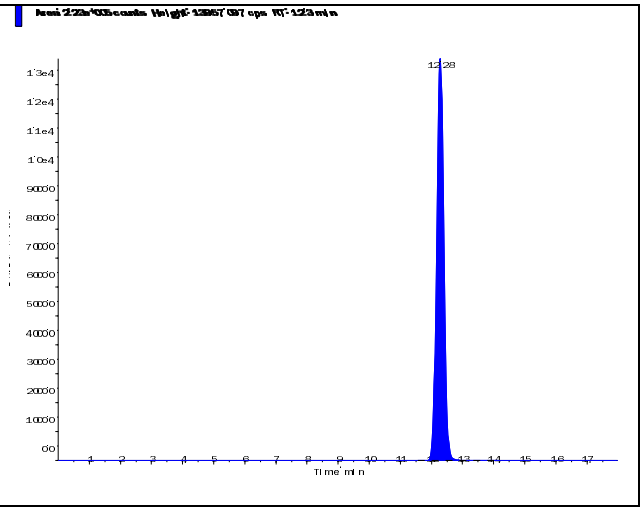
Sample Name	WG473484-02 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM24548.wiff	**Injection Volume**	10.00
Acquisition Date	4/28/2014 8:16:43 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473484-02	**Dilution Factor**	1.00
Sample Comment	1,1 STD63472	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.230e+05	12.30	5.00	-

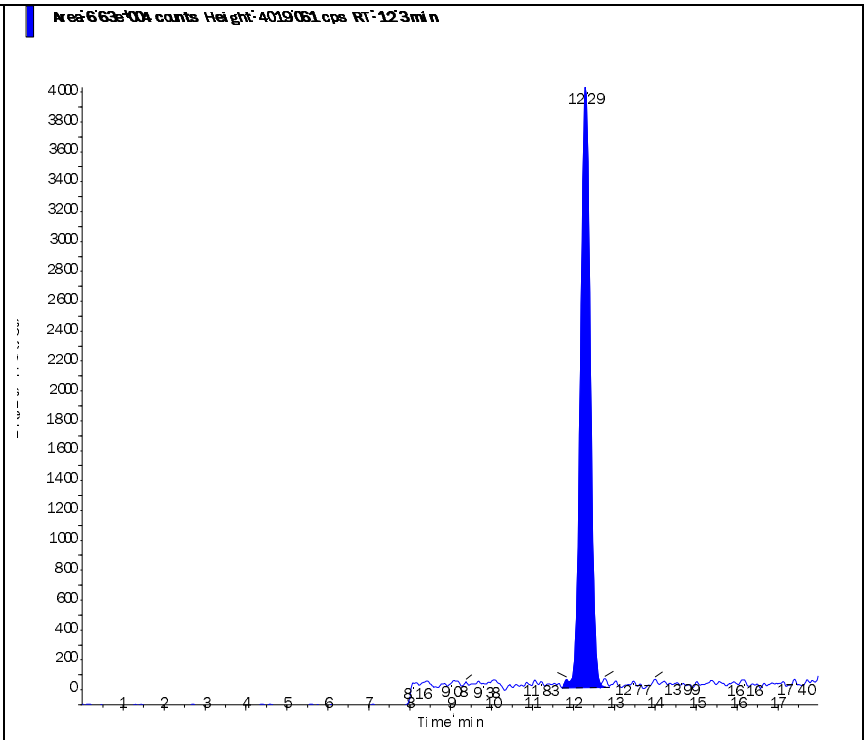
Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	6.630e+04	12.30	1.00	1.05
Perchlorate conf	2.160e+04	12.30	1.00	1.05

O18LP (Internal Standard)

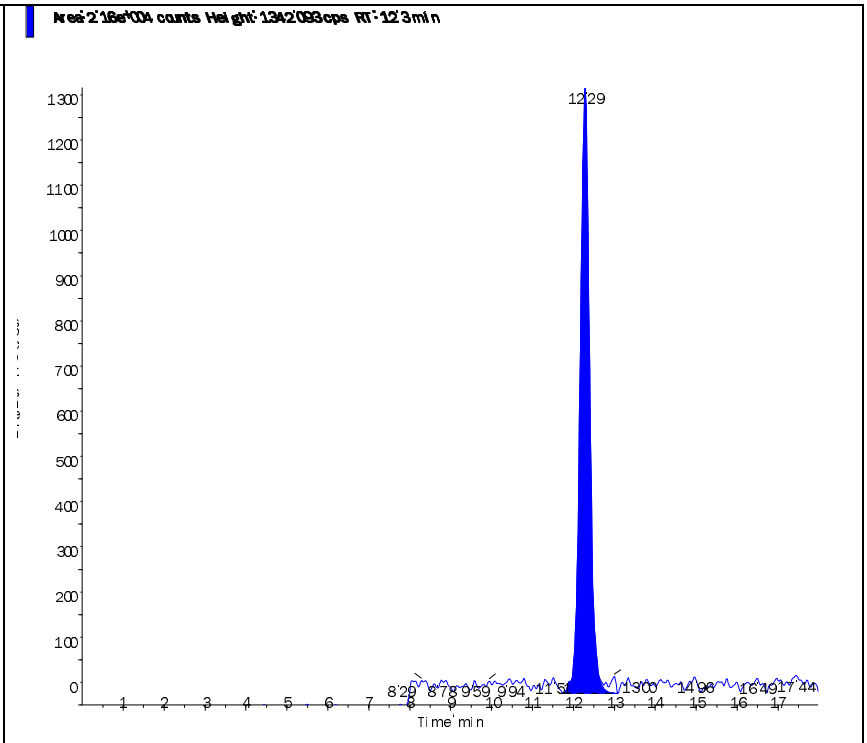
RT (Exp. RT): 12.30(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): Calculated conc: Area Ratio: Sample Type:	 12.30 (13.40) min 1.05 ng/ml 0.297 (Quality Control)



Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): Calculated conc: Area Ratio: Sample Type:	 12.30 (13.40) min 1.05 ng/ml 0.097 (Quality Control)



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Printed: 4/30/2014 7:02 PM

Data File	LM24560.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/29/2014 12:03:57 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

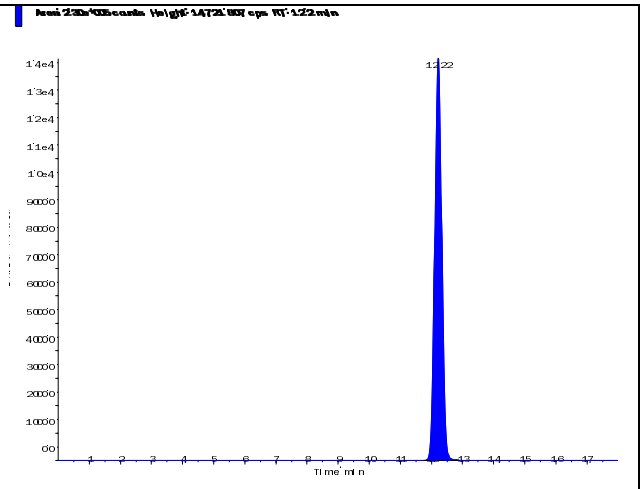
Sample Name	WG473484-03 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM24560.wiff	**Injection Volume**	10.00
Acquisition Date	4/29/2014 12:03:57 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473484-03	**Dilution Factor**	1.00
Sample Comment	1,1 STD63472	**Weight to Volume**	0.00

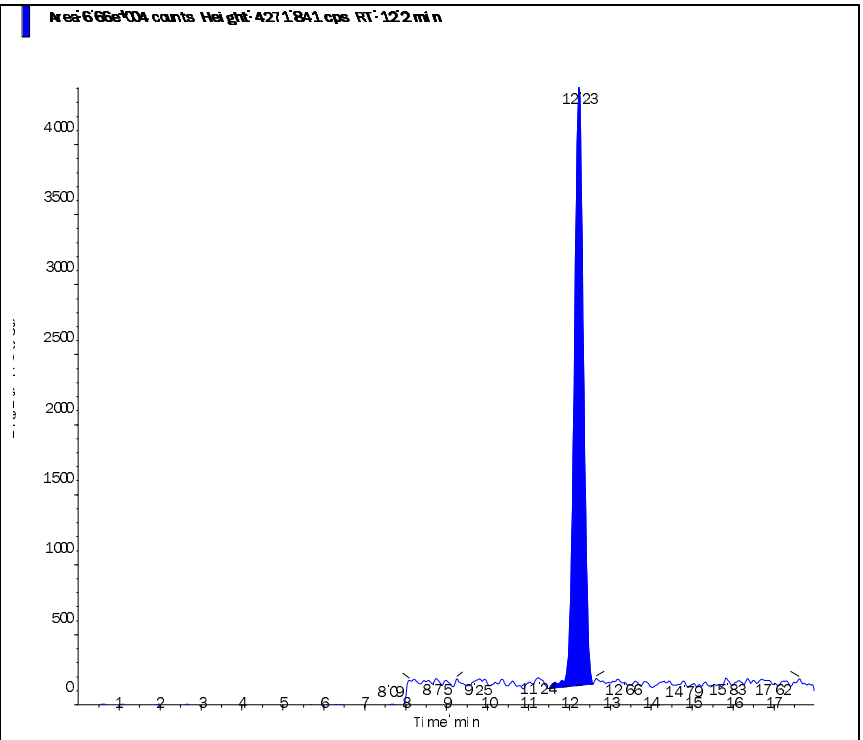
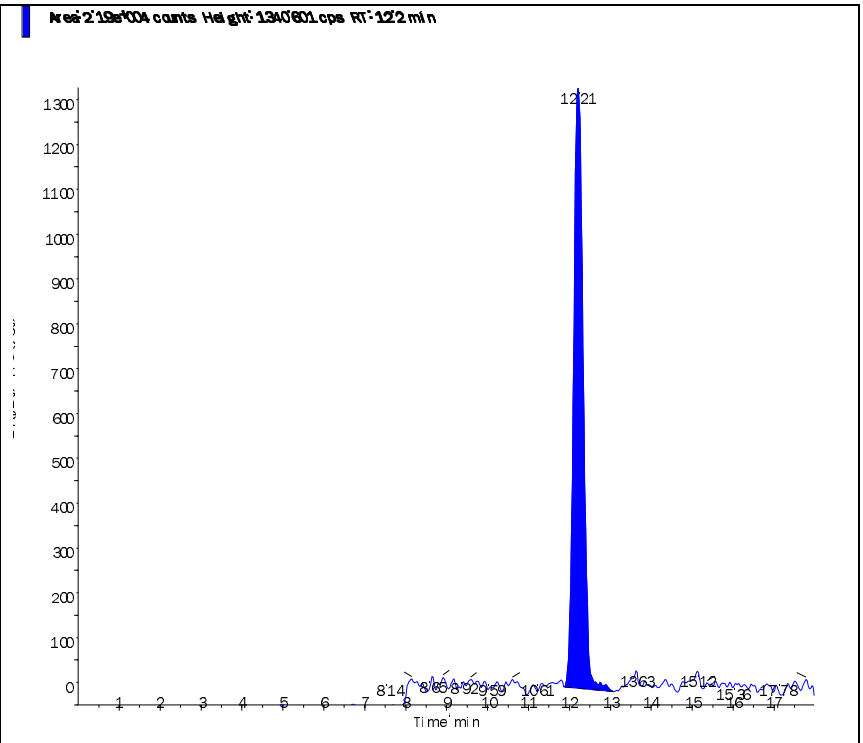
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.300e+05	12.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	6.660e+04	12.20	1.00	1.02
Perchlorate conf	2.190e+04	12.20	1.00	1.03

O18LP (Internal Standard)

RT (Exp. RT): 12.20(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 12.20 (13.40) min Calculated conc: 1.02 ng/ml Area Ratio: 0.289 Sample Type: (Quality Control)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 12.20 (13.40) min Calculated conc: 1.03 ng/ml Area Ratio: 0.095 Sample Type: (Quality Control)	

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Printed: 4/30/2014 7:04 PM

Data File	LM24570.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/29/2014 3:13:22 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

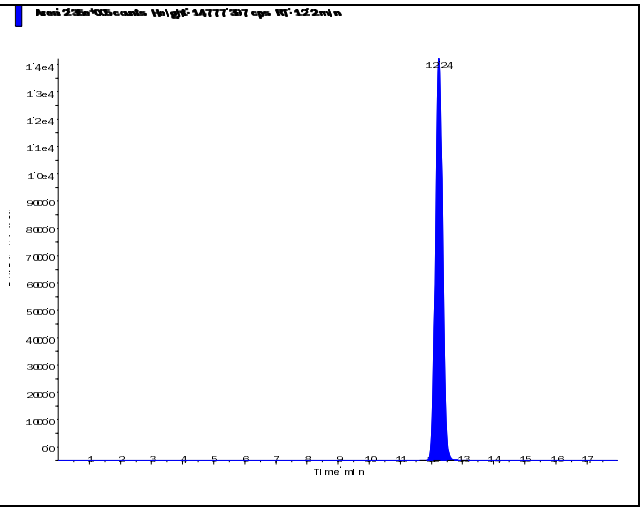
Sample Name	WG473484-05 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM24570.wiff	**Injection Volume**	10.00
Acquisition Date	4/29/2014 3:13:22 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473484-05	**Dilution Factor**	1.00
Sample Comment	1,1 STD63472	**Weight to Volume**	0.00

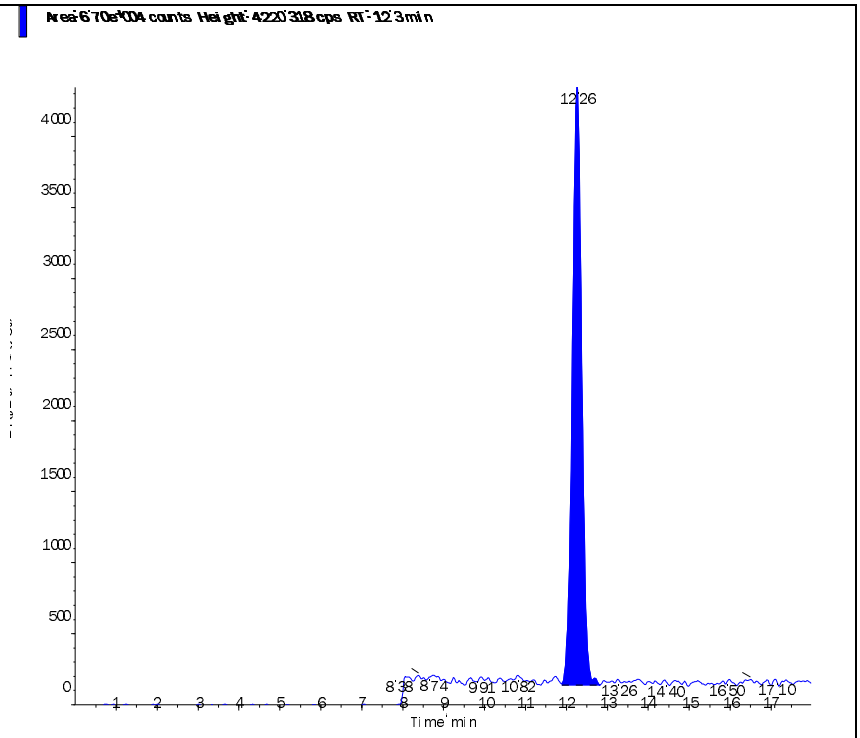
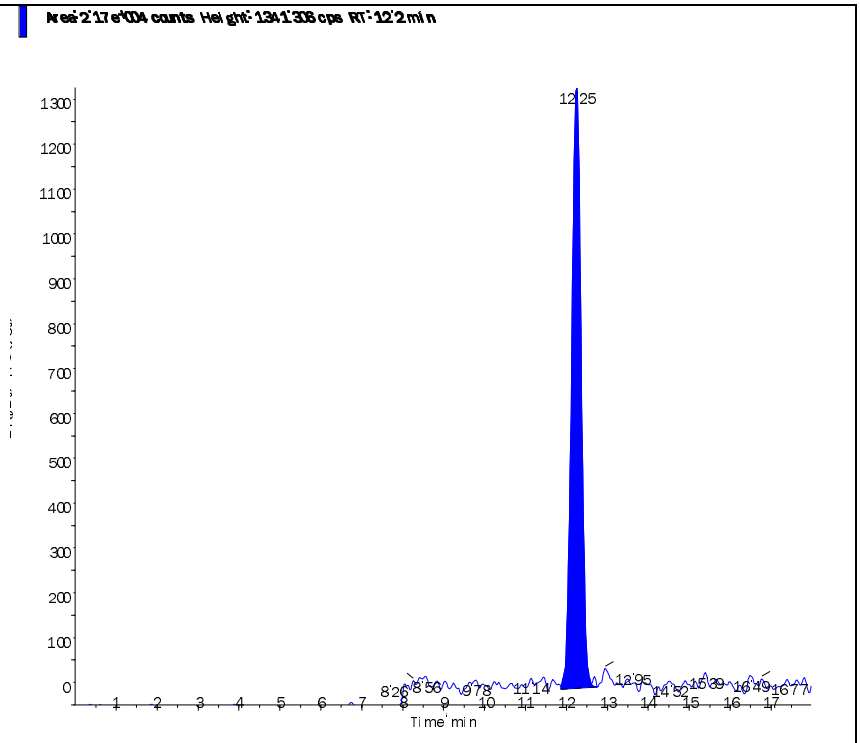
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.350e+05	12.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	6.700e+04	12.30	1.00	1.00
Perchlorate conf	2.170e+04	12.20	1.00	1.00

O18LP (Internal Standard)

RT (Exp. RT): 12.20(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 12.30 (13.40) min Calculated conc: 1.00 ng/ml Area Ratio: 0.285 Sample Type: (Quality Control)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 12.20 (13.40) min Calculated conc: 1.00 ng/ml Area Ratio: 0.093 Sample Type: (Quality Control)	

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Data File	LM24581.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/29/2014 6:41:35 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

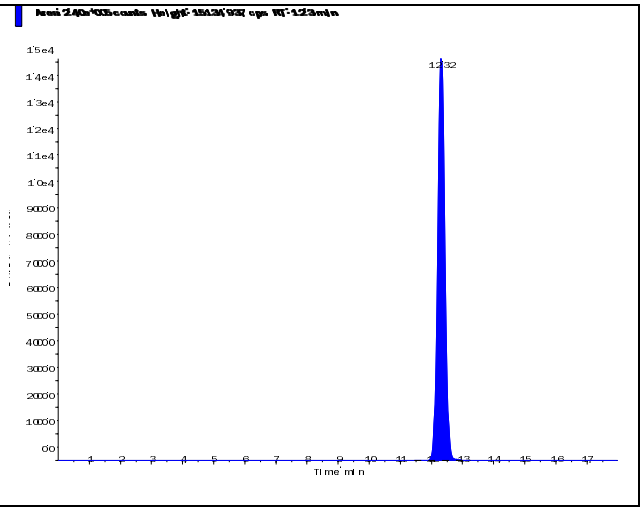
Sample Name	WG473484-07 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM24581.wiff	**Injection Volume**	10.00
Acquisition Date	4/29/2014 6:41:35 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473484-07	**Dilution Factor**	1.00
Sample Comment	1,1 STD63472	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.400e+05	12.30	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	6.730e+04	12.30	1.00	0.989
Perchlorate conf	2.260e+04	12.30	1.00	1.02

O18LP (Internal Standard)

RT (Exp. RT): 12.30(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



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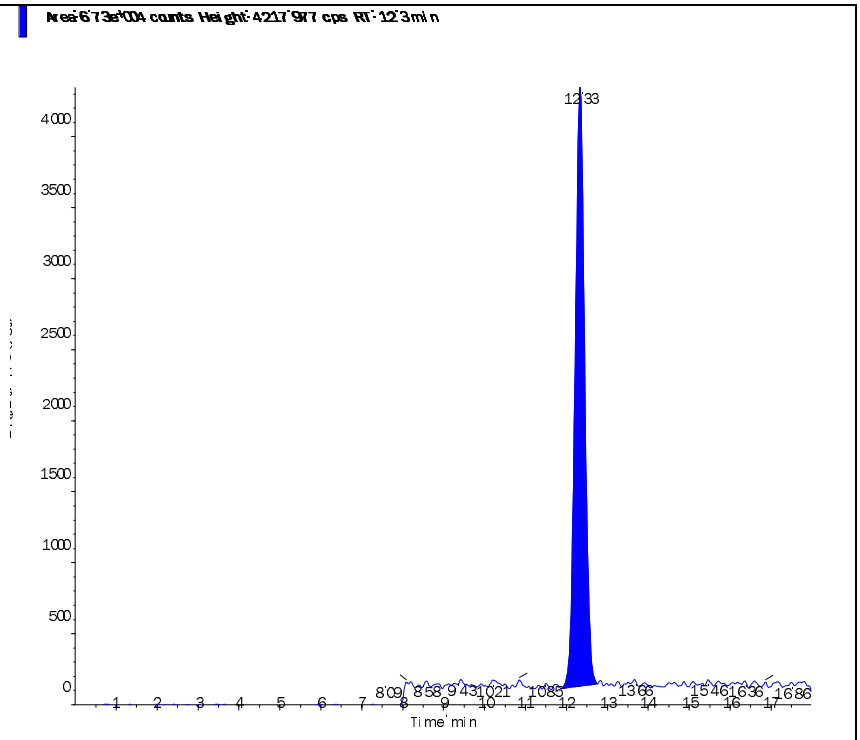
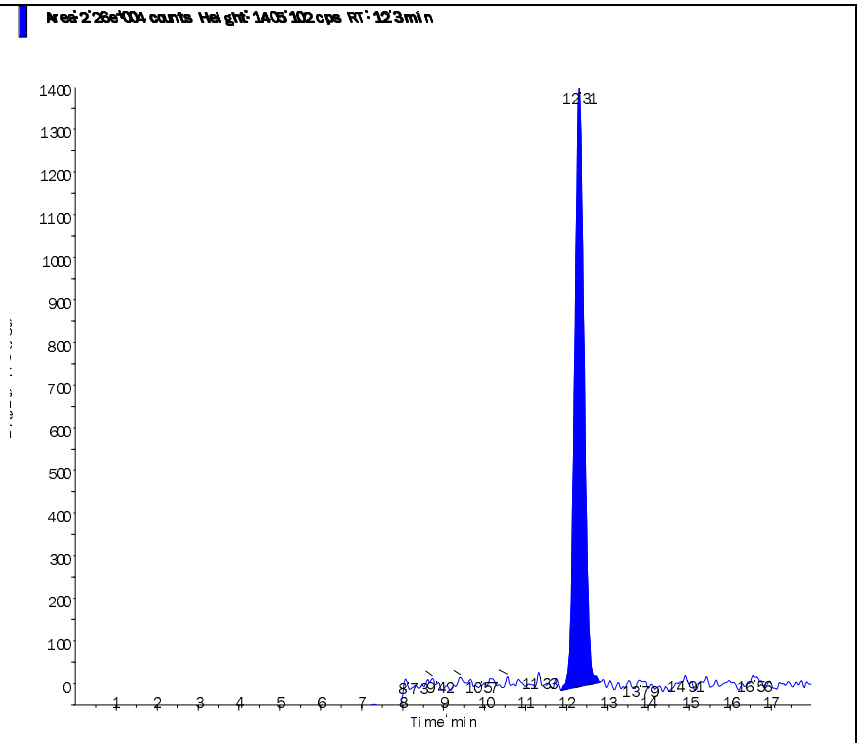
Perchlorate (98.8/83.3 amu) RT (Exp. RT): Calculated conc: Area Ratio: Sample Type:	12.30 (13.40) min 0.989 ng/ml 0.281 (Quality Control)



Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): Calculated conc: Area Ratio: Sample Type:	12.30 (13.40) min 1.02 ng/ml 0.094 (Quality Control)



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Printed: 4/30/2014 7:08 PM

Data File	LM24584.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/29/2014 5:51:25 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

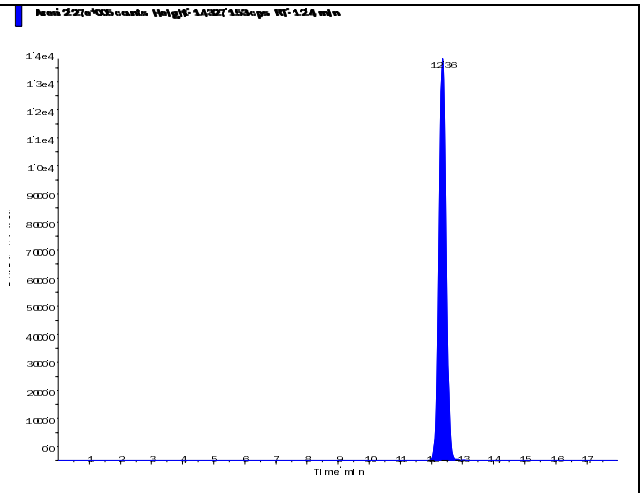
Sample Name	WG473484-09 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM24584.wiff	**Injection Volume**	10.00
Acquisition Date	4/29/2014 5:51:25 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473484-09	**Dilution Factor**	1.00
Sample Comment	1,1 STD63472	**Weight to Volume**	0.00

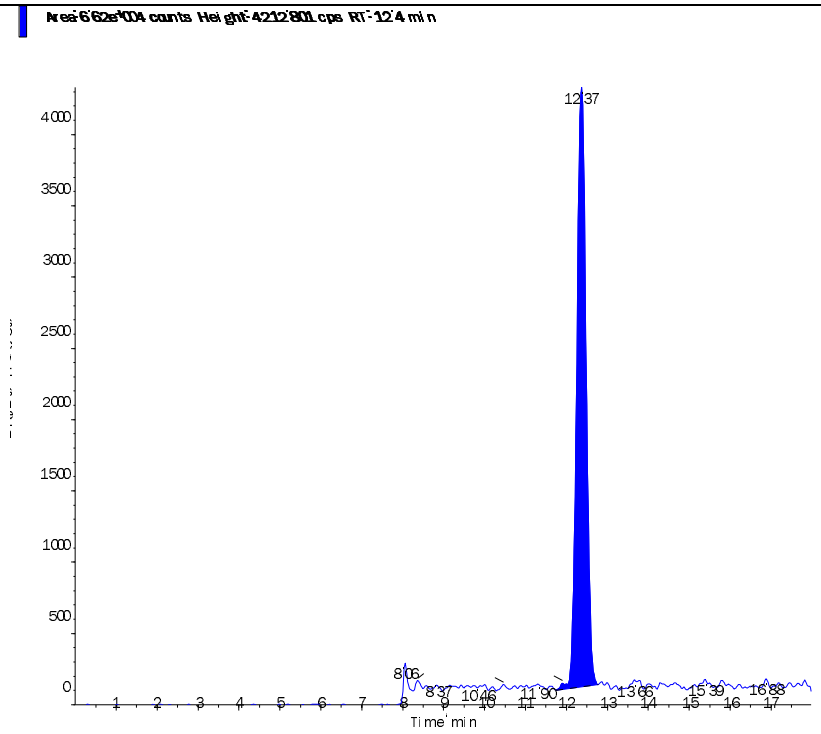
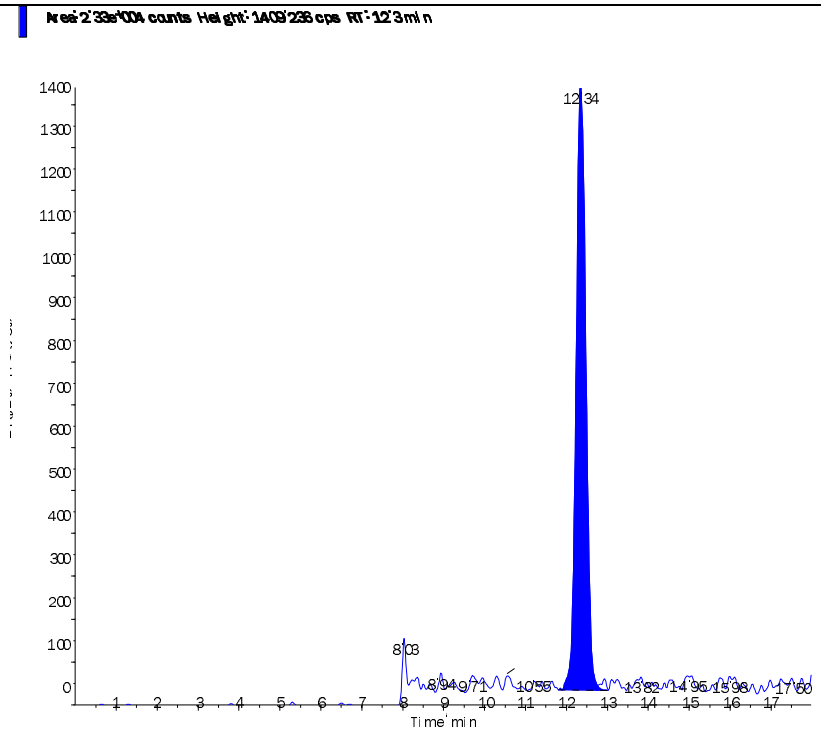
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.270e+05	12.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	6.620e+04	12.40	1.00	1.03
Perchlorate conf	2.330e+04	12.30	1.00	1.11

O18LP (Internal Standard)

RT (Exp. RT): 12.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 12.40 (13.40) min Calculated conc: 1.03 ng/ml Area Ratio: 0.292 Sample Type: (Quality Control)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 12.30 (13.40) min Calculated conc: 1.11 ng/ml Area Ratio: 0.103 Sample Type: (Quality Control)	

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Data File	LM24594.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/29/2014 9:00:44 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

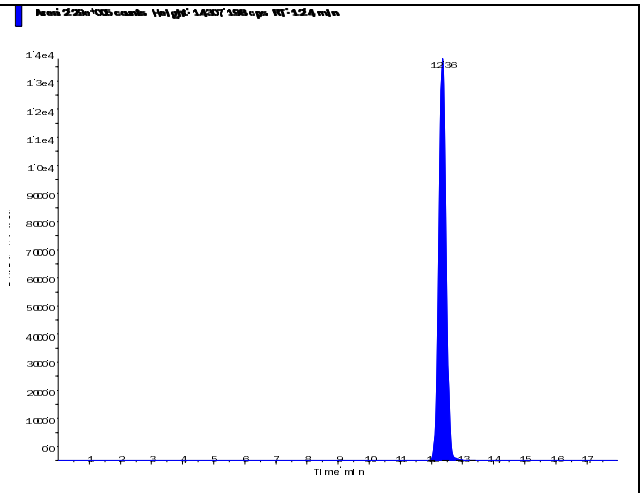
Sample Name	WG473484-11 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM24594.wiff	**Injection Volume**	10.00
Acquisition Date	4/29/2014 9:00:44 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473484-11	**Dilution Factor**	1.00
Sample Comment	1,1 STD63472	**Weight to Volume**	0.00

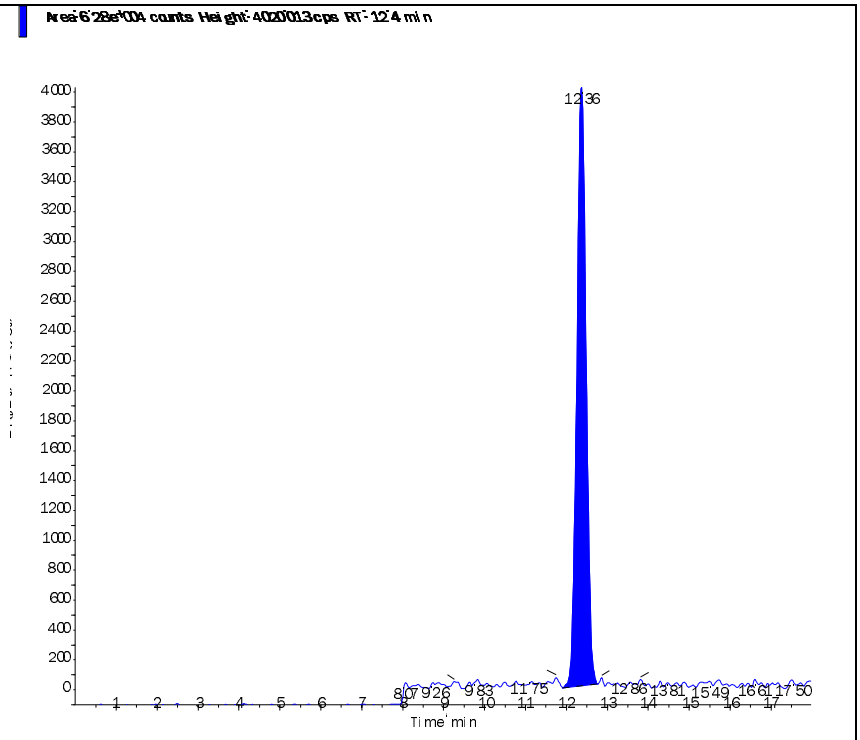
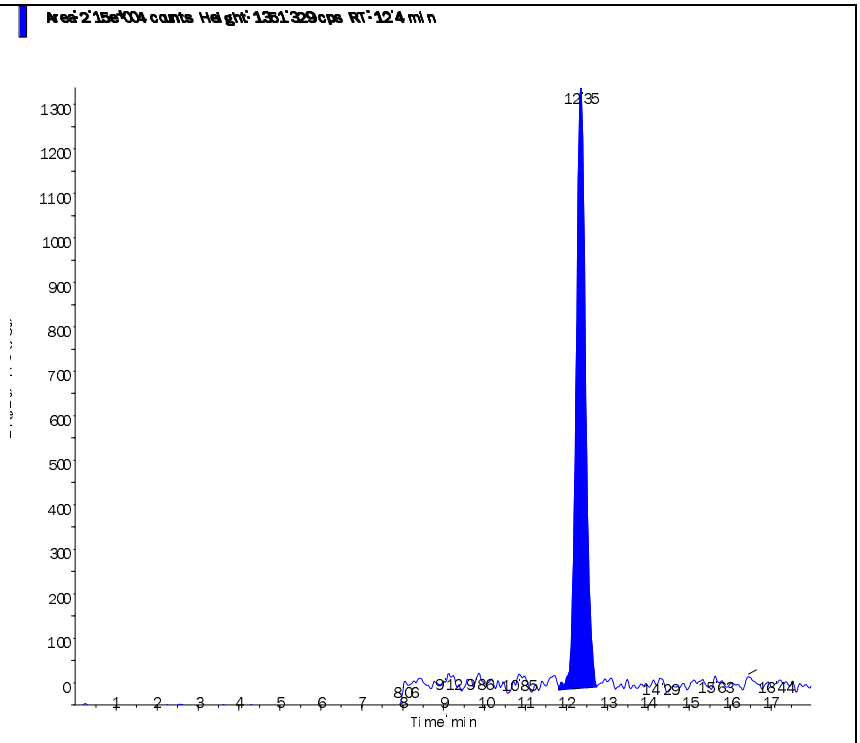
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.290e+05	12.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	6.280e+04	12.40	1.00	0.967
Perchlorate conf	2.150e+04	12.40	1.00	1.02

O18LP (Internal Standard)

RT (Exp. RT): 12.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 12.40 (13.40) min Calculated conc: 0.967 ng/ml Area Ratio: 0.275 Sample Type: (Quality Control)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 12.40 (13.40) min Calculated conc: 1.02 ng/ml Area Ratio: 0.094 Sample Type: (Quality Control)	

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Data File	LM24549.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/28/2014 8:35:38 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

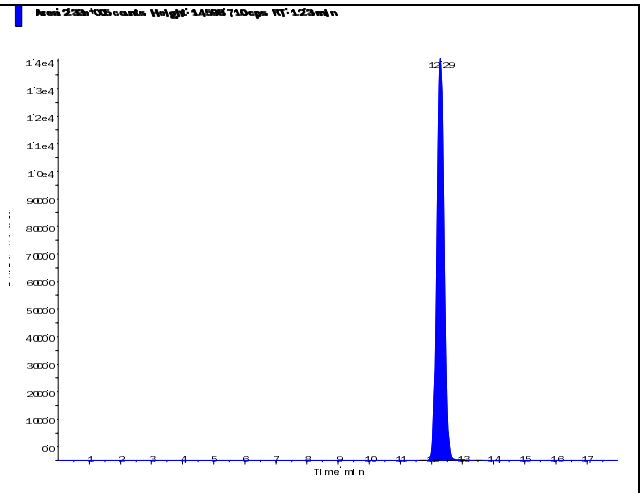
Sample Name	WG473483-07 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM24549.wiff	**Injection Volume**	10.00
Acquisition Date	4/28/2014 8:35:38 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473483-07	**Dilution Factor**	1.00
Sample Comment	1,1 STD63472	**Weight to Volume**	0.00

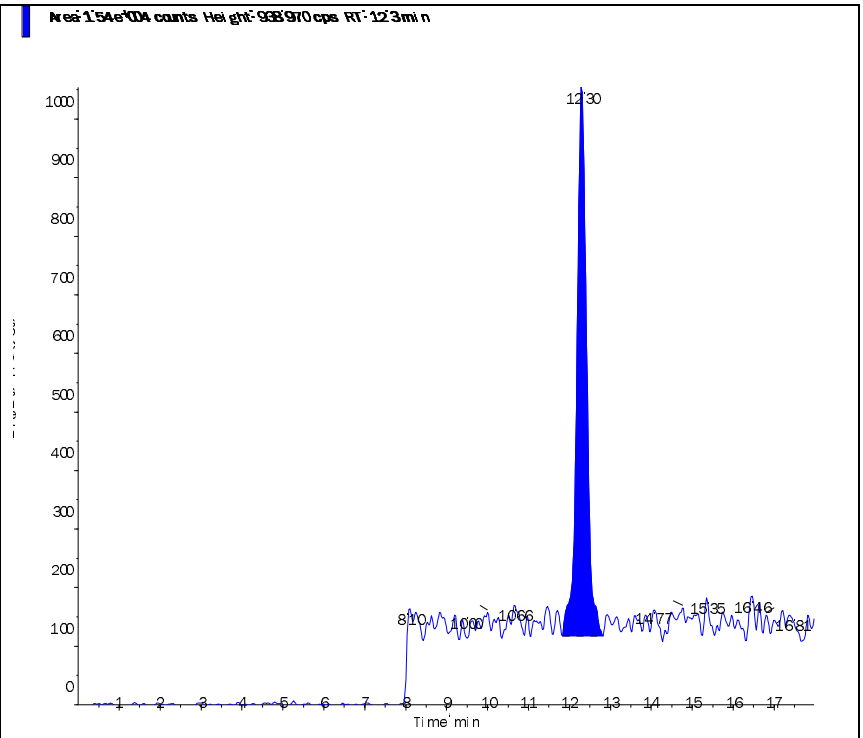
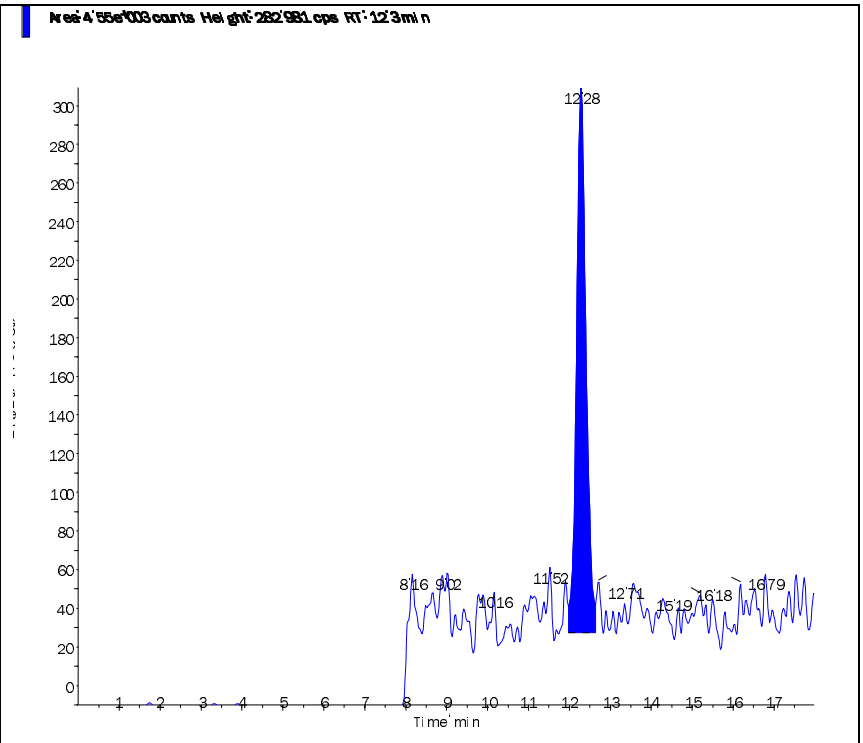
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.330e+05	12.30	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.540e+04	12.30	N/A	0.225
Perchlorate conf	4.550e+03	12.30	N/A	0.203

O18LP (Internal Standard)

RT (Exp. RT): 12.30(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)

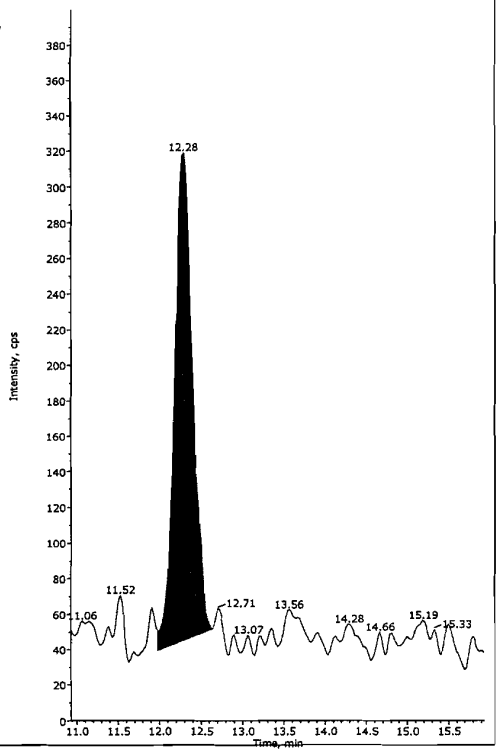


Perchlorate (98.8/83.3 amu) RT (Exp. RT): 12.30 (13.40) min Calculated conc: 0.225 ng/ml Area Ratio: 0.066 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 12.30 (13.40) min Calculated conc: 0.203 ng/ml Area Ratio: 0.02 Sample Type: (Unknown)	

Printing Time: 12:57:24 PM
Printing Date: Wednesday, April 30, 2014

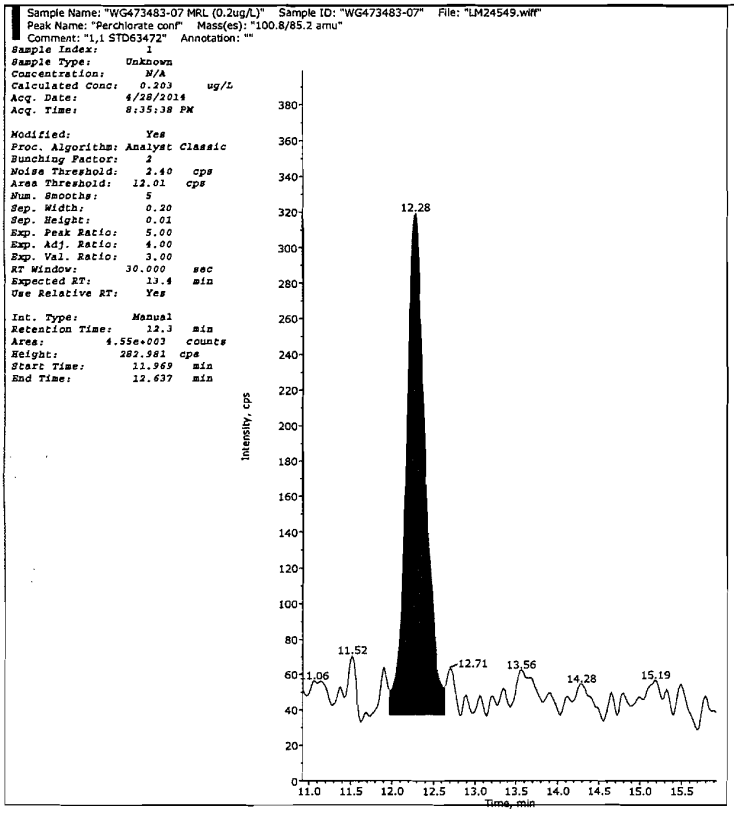
Sample Name: "WG473483-07 MRL (0.2ug/L)" Sample ID: "WG473483-07" File: "LM24549.wiff"
Peak Name: "Perchlorate conf" Mass(es): "100.8/85.2 amu"
Comment: "1,1 STD63472" Annotation: ""

Sample Index:	1
Sample Type:	Unknown
Concentration:	N/A
Calculated Conc:	0.187 ug/L
Acq. Date:	4/28/2014
Acq. Time:	8:35:38 PM
Modified:	No
Proc. Algorithm:	Analyst Classic
Bunching Factor:	2
Noise Threshold:	2.40 cps
Area Threshold:	12.01 cps
Num. Smooths:	5
Sep. Width:	0.20
Sep. Height:	0.01
Exp. Peak Ratio:	5.00
Exp. Adj. Ratio:	4.00
Exp. Val. Ratio:	3.00
RT Window:	30.000 sec
Expected RT:	13.4 min
Use Relative RT:	Yes
Int. Type:	Valley
Retention Time:	12.3 min
Area:	4.20e+003 counts
Height:	274.746 cps
Start Time:	11.969 min
End Time:	12.637 min



Collected by: N/A
Electronic Signature: no
Operator: lcms1

Printing Time: 1:39:09 PM
Printing Date: Wednesday, April 30, 2014



#4
JWR/04/30/14
rm 4/30/14

Collected by: N/A
Electronic Signature: no
Operator: lcms1

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Printed: 4/30/2014 7:02 PM

Data File	LM24561.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/29/2014 12:22:52 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

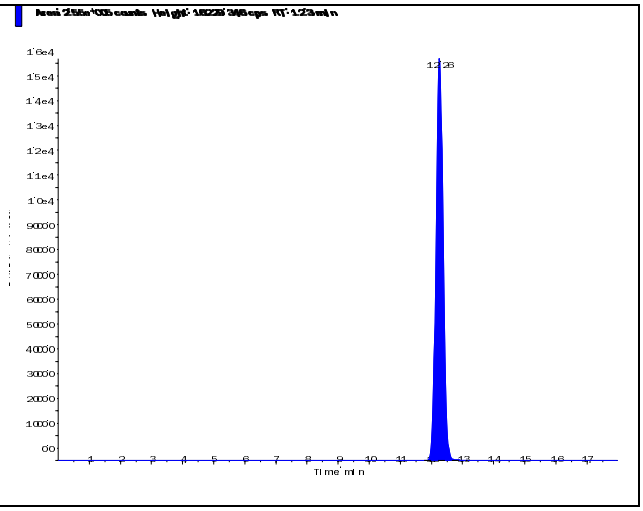
Sample Name	WG473483-08 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM24561.wiff	**Injection Volume**	10.00
Acquisition Date	4/29/2014 12:22:52 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473483-08	**Dilution Factor**	1.00
Sample Comment	1,1 STD63472	**Weight to Volume**	0.00

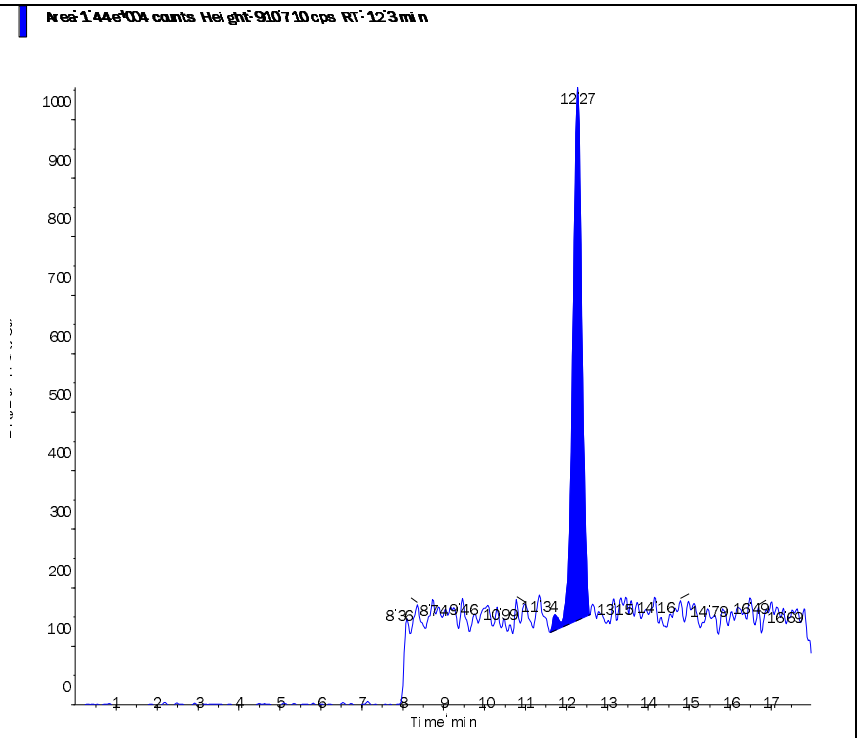
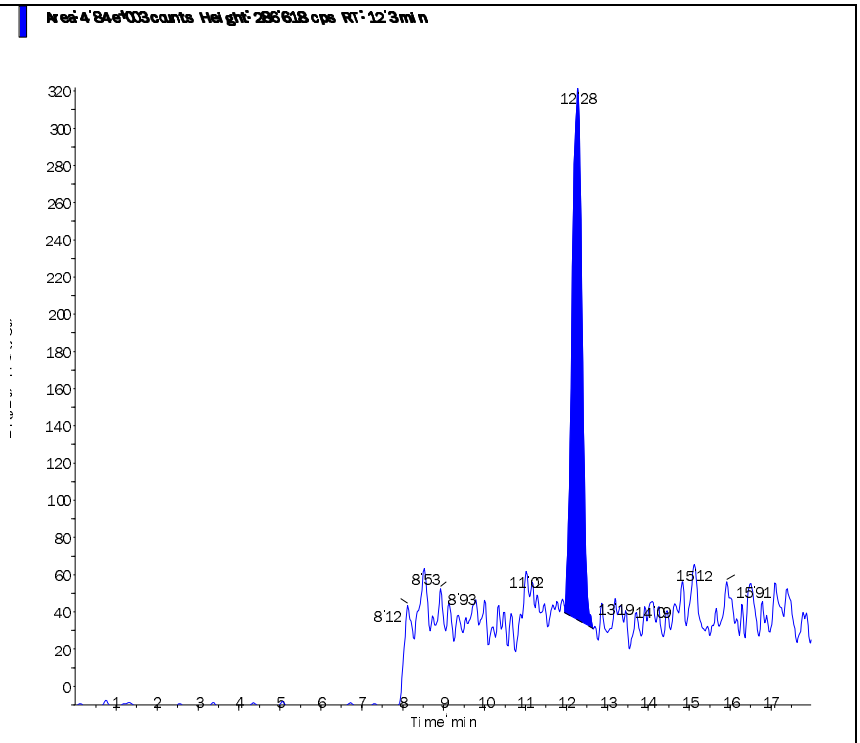
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.550e+05	12.30	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.440e+04	12.30	N/A	0.191
Perchlorate conf	4.840e+03	12.30	N/A	0.197

O18LP (Internal Standard)

RT (Exp. RT): 12.30(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)

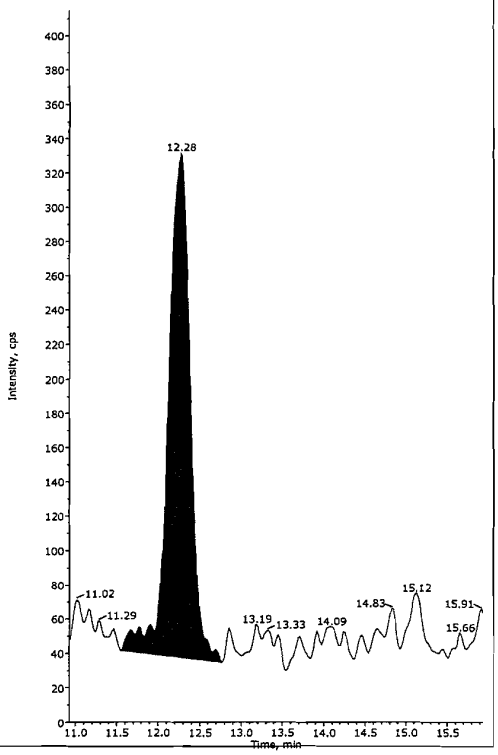


Perchlorate (98.8/83.3 amu) RT (Exp. RT): 12.30 (13.40) min Calculated conc: 0.191 ng/ml Area Ratio: 0.056 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 12.30 (13.40) min Calculated conc: 0.197 ng/ml Area Ratio: 0.019 Sample Type: (Unknown)	

Printing Time: 1:09:02 PM
Printing Date: Wednesday, April 30, 2014

Sample Name: "WG473483-08 MRL (0.2ug/L)" Sample ID: "WG473483-08" File: "LM24561.wiff"
Peak Name: "Perchlorate conf" Mass(es): "100.8/85.2 amu"
Comment: "1,1 STD63472" Annotation: ""

Sample Index:	1
Sample Type:	Unknown
Concentration:	N/A
Calculated Conc:	0.224 ug/L
Acq. Date:	4/29/2014
Acq. Time:	12:22:52 AM
Modified:	No
Proc. Algorithm:	Analyst Classic
Bunching Factor:	2
Noise Threshold:	2.40 cps
Area Threshold:	12.01 cps
Num. Smooths:	5
Sep. Width:	0.20
Sep. Height:	0.01
Exp. Peak Ratio:	5.00
Exp. Adj. Ratio:	4.00
Exp. Val. Ratio:	3.00
RT Window:	30.000 sec
Expected RT:	13.4 min
Use Relative RT:	Yes
Int. Type:	Base To Base
Retention Time:	12.3 min
Area:	5.48e+003 counts
Height:	294.729 cps
Start Time:	11.543 min
End Time:	12.779 min

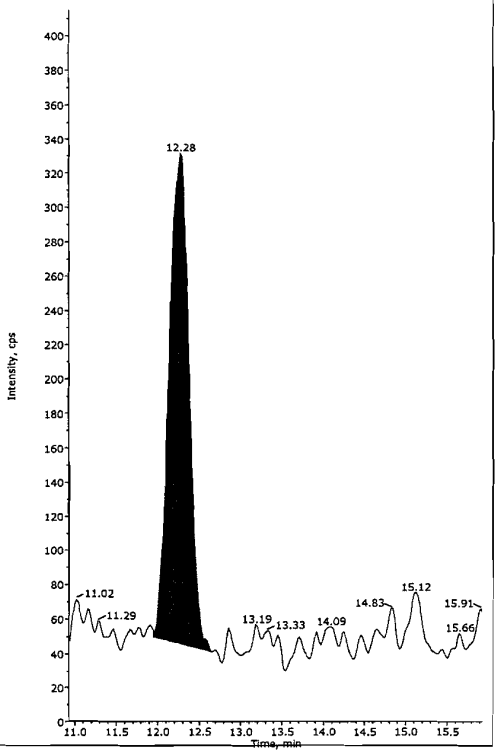


Collected by: N/A
Electronic Signature: no
Operator: lcms1

Printing Time: 1:43:33 PM
Printing Date: Wednesday, April 30, 2014

Sample Name: "WG473483-08 MRL (0.2ug/L)" Sample ID: "WG473483-08" File: "LM24561.wiff"
Peak Name: "Perchlorate conf" Mass(es): "100.8/85.2 amu"
Comment: "1,1 STD63472" Annotation: ""

Sample Index:	1	
Sample Type:	Unknown	
Concentration:	N/A	
Calculated Conc:	0.197	ug/L
Acq. Date:	4/29/2014	
Acq. Time:	12:22:52 AM	
Modified:	Yes	
Proc. Algorithm:	Analyst Classic	
Bunching Factor:	2	
Noise Threshold:	2.40	cps
Area Threshold:	12.01	cps
Num. Smooths:	5	
Sep. Width:	0.20	
Sep. Height:	0.01	
Exp. Peak Ratio:	5.00	
Exp. Adj. Ratio:	4.00	
Exp. Val. Ratio:	3.00	
RT Window:	30.000	sec
Expected RT:	13.4	min
Use Relative RT:	Yes	
Int. Type:	Manual	
Retention Time:	12.3	min
Area:	4.84e+003	counts
Height:	286.618	cps
Start Time:	11.948	min
End Time:	12.657	min



#4
JWR 04/30/14

mlw 4/30/14

Collected by: N/A
Electronic Signature: no
Operator: lcms1

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Created with Analyst Reporter
Printed: 4/30/2014 7:04 PM

Data File	LM24571.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/29/2014 3:32:17 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

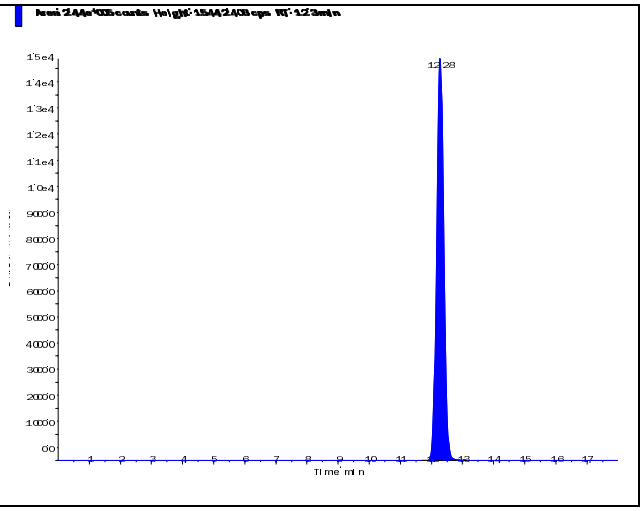
Sample Name	WG473483-09 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM24571.wiff	**Injection Volume**	10.00
Acquisition Date	4/29/2014 3:32:17 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473483-09	**Dilution Factor**	1.00
Sample Comment	1,1 STD63472	**Weight to Volume**	0.00

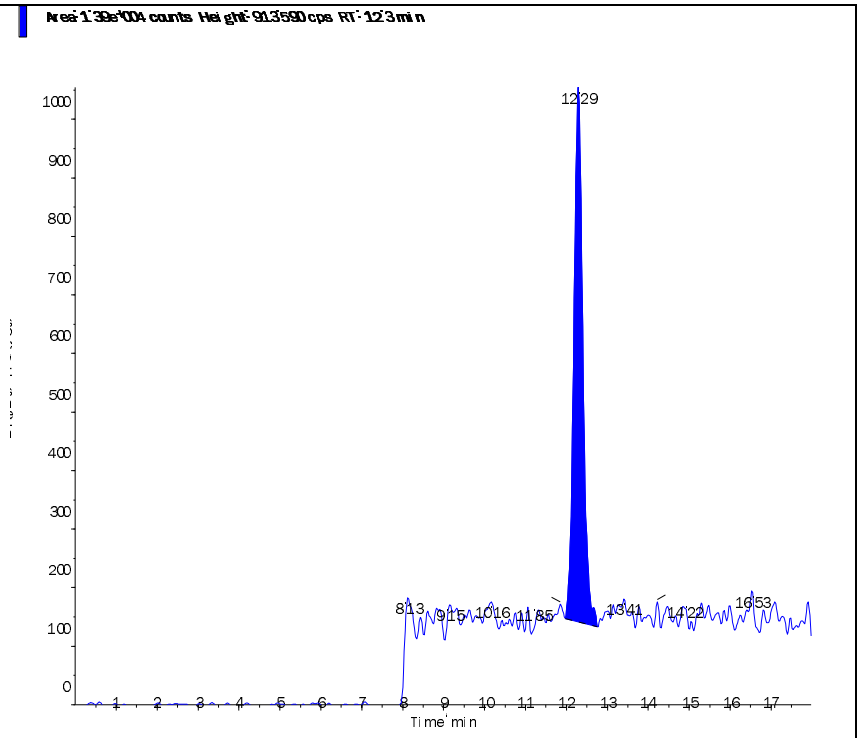
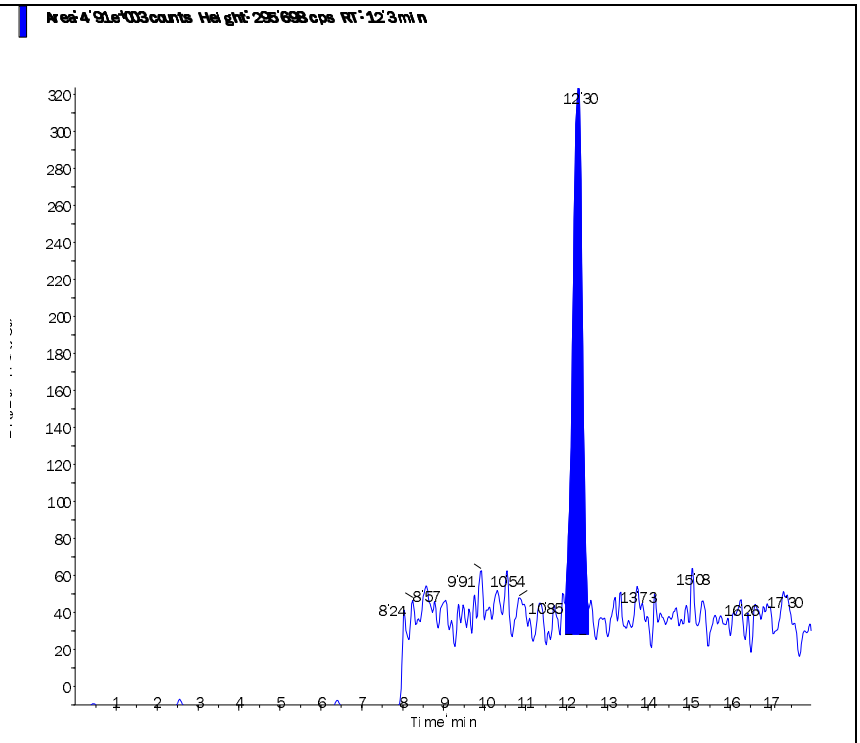
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.440e+05	12.30	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.390e+04	12.30	N/A	0.193
Perchlorate conf	4.910e+03	12.30	N/A	0.209

O18LP (Internal Standard)

RT (Exp. RT): 12.30(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)

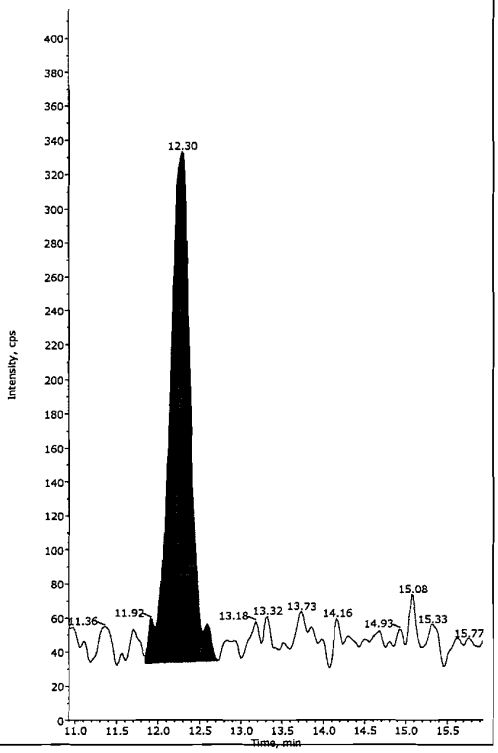


Perchlorate (98.8/83.3 amu) RT (Exp. RT): 12.30 (13.40) min Calculated conc: 0.193 ng/ml Area Ratio: 0.057 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 12.30 (13.40) min Calculated conc: 0.209 ng/ml Area Ratio: 0.02 Sample Type: (Unknown)	

Printing Time: 1:10:06 PM
Printing Date: Wednesday, April 30, 2014

Sample Name: "WG473483-09 MRL (0.2ug/L)" Sample ID: "WG473483-09" File: "LM24571.wiff"
Peak Name: "Perchlorate conf" Mass(es): "100.8/85.2 amu"
Comment: "1,1 STD63472" Annotation: ""

Sample Index:	1
Sample Type:	Unknown
Concentration:	N/A
Calculated Conc:	0.228 ug/L
Acq. Date:	4/29/2014
Acq. Time:	3:32:17 AM
Modified:	No
Proc. Algorithm:	Analyst Classic
Bunching Factor:	2
Noise Threshold:	2.40 cps
Area Threshold:	12.01 cps
Num. Smooths:	5
Sep. Width:	0.20
Sep. Height:	0.01
Exp. Peak Ratio:	5.00
Exp. Adj. Ratio:	4.00
Exp. Val. Ratio:	3.00
RT Window:	30.000 sec
Expected RT:	13.4 min
Use Relative RT:	Yes
Int. Type:	Valley
Retention Time:	12.3 min
Area:	5.33e+003 counts
Height:	299.473 cps
Start Time:	11.847 min
End Time:	12.718 min

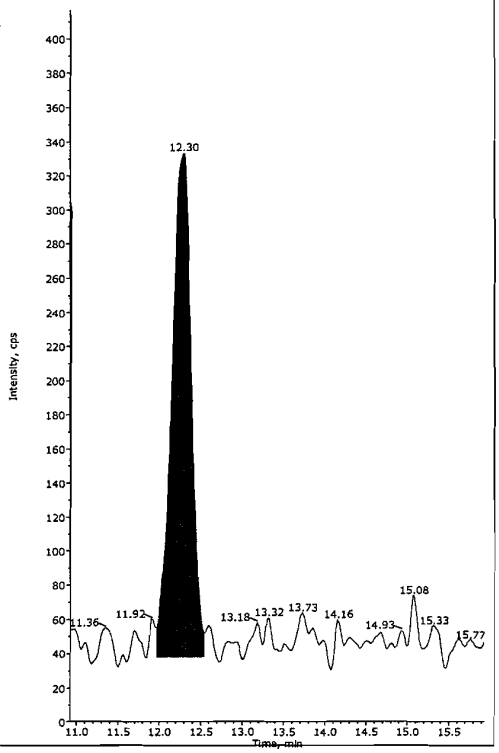


Collected by: N/A
Electronic Signature: no
Operator: lcms1

Printing Time: 1:44:22 PM
Printing Date: Wednesday, April 30, 2014

Sample Name: "WG473483-09 MRL (0.2ug/L)" Sample ID: "WG473483-09" File: "LM24571.wiff"
Peak Name: "Perchlorate conf" Mass(es): "100.8/85.2 amu"
Comment: "1,1 STD63472" Annotation: ""

Sample Index:	1
Sample Type:	Unknown
Concentration:	N/A
Calculated Conc:	0.209 ug/L
Acq. Date:	4/29/2014
Acq. Time:	3:32:17 AM
Modified:	Yes
Proc. Algorithm:	Analyst Classic
Bunching Factor:	2
Noise Threshold:	2.40 cps
Area Threshold:	12.01 cps
Num. Smooths:	5
Sep. Width:	0.20
Sep. Height:	0.01
Exp. Peak Ratio:	5.00
Exp. Adj. Ratio:	4.00
Exp. Val. Ratio:	3.00
RT Window:	30.000 sec
Expected RT:	13.4 min
Use Relative RT:	Yes
Int. Type:	Manual
Retention Time:	12.3 min
Area:	4.91e+003 counts
Height:	295.698 cps
Start Time:	11.968 min
End Time:	12.536 min



#2
JWR/04/30/14

mlc 4/30/14

Collected by: N/A
Electronic Signature: no
Operator: lcms1

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Created with Analyst Reporter
Printed: 4/30/2014 7:07 PM

Data File	LM24582.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/29/2014 7:00:31 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

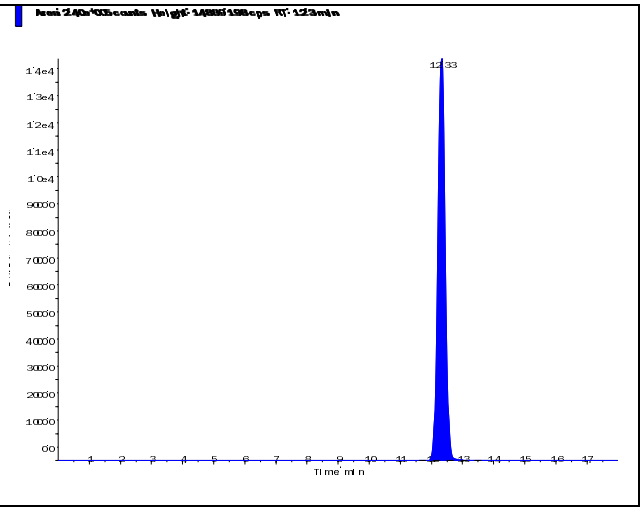
Sample Name	WG473483-10 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM24582.wiff	**Injection Volume**	10.00
Acquisition Date	4/29/2014 7:00:31 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473483-10	**Dilution Factor**	1.00
Sample Comment	1,1 STD63472	**Weight to Volume**	0.00

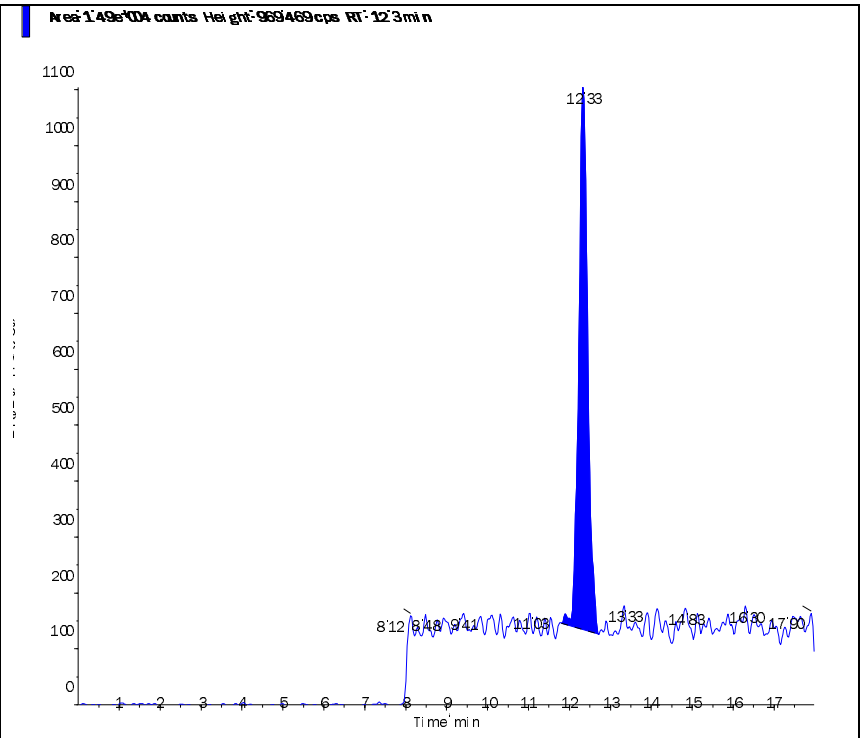
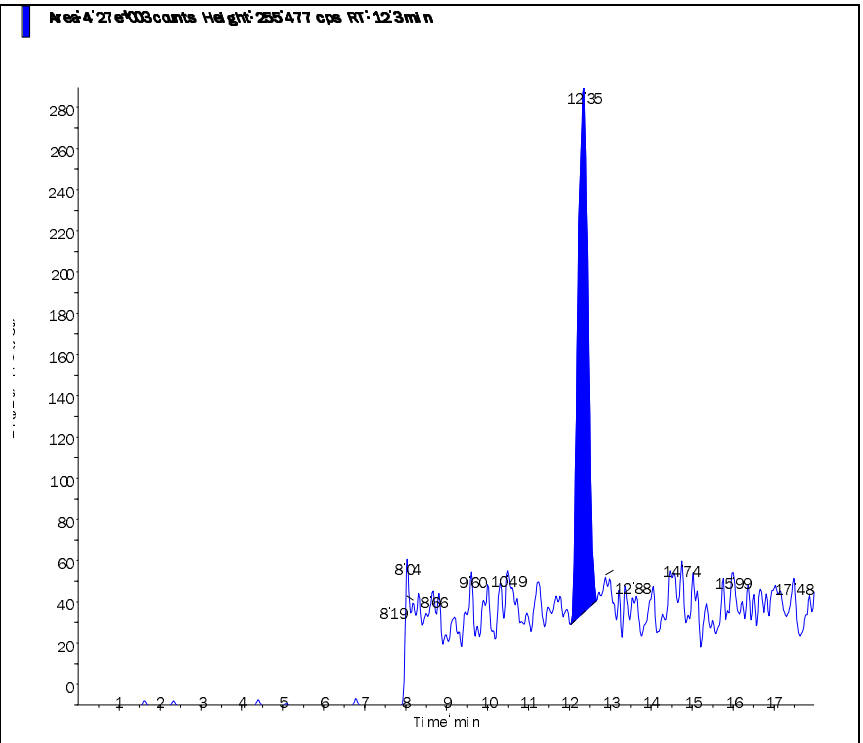
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.400e+05	12.30	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.490e+04	12.30	N/A	0.211
Perchlorate conf	4.270e+03	12.30	N/A	0.184

O18LP (Internal Standard)

RT (Exp. RT): 12.30(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 12.30 (13.40) min Calculated conc: 0.211 ng/ml Area Ratio: 0.062 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 12.30 (13.40) min Calculated conc: 0.184 ng/ml Area Ratio: 0.018 Sample Type: (Unknown)	

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Created with Analyst Reporter
Printed: 4/30/2014 7:08 PM

Data File	LM24585.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/29/2014 6:10:16 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

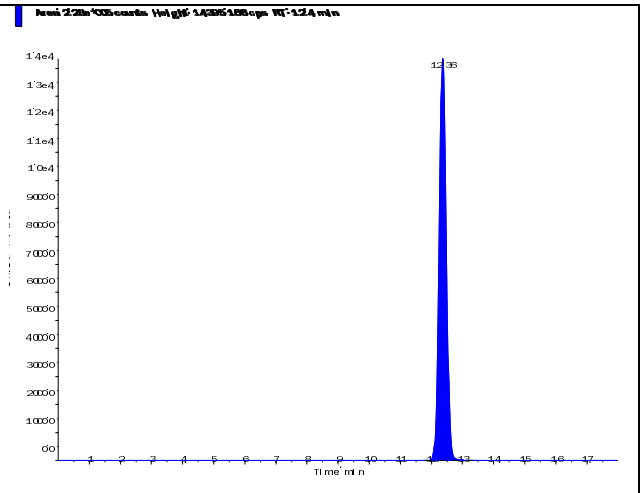
Sample Name	WG473483-11 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM24585.wiff	**Injection Volume**	10.00
Acquisition Date	4/29/2014 6:10:16 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473483-11	**Dilution Factor**	1.00
Sample Comment	1,1 STD63472	**Weight to Volume**	0.00

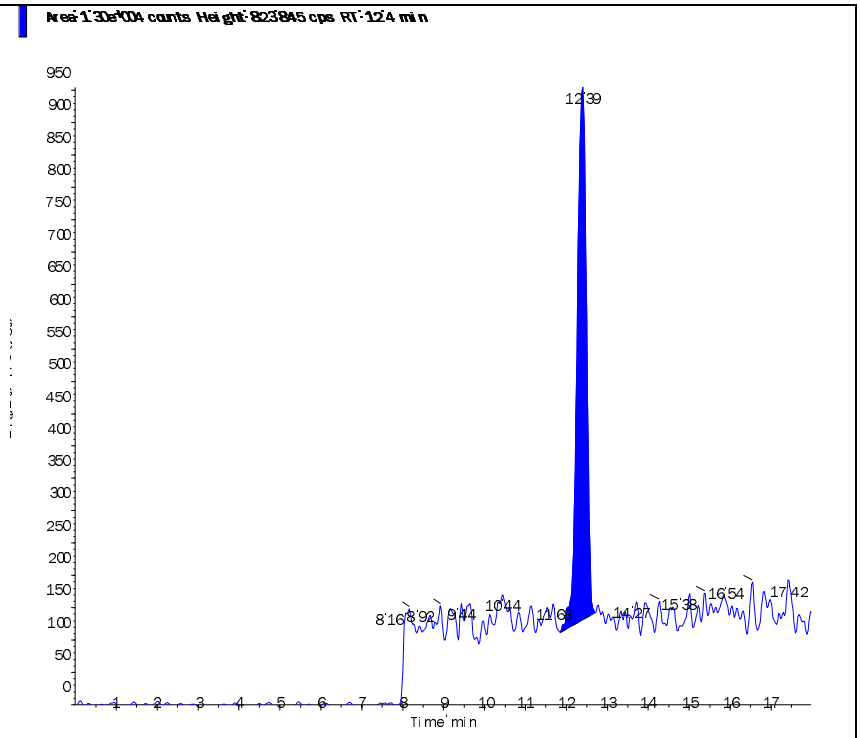
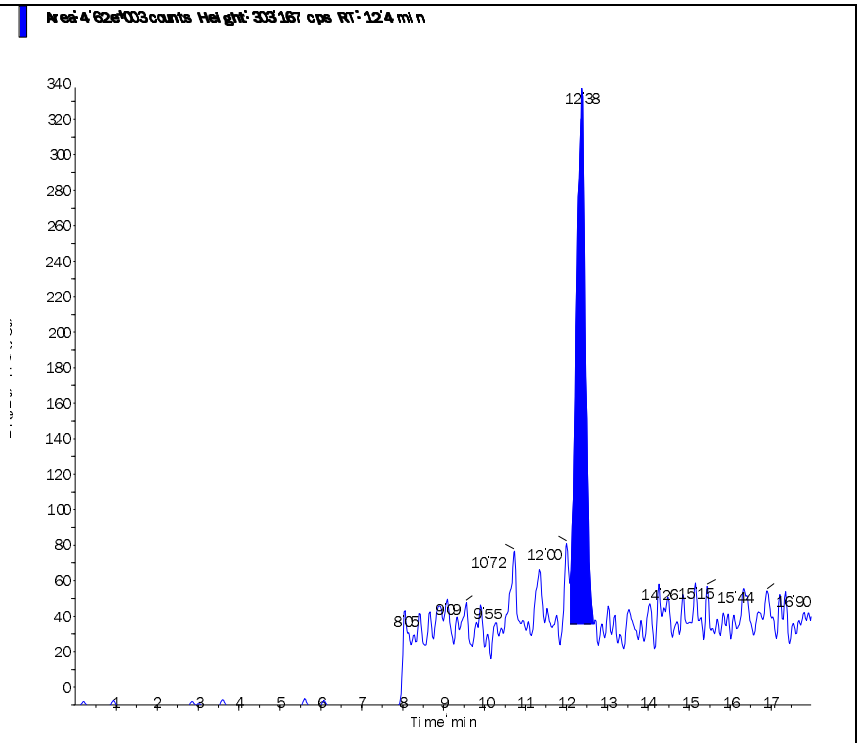
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.280e+05	12.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.300e+04	12.40	N/A	0.193
Perchlorate conf	4.620e+03	12.40	N/A	0.21

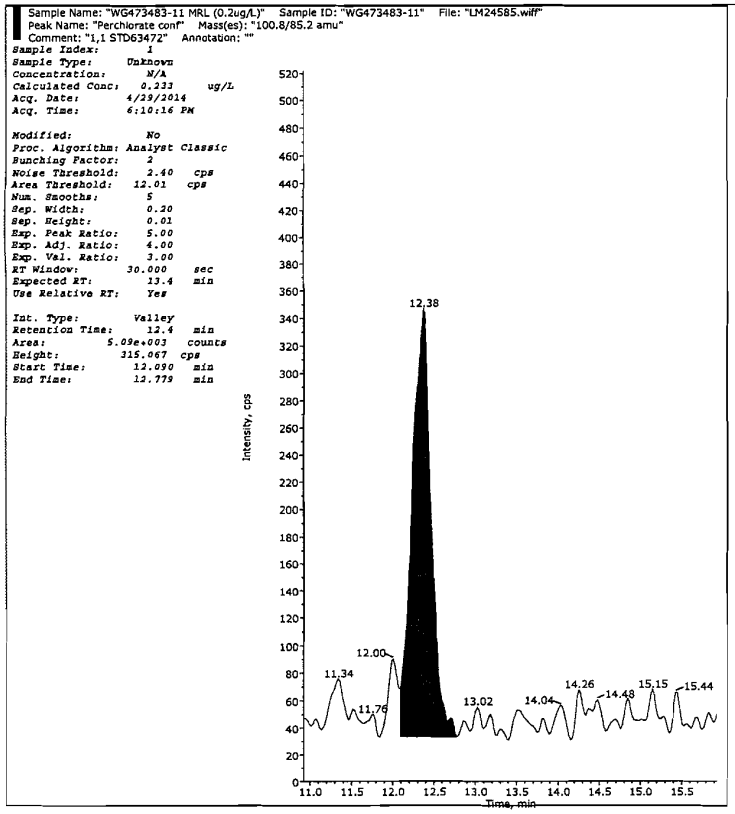
O18LP (Internal Standard)

RT (Exp. RT): 12.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



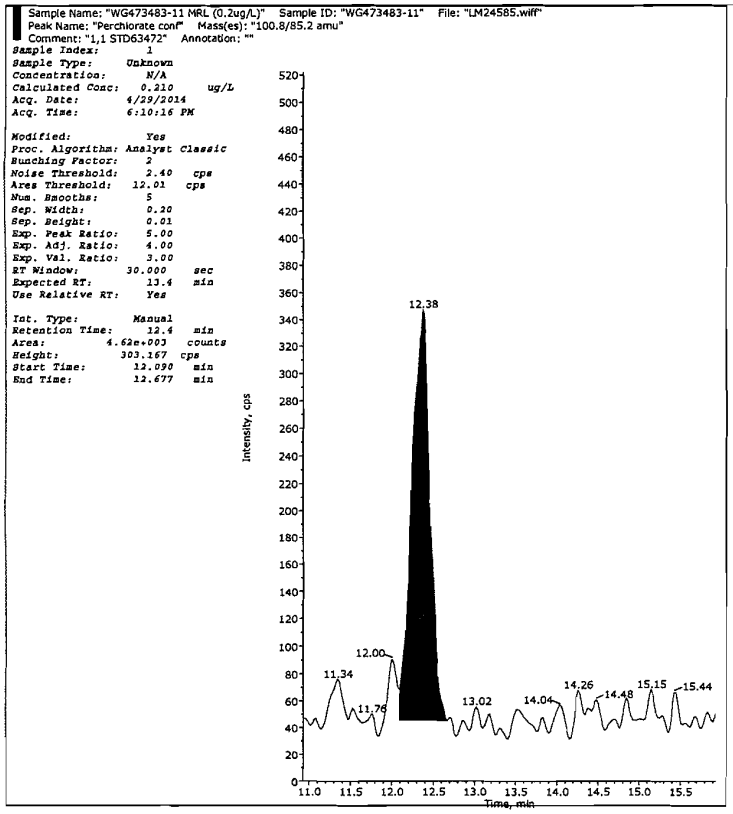
Perchlorate (98.8/83.3 amu) RT (Exp. RT): 12.40 (13.40) min Calculated conc: 0.193 ng/ml Area Ratio: 0.057 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 12.40 (13.40) min Calculated conc: 0.21 ng/ml Area Ratio: 0.02 Sample Type: (Unknown)	

Printing Time: 1:24:01 PM
Printing Date: Wednesday, April 30, 2014



Collected by: N/A
Electronic Signature: no
Operator: lcms1

Printing Time: 1:50:30 PM
Printing Date: Wednesday, April 30, 2014



#4
JWR/04/30/14

mll 4/30/14

Collected by: N/A
Electronic Signature: no
Operator: lcms1

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Created with Analyst Reporter
Printed: 4/30/2014 7:10 PM

Data File	LM24595.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/29/2014 9:19:40 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

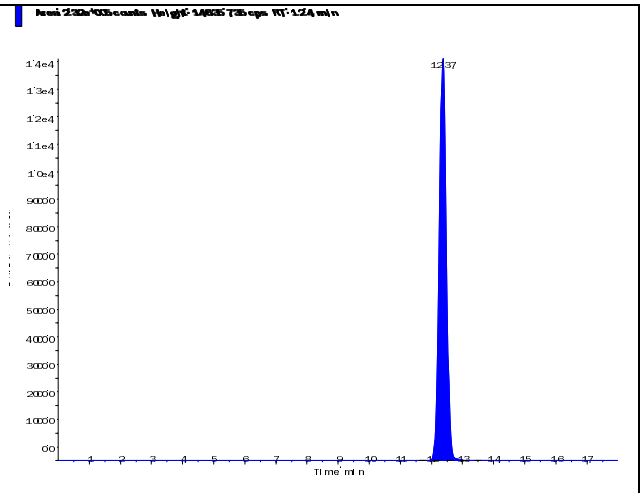
Sample Name	WG473483-12 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM24595.wiff	**Injection Volume**	10.00
Acquisition Date	4/29/2014 9:19:40 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473483-12	**Dilution Factor**	1.00
Sample Comment	1,1 STD63472	**Weight to Volume**	0.00

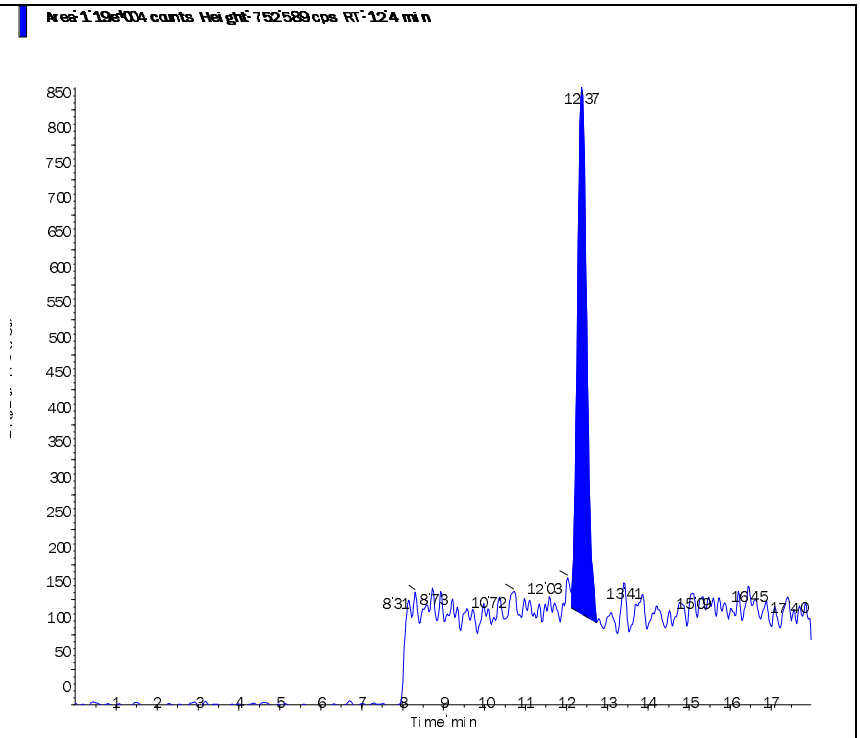
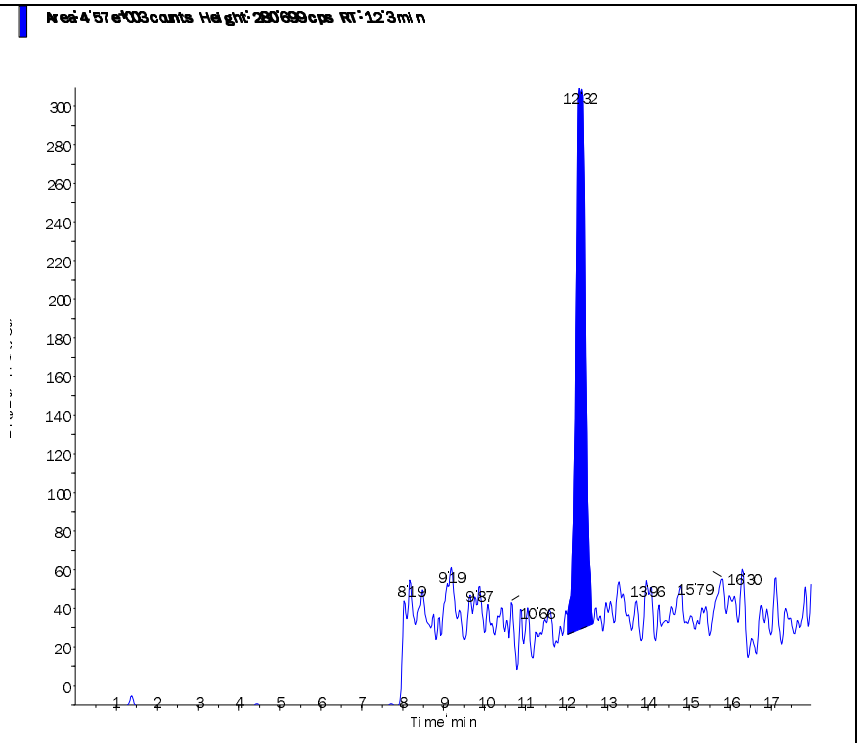
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.320e+05	12.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.190e+04	12.40	N/A	0.172
Perchlorate conf	4.570e+03	12.30	N/A	0.205

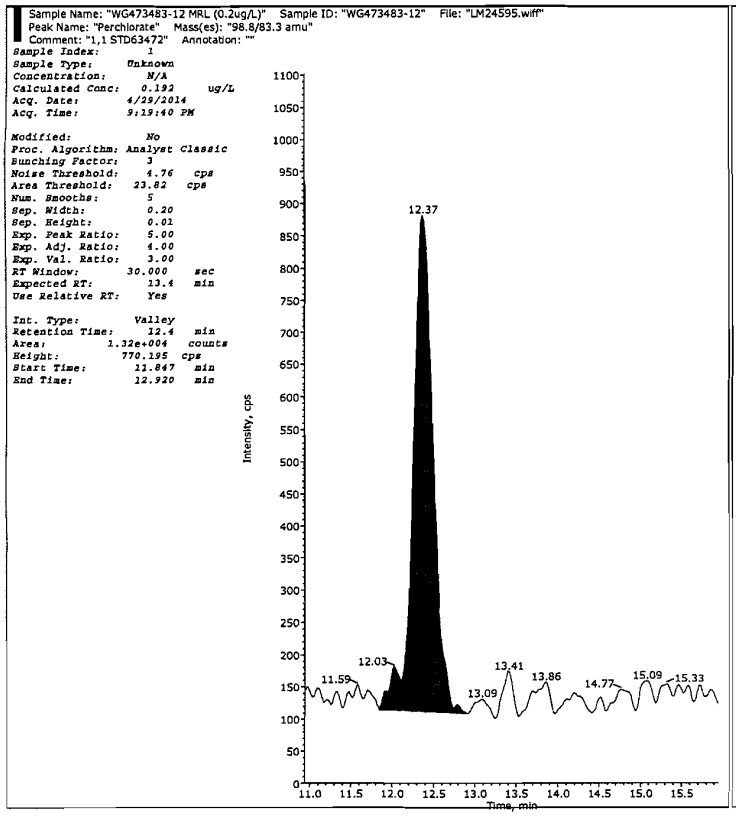
O18LP (Internal Standard)

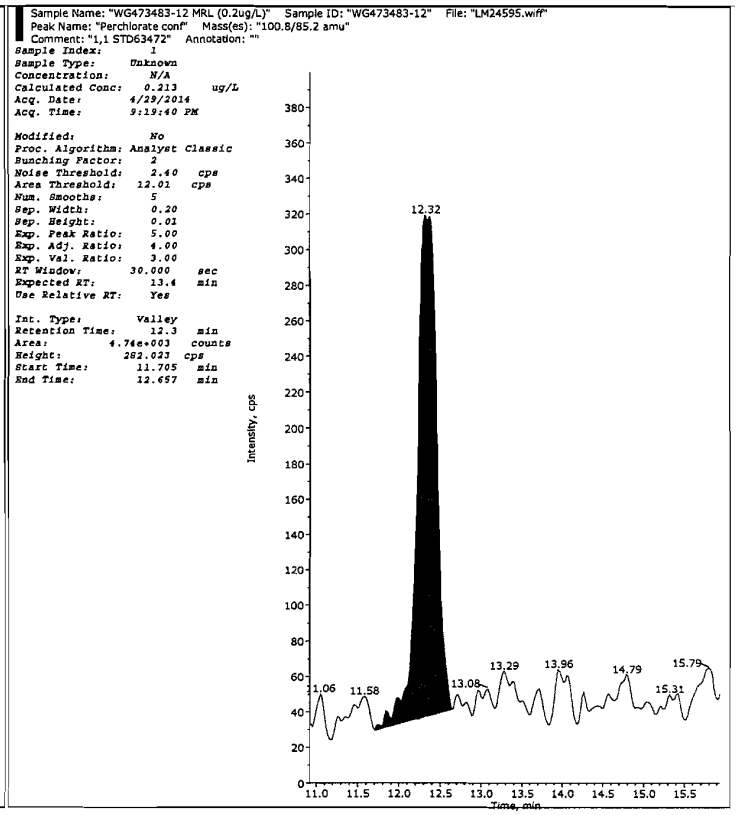
RT (Exp. RT): 12.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 12.40 (13.40) min Calculated conc: 0.172 ng/ml Area Ratio: 0.051 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 12.30 (13.40) min Calculated conc: 0.205 ng/ml Area Ratio: 0.02 Sample Type: (Unknown)	

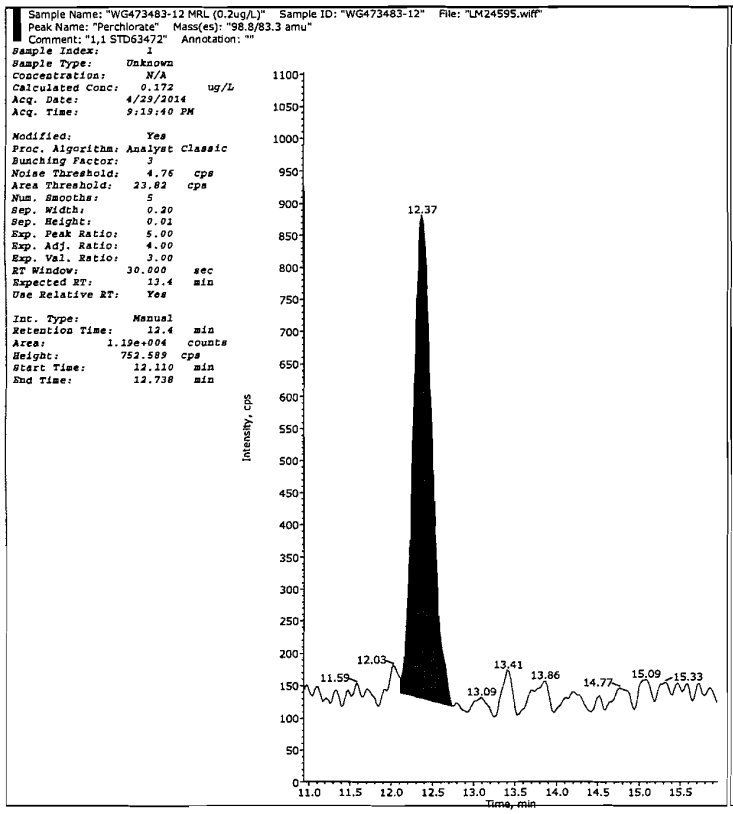
Printing Time: 1:31:48 PM
Printing Date: Wednesday, April 30, 2014

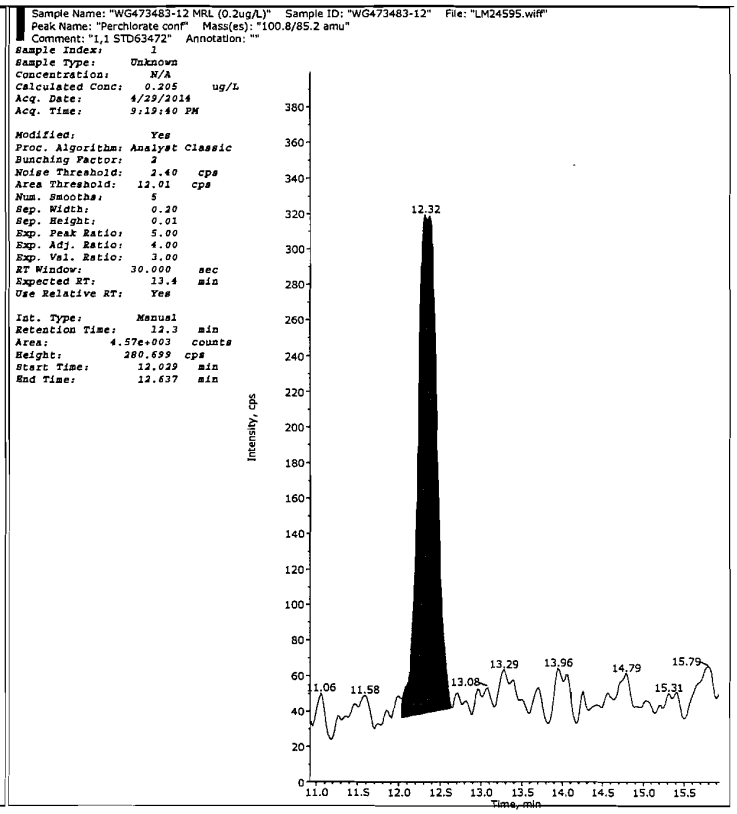




Collected by: N/A
Electronic Signature: no
Operator: lcms1

Printing Time: 1:53:44 PM
Printing Date: Wednesday, April 30, 2014





#4
JWR/04/30/14

#2
JWR/04/30/14

mlk 4/30/14

Collected by: N/A
Electronic Signature: no
Operator: lcms1

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Created with Analyst Reporter
Printed: 4/30/2014 6:58 PM

Data File	LM24547.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/28/2014 7:57:48 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

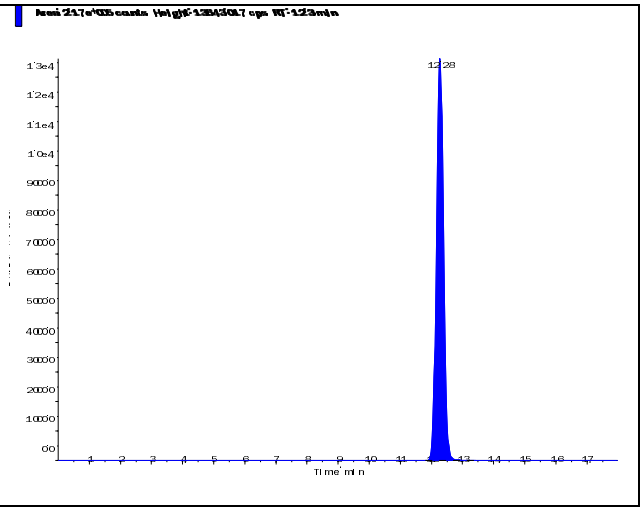
Sample Name	WG473484-01 CCB	**Injection Vial**	1.00
Data File	LM24547.wiff	**Injection Volume**	10.00
Acquisition Date	4/28/2014 7:57:48 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473484-01	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.170e+05	12.30	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	0.000e+00	0.00	N/A	No Peak
Perchlorate conf	2.590e+02	12.30	N/A	0.0025

O18LP (Internal Standard)

RT (Exp. RT): 12.30(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



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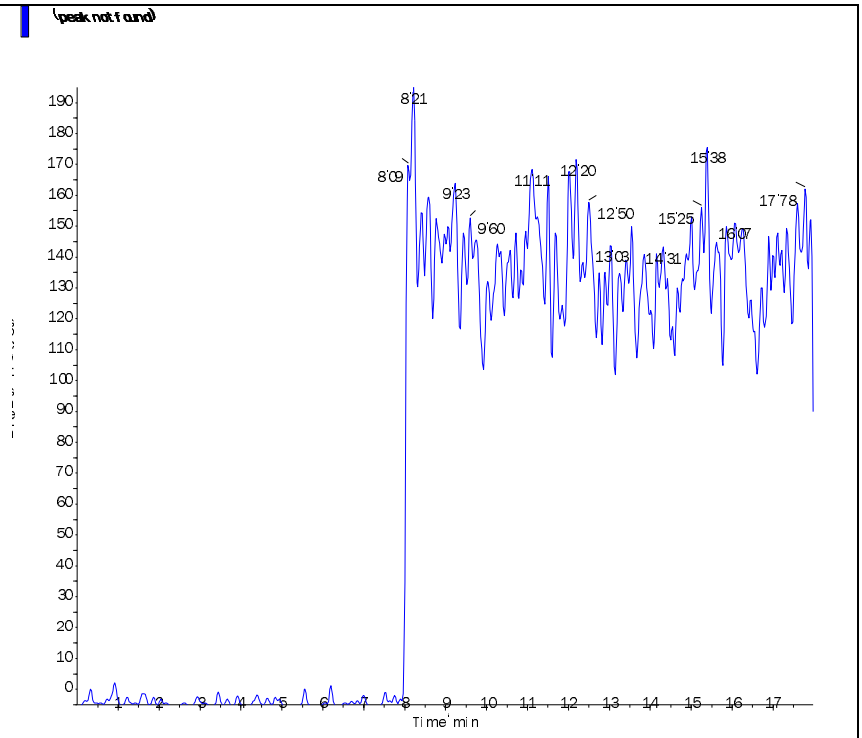
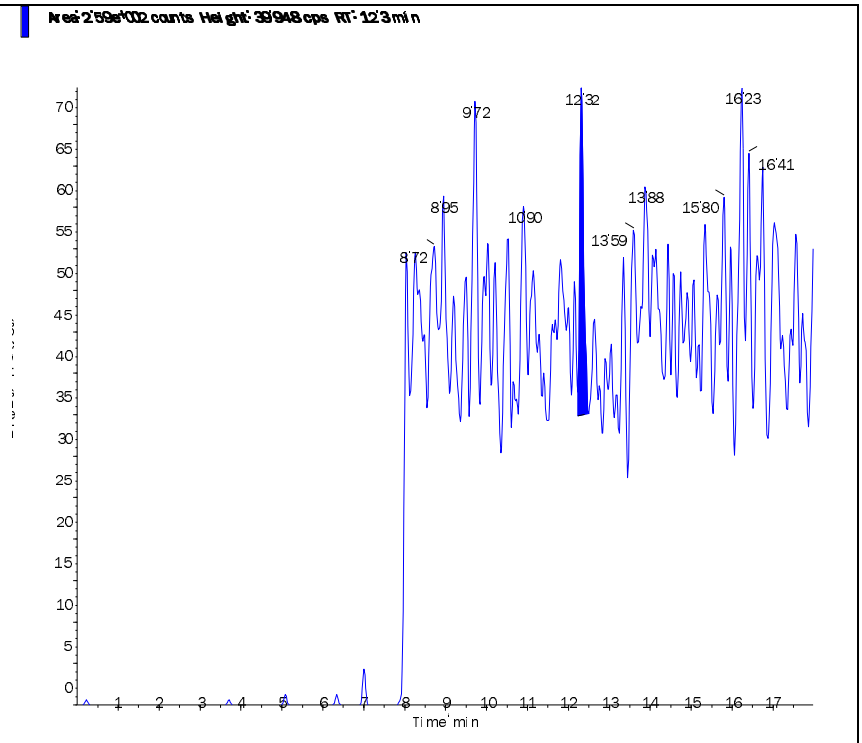
Perchlorate (98.8/83.3 amu) RT (Exp. RT): 0.00 (13.40) min Calculated conc: No Peak ng/ml Area Ratio: 0.00 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 12.30 (13.40) min Calculated conc: 0.0025 ng/ml Area Ratio: 0.001 Sample Type: (Unknown)	

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Printed: 4/30/2014 7:02 PM

Data File	LM24562.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/29/2014 12:41:49 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

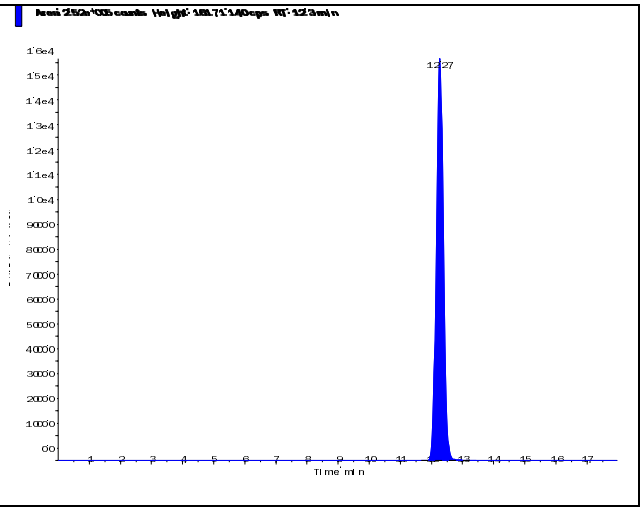
Sample Name	WG473484-04 CCB	**Injection Vial**	1.00
Data File	LM24562.wiff	**Injection Volume**	10.00
Acquisition Date	4/29/2014 12:41:49 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473484-04	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.520e+05	12.30	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	6.330e+02	12.30	N/A	< 0
Perchlorate conf	3.080e+02	12.30	N/A	0.0028

O18LP (Internal Standard)

RT (Exp. RT): 12.30(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



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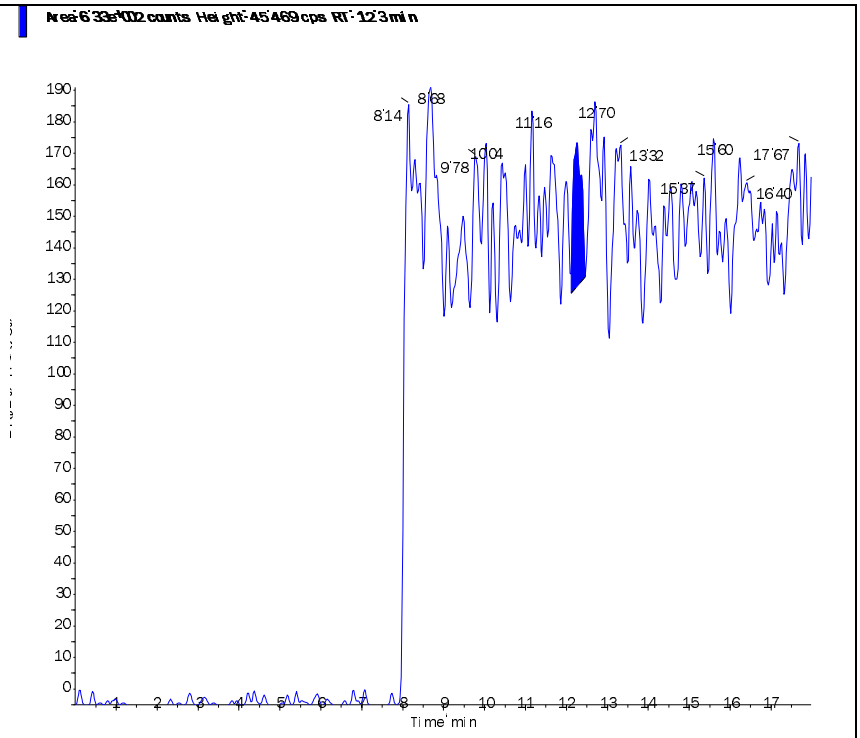
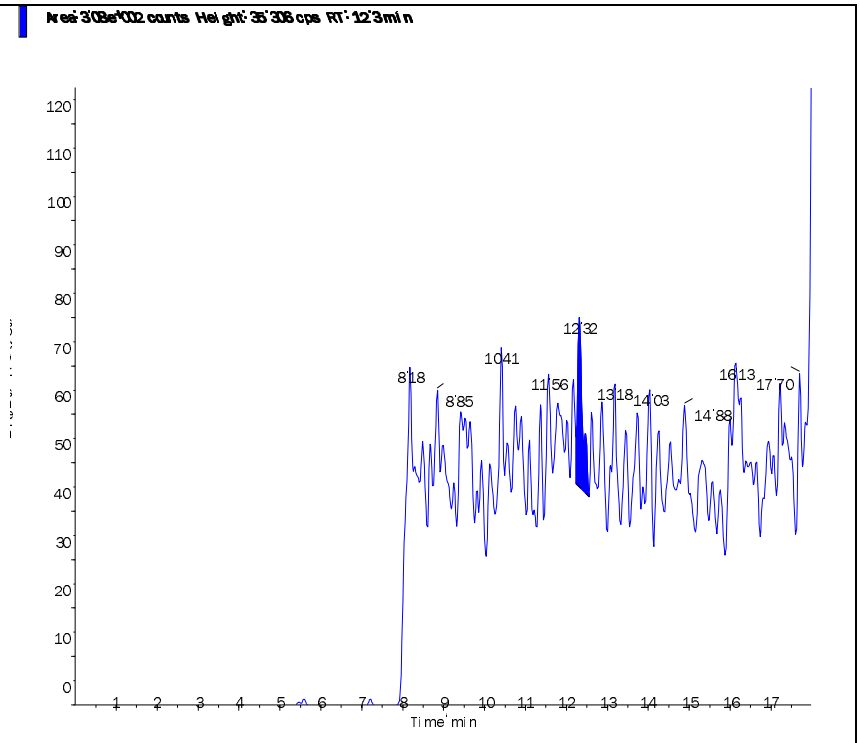
Printed: 4/30/2014 7:02 PM

Perchlorate (98.8/83.3 amu) RT (Exp. RT): 12.30 (13.40) min Calculated conc: < 0 ng/ml Area Ratio: 0.003 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 12.30 (13.40) min Calculated conc: 0.0028 ng/ml Area Ratio: 0.001 Sample Type: (Unknown)	

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Created with Analyst Reporter
Printed: 4/30/2014 7:04 PM

Data File	LM24572.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/29/2014 3:51:14 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

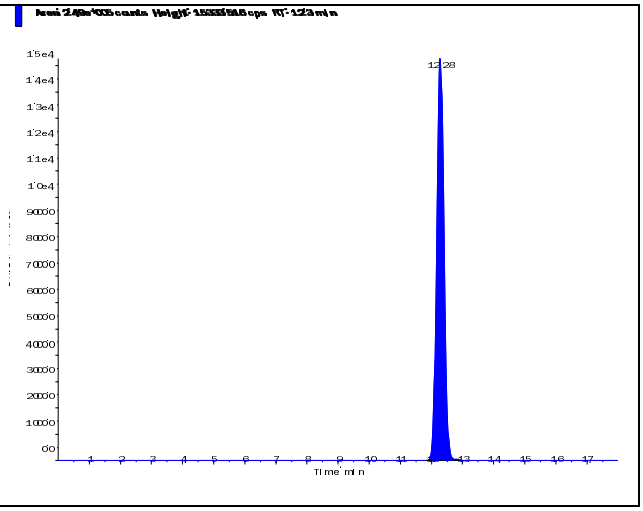
Sample Name	WG473484-06 CCB	**Injection Vial**	1.00
Data File	LM24572.wiff	**Injection Volume**	10.00
Acquisition Date	4/29/2014 3:51:14 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473484-06	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

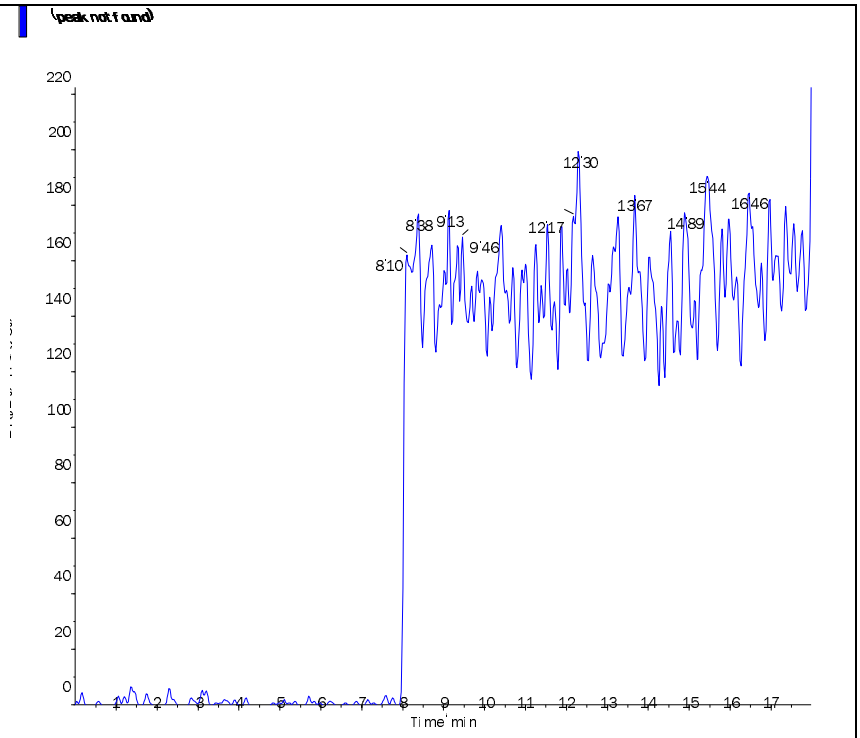
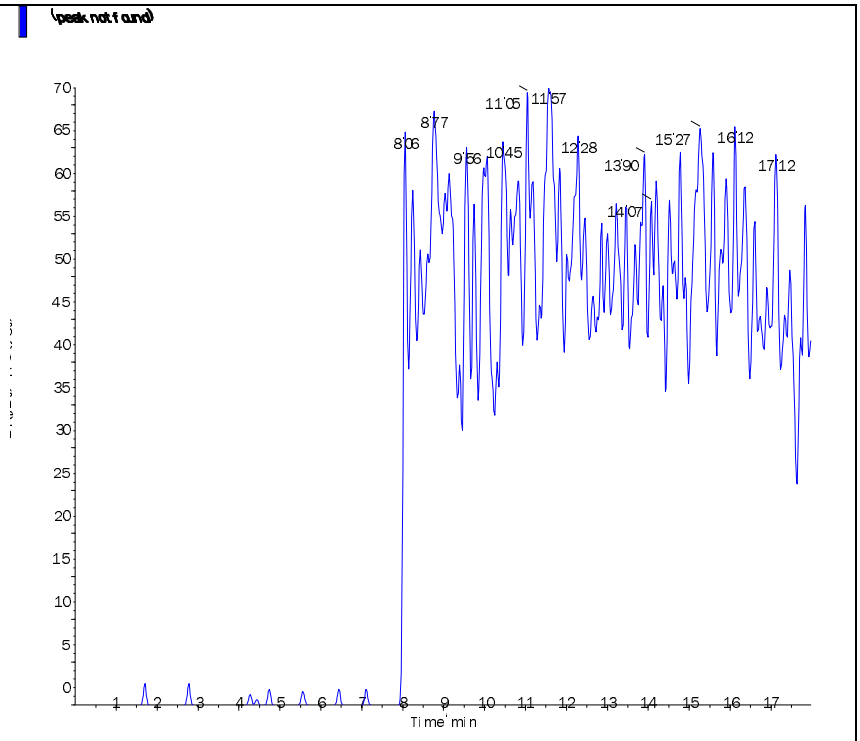
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.490e+05	12.30	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	0.000e+00	0.00	N/A	No Peak
Perchlorate conf	0.000e+00	0.00	N/A	No Peak

O18LP (Internal Standard)

RT (Exp. RT): 12.30(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 0.00 (13.40) min Calculated conc: No Peak ng/ml Area Ratio: 0.00 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 0.00 (13.40) min Calculated conc: No Peak ng/ml Area Ratio: 0.00 Sample Type: (Unknown)	

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Printed: 4/30/2014 7:07 PM

Data File	LM24583.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/29/2014 7:19:28 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

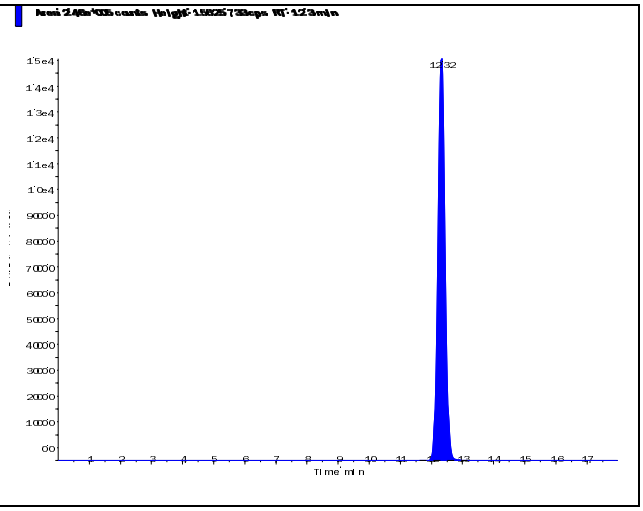
Sample Name	WG473484-08 CCB	**Injection Vial**	1.00
Data File	LM24583.wiff	**Injection Volume**	10.00
Acquisition Date	4/29/2014 7:19:28 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473484-08	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

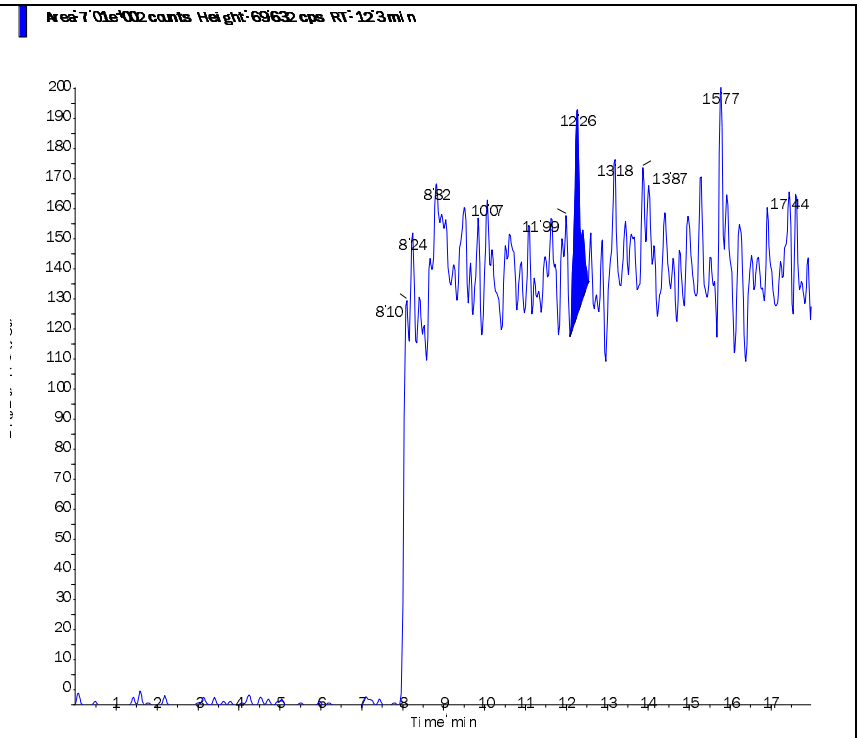
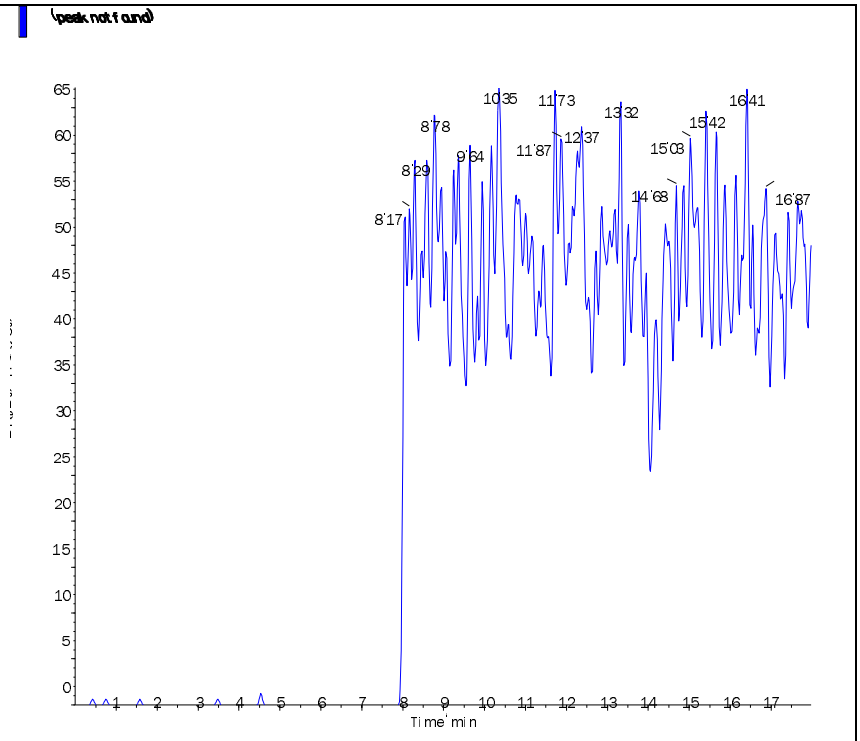
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.460e+05	12.30	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.010e+02	12.30	N/A	0.0004
Perchlorate conf	0.000e+00	0.00	N/A	No Peak

O18LP (Internal Standard)

RT (Exp. RT): 12.30(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 12.30 (13.40) min Calculated conc: 0.0004 ng/ml Area Ratio: 0.003 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 0.00 (13.40) min Calculated conc: No Peak ng/ml Area Ratio: 0.00 Sample Type: (Unknown)	

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Data File	LM24586.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/29/2014 6:29:12 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

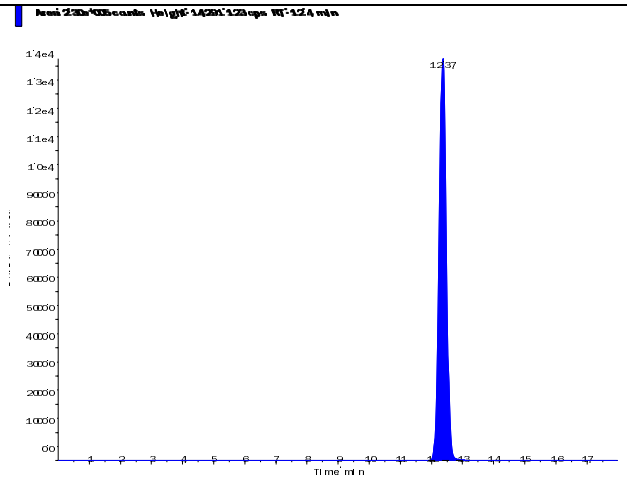
Sample Name	WG473484-10 CCB	**Injection Vial**	1.00
Data File	LM24586.wiff	**Injection Volume**	10.00
Acquisition Date	4/29/2014 6:29:12 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473484-10	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.300e+05	12.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	4.550e+02	12.30	N/A	< 0
Perchlorate conf	1.700e+02	12.40	N/A	< 0

O18LP (Internal Standard)

RT (Exp. RT): 12.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



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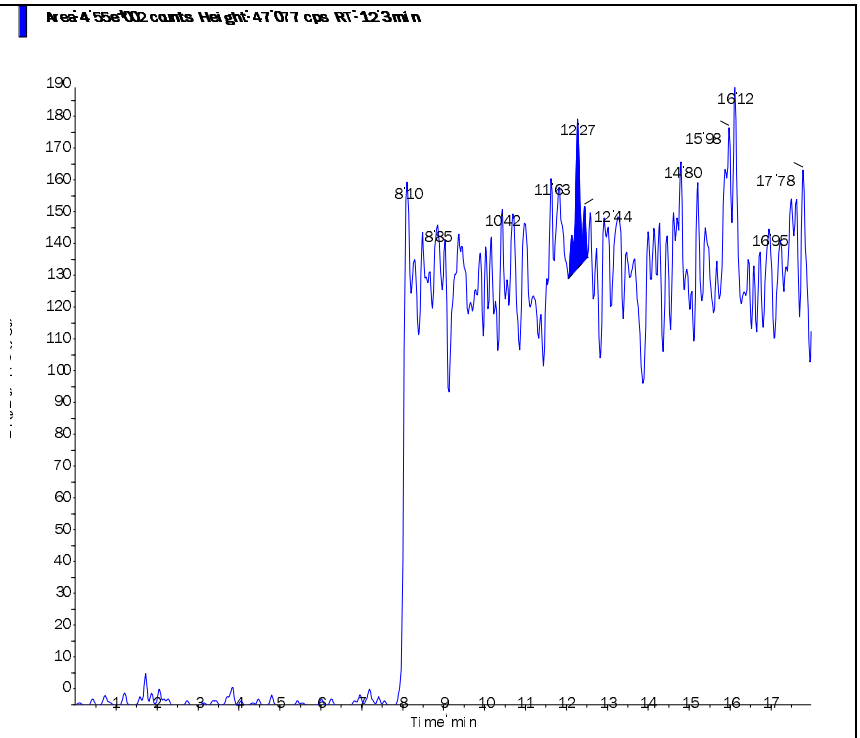
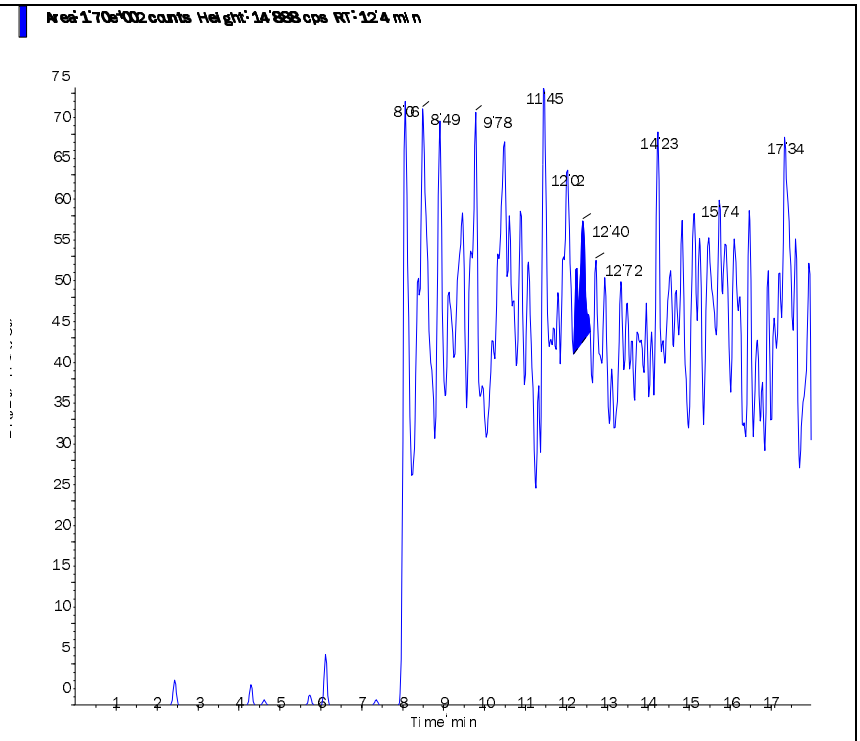
Perchlorate (98.8/83.3 amu) RT (Exp. RT): 12.30 (13.40) min Calculated conc: < 0 ng/ml Area Ratio: 0.002 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 12.40 (13.40) min Calculated conc: < 0 ng/ml Area Ratio: 0.001 Sample Type: (Unknown)	

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Created with Analyst Reporter
Printed: 4/30/2014 7:10 PM

Data File	LM24596.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/29/2014 9:38:34 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

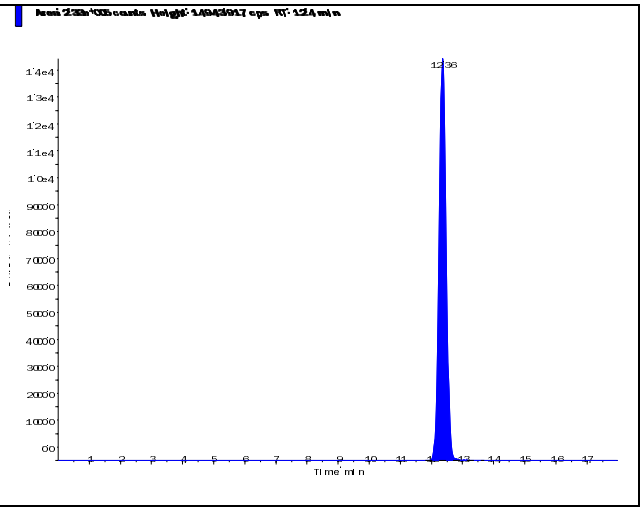
Sample Name	WG473484-12 CCB	**Injection Vial**	1.00
Data File	LM24596.wiff	**Injection Volume**	10.00
Acquisition Date	4/29/2014 9:38:34 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473484-12	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.330e+05	12.40	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.690e+03	12.30	N/A	0.0159
Perchlorate conf	1.340e+02	12.20	N/A	< 0

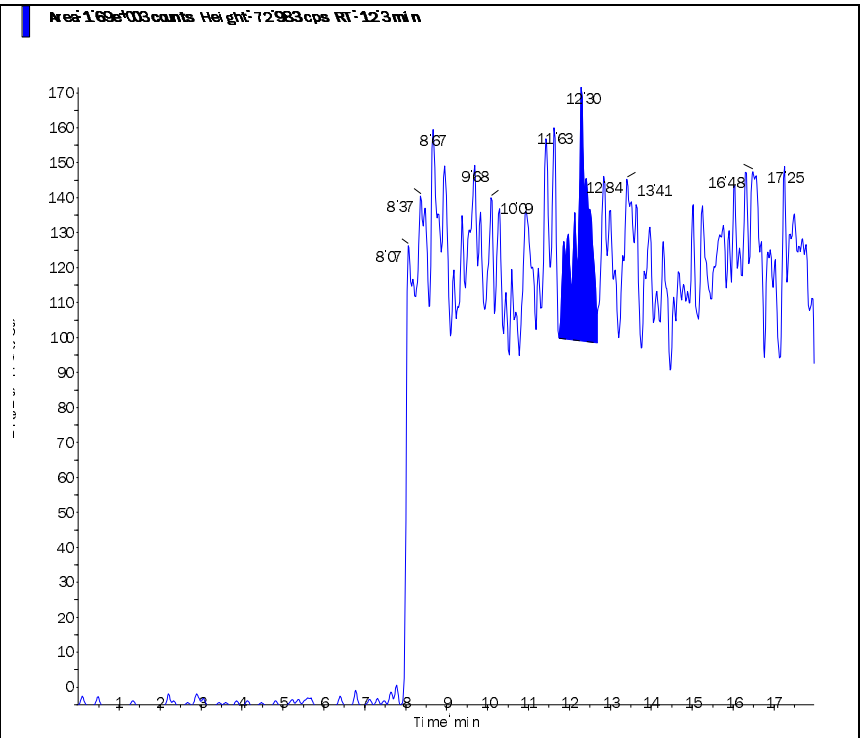
O18LP (Internal Standard)

RT (Exp. RT): 12.40(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



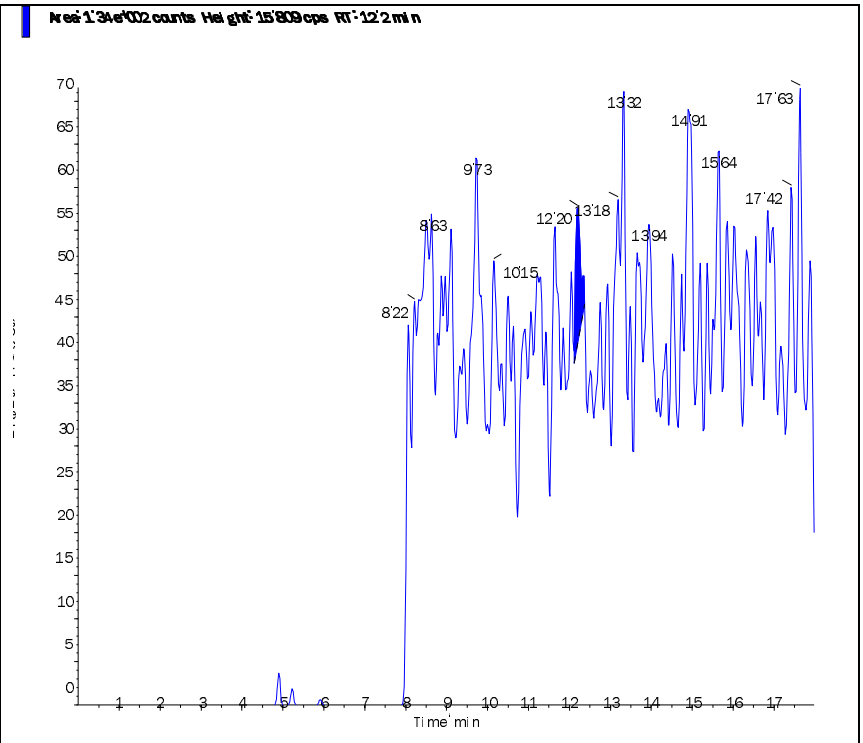
Perchlorate (98.8/83.3 amu)

RT (Exp. RT):	12.30 (13.40) min
Calculated conc:	0.0159 ng/ml
Area Ratio:	0.007
Sample Type:	(Unknown)



Perchlorate conf (100.8/85.2 amu)

RT (Exp. RT):	12.20 (13.40) min
Calculated conc:	< 0 ng/ml
Area Ratio:	0.001
Sample Type:	(Unknown)



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Data File	LM24587.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/29/2014 6:48:11 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

Sample Name	WG473483-01 MCT (0.2ug/L)(Rerun)	**Injection Vial**	4.00
Data File	LM24587.wiff	**Injection Volume**	10.00
Acquisition Date	4/29/2014 6:48:11 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473483-01	**Dilution Factor**	1.00
Sample Comment	1,1 STD63472	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.250e+05	9.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.350e+04	9.25	N/A	0.203
Perchlorate conf	4.610e+03	9.20	N/A	0.213

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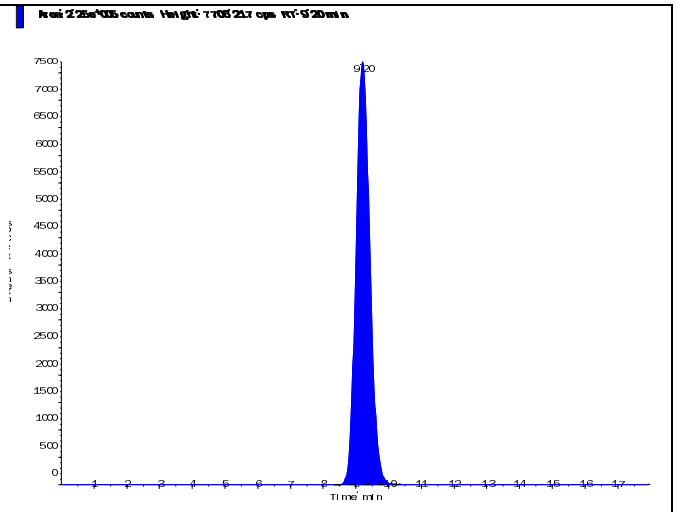
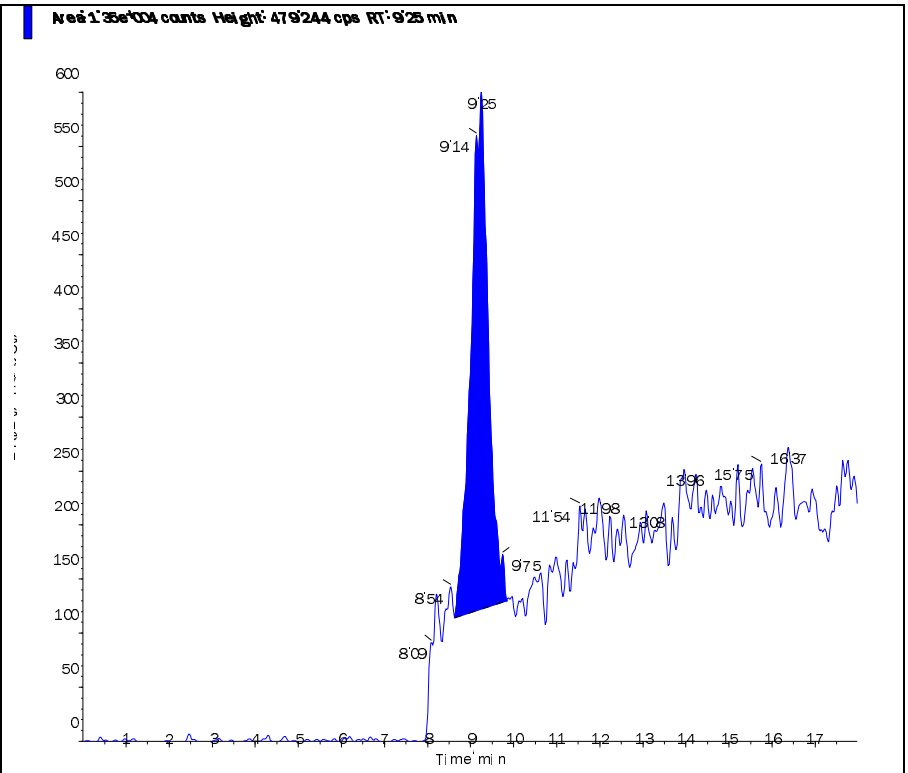
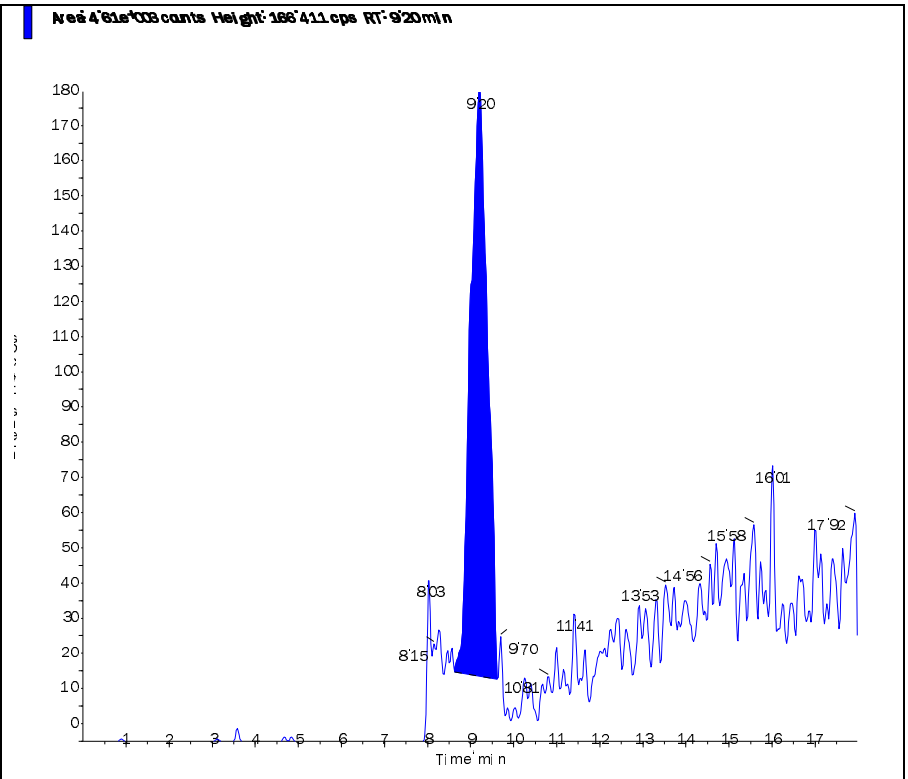
Printed: 4/30/2014 7:09 PM

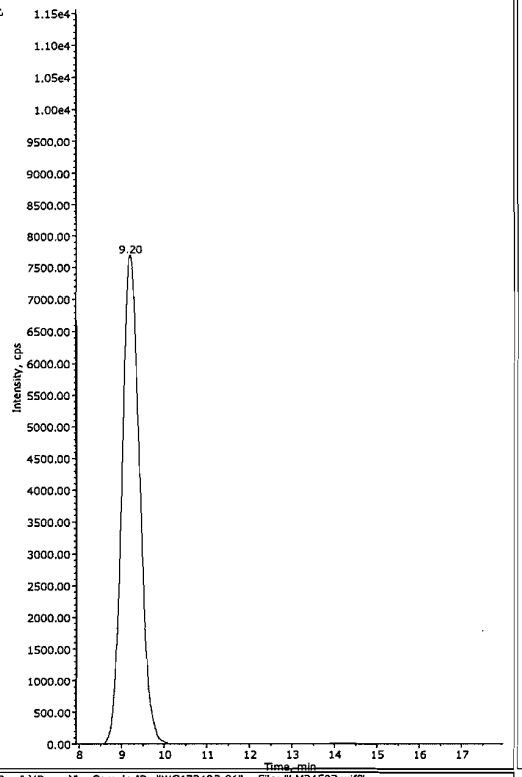
O18LP (Internal Standard) RT (Exp. RT): 9.20(9.19) min Concentration: 5.00 ug/L Sample Type: (Unknown)	

Perchlorate (98.8/83.3 amu) RT (Exp. RT): 9.25 (13.40) min Calculated conc: 0.203 ng/ml Area Ratio: 0.06 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 9.20 (13.40) min Calculated conc: 0.213 ng/ml Area Ratio: 0.02 Sample Type: (Unknown)	

Printing Time: 1:28:12 PM
Printing Date: Wednesday, April 30, 2014

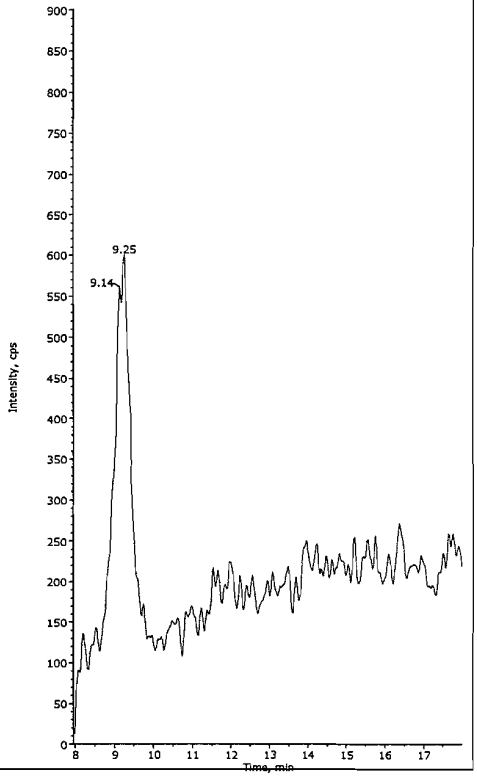
Sample Name: "WG473483-01 MCT (0.2ug/L)(Rerun)" Sample ID: "WG473483-01" File: "LM24587.wiff"
Peak Name: "O18LP(IS)" Mass(es): "107.0/89.0 amu"
Comment: "1,1 STD63472" Annotation: ""

Sample Index:	1
Sample Type:	Unknown
Concentration:	5.00 ug/L
Calculated Conc:	N/A
Acq. Date:	4/29/2014
Acq. Time:	6:48:11 PM
Modified:	No



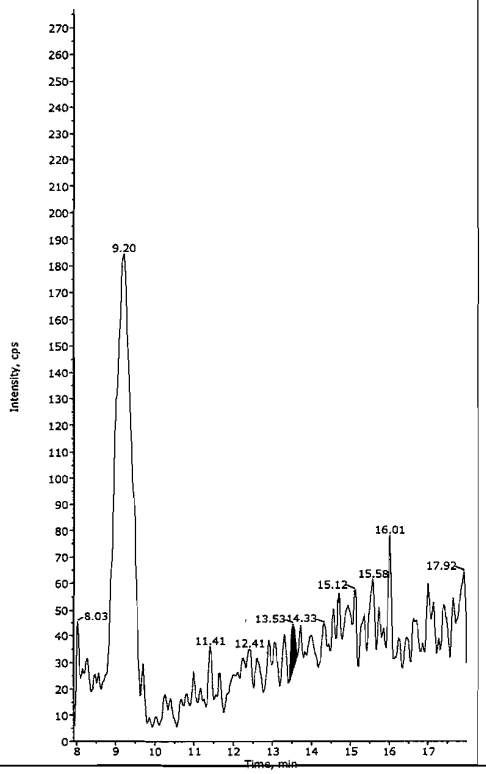
Sample Name: "WG473483-01 MCT (0.2ug/L)(Rerun)" Sample ID: "WG473483-01" File: "LM24587.wiff"
Peak Name: "Perchlorate" Mass(es): "98.8/83.3 amu"
Comment: "1,1 STD63472" Annotation: ""

Sample Index:	1
Sample Type:	Unknown
Concentration:	N/A
Calculated Conc:	No Intercept
Acq. Date:	4/29/2014
Acq. Time:	6:48:11 PM
Modified:	No



Sample Name: "WG473483-01 MCT (0.2ug/L)(Rerun)" Sample ID: "WG473483-01" File: "LM24587.wiff"
Peak Name: "Perchlorate conf" Mass(es): "100.8/85.2 amu"
Comment: "1,1 STD63472" Annotation: ""

Sample Index:	1
Sample Type:	Unknown
Concentration:	N/A
Calculated Conc:	No Intercept
Acq. Date:	4/29/2014
Acq. Time:	6:48:11 PM
Modified:	No
Proc. Algorithm:	Analyst Classic
Bunching Factor:	2
Noise Threshold:	2.40 cps
Area Threshold:	12.01 cps
Num. Smooths:	5
Sep. Width:	0.20
Sep. Height:	0.01
Exp. Peak Ratio:	5.00
Exp. Adj. Ratio:	4.00
Exp. Val. Ratio:	3.00
RT Window:	30.000 sec
Expected RT:	13.4 min
Use Relative RT:	Yes
Int. Type:	Base To Base
Retention Time:	13.5 min
Area:	1.30e+003 counts
Height:	16.959 cps
Start Time:	13.427 min
End Time:	13.649 min

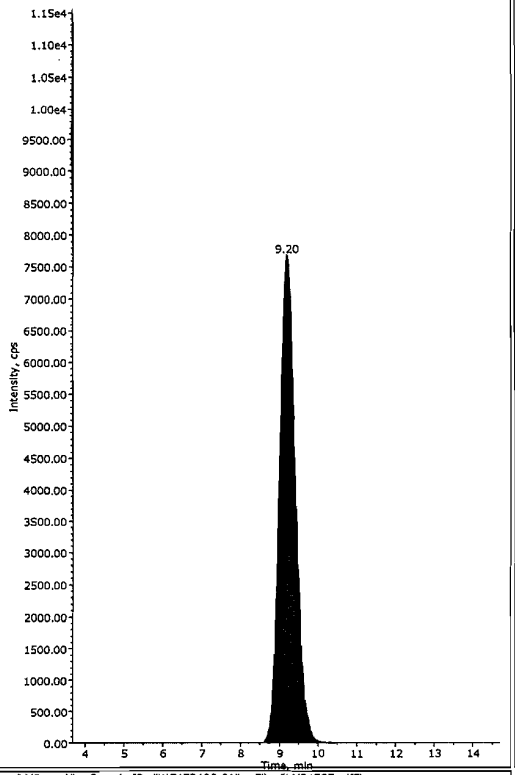


Collected by: N/A
Electronic Signature: no
Operator: lcms1

Printing Time: 1:52:23 PM
Printing Date: Wednesday, April 30, 2014

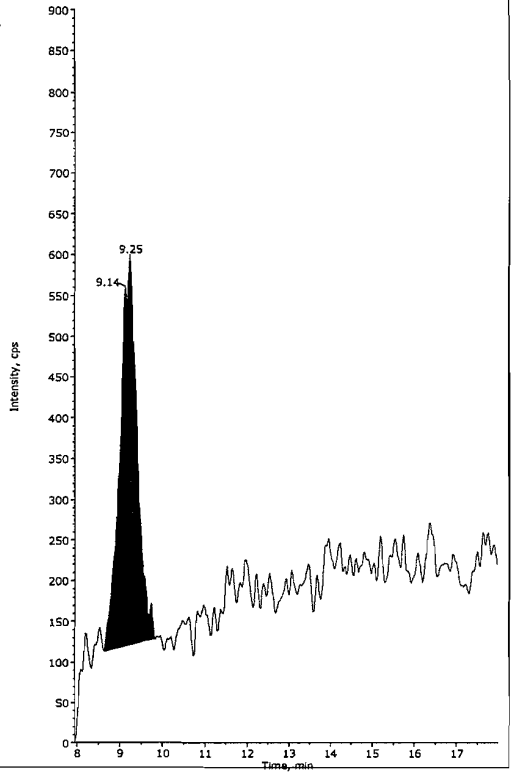
Sample Name: "WG473483-01 MCT (0.2ug/L)(Rerun)" Sample ID: "WG473483-01" File: "LM24587.wiff"
Peak Name: "O18LP(IS)" Mass(es): "107.0/89.0 amu"
Comment: "1,1 STD63472" Annotation: ""

Sample Index:	1	
Sample Type:	Unknown	
Concentration:	5.00	ug/L
Calculated Conc:	N/A	
Acq. Date:	4/29/2014	
Acq. Time:	6:48:11 PM	
Modified:	Yes	
Proc. Algorithm:	Analyst Classic	
Bunching Factor:	5	
Noise Threshold:	5.47	cps
Area Threshold:	27.34	cps
Num. Smooths:	5	
Sep. Width:	0.20	
Sep. Height:	0.01	
Exp. Peak Ratio:	5.00	
Exp. Adj. Ratio:	4.00	
Exp. Val. Ratio:	3.00	
RT Window:	420.000	sec
Expected RT:	9.19	min
Use Relative RT:	No	
Int. Type:	Base To Base	
Retention Time:	9.20	min
Area:	2.25e+005	counts
Height:	7706.217	cps
Start Time:	8.333	min
End Time:	10.409	min



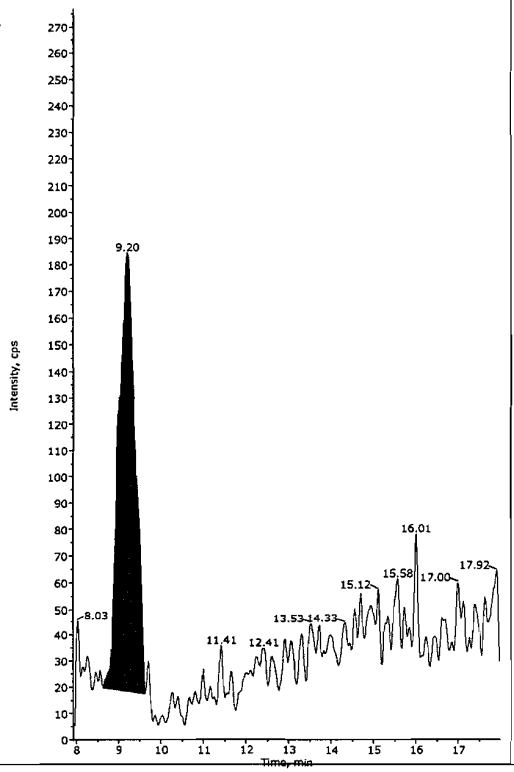
Sample Name: "WG473483-01 MCT (0.2ug/L)(Rerun)" Sample ID: "WG473483-01" File: "LM24587.wiff"
Peak Name: "Perchlorate" Mass(es): "98.8/83.3 amu"
Comment: "1,1 STD63472" Annotation: ""

Sample Index:	1	
Sample Type:	Unknown	
Concentration:	N/A	
Calculated Conc:	0.203	ug/L
Acq. Date:	4/29/2014	
Acq. Time:	6:48:11 PM	
Modified:	Yes	
Proc. Algorithm:	Analyst Classic	
Bunching Factor:	3	
Noise Threshold:	4.76	cps
Area Threshold:	23.82	cps
Num. Smooths:	5	
Sep. Width:	0.20	
Sep. Height:	0.01	
Exp. Peak Ratio:	5.00	
Exp. Adj. Ratio:	4.00	
Exp. Val. Ratio:	3.00	
RT Window:	30.000	sec
Expected RT:	13.4	min
Use Relative RT:	Yes	
Int. Type:	Manual	
Retention Time:	9.25	min
Area:	1.35e+004	counts
Height:	479.244	cps
Start Time:	8.627	min
End Time:	9.842	min



Sample Name: "WG473483-01 MCT (0.2ug/L)(Rerun)" Sample ID: "WG473483-01" File: "LM24587.wiff"
Peak Name: "Perchlorate conf" Mass(es): "100.8/85.2 amu"
Comment: "1,1 STD63472" Annotation: ""

Sample Index:	1	
Sample Type:	Unknown	
Concentration:	N/A	
Calculated Conc:	0.213	ug/L
Acq. Date:	4/29/2014	
Acq. Time:	6:48:11 PM	
Modified:	Yes	
Proc. Algorithm:	Analyst Classic	
Bunching Factor:	2	
Noise Threshold:	2.40	cps
Area Threshold:	12.01	cps
Num. Smooths:	5	
Sep. Width:	0.20	
Sep. Height:	0.01	
Exp. Peak Ratio:	5.00	
Exp. Adj. Ratio:	4.00	
Exp. Val. Ratio:	3.00	
RT Window:	30.000	sec
Expected RT:	13.4	min
Use Relative RT:	Yes	
Int. Type:	Manual	
Retention Time:	9.20	min
Area:	4.61e+003	counts
Height:	166.411	cps
Start Time:	8.627	min
End Time:	9.619	min



#1
JWR 04/30/14
MM 4/30/14

Collected by: N/A
Electronic Signature: no
Operator: lcms1

2.1.1.5 Raw QC Data

Applied Biosystems | MDS SCIEX

Created with Analyst Reporter
Printed: 4/30/2014 6:59 PM

Data File	LM24551.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/28/2014 9:13:29 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

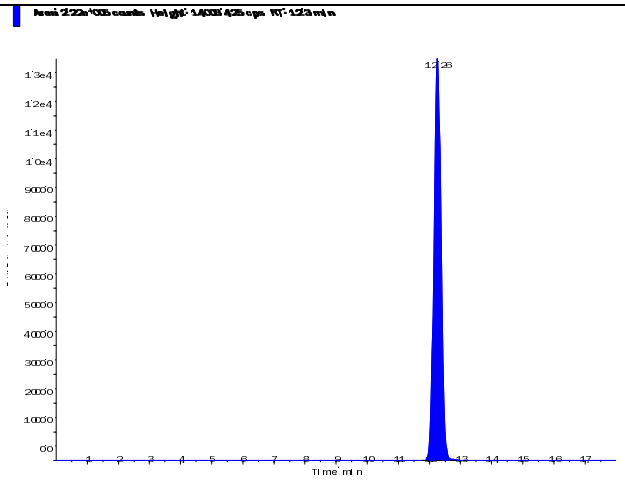
Sample Name	WG473483-02 BLANK	**Injection Vial**	5.00
Data File	LM24551.wiff	**Injection Volume**	10.00
Acquisition Date	4/28/2014 9:13:29 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473483-02	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.220e+05	12.30	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	0.000e+00	0.00	N/A	No Peak
Perchlorate conf	2.690e+02	12.20	N/A	0.0027

O18LP (Internal Standard)

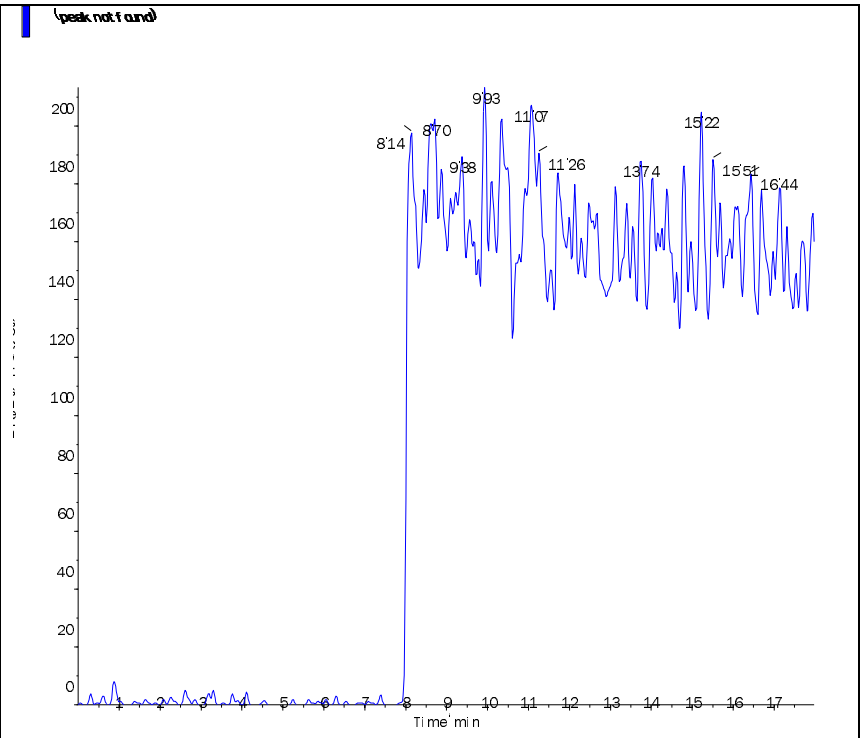
RT (Exp. RT): 12.30(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



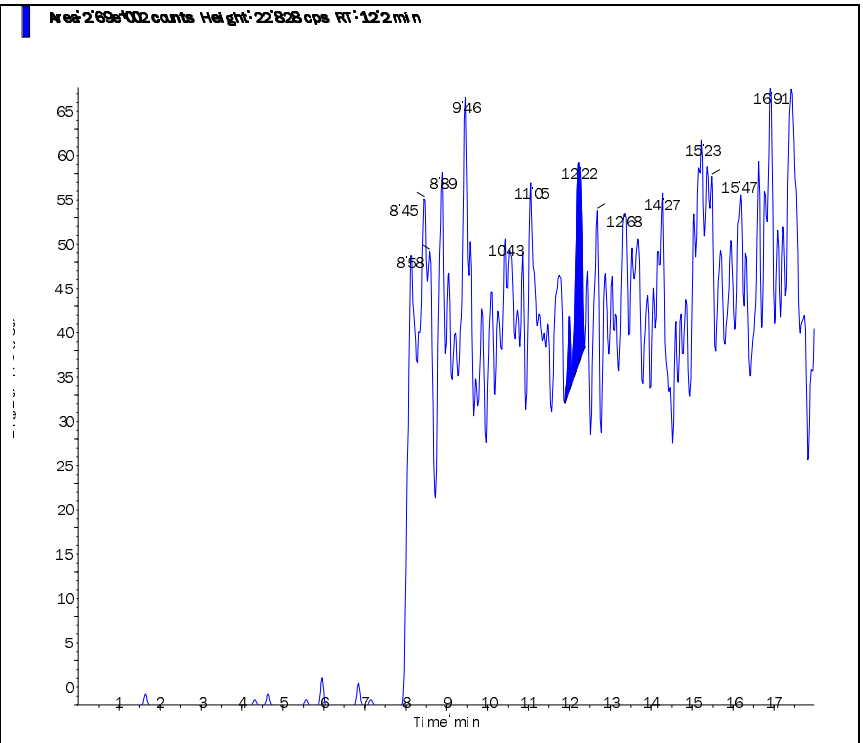
Applied Biosystems | MDS SCIEX

Created with Analyst Reporter
Printed: 4/30/2014 6:59 PM

Perchlorate (98.8/83.3 amu) RT (Exp. RT): Calculated conc: Area Ratio: Sample Type:	0.00 (13.40) min No Peak ng/ml 0.00 (Unknown)



Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): Calculated conc: Area Ratio: Sample Type:	12.20 (13.40) min 0.0027 ng/ml 0.001 (Unknown)



Applied Biosystems | MDS SCIEX

Created with Analyst Reporter
Printed: 4/30/2014 6:59 PM

Data File	LM24552.wiff	**Result Table**	042814_JWR.rdb
Acquisition Date	4/28/2014 9:32:25 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

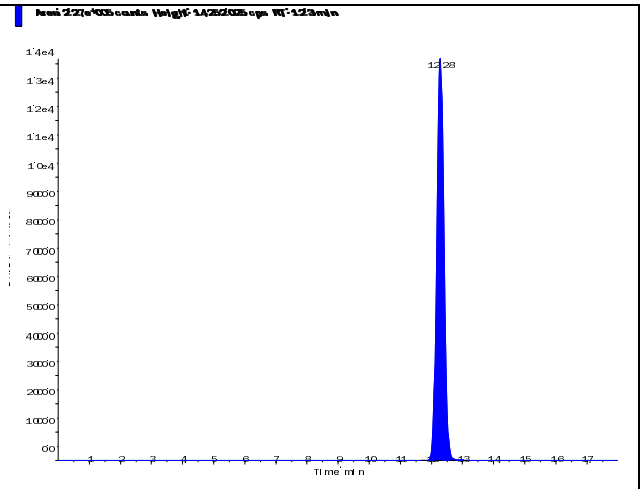
Sample Name	WG473483-03 LCS (0.2ug/L)	**Injection Vial**	6.00
Data File	LM24552.wiff	**Injection Volume**	10.00
Acquisition Date	4/28/2014 9:32:25 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	042814_JWR.rdb
Sample ID	WG473483-03	**Dilution Factor**	1.00
Sample Comment	1,1 STD63472	**Weight to Volume**	0.00

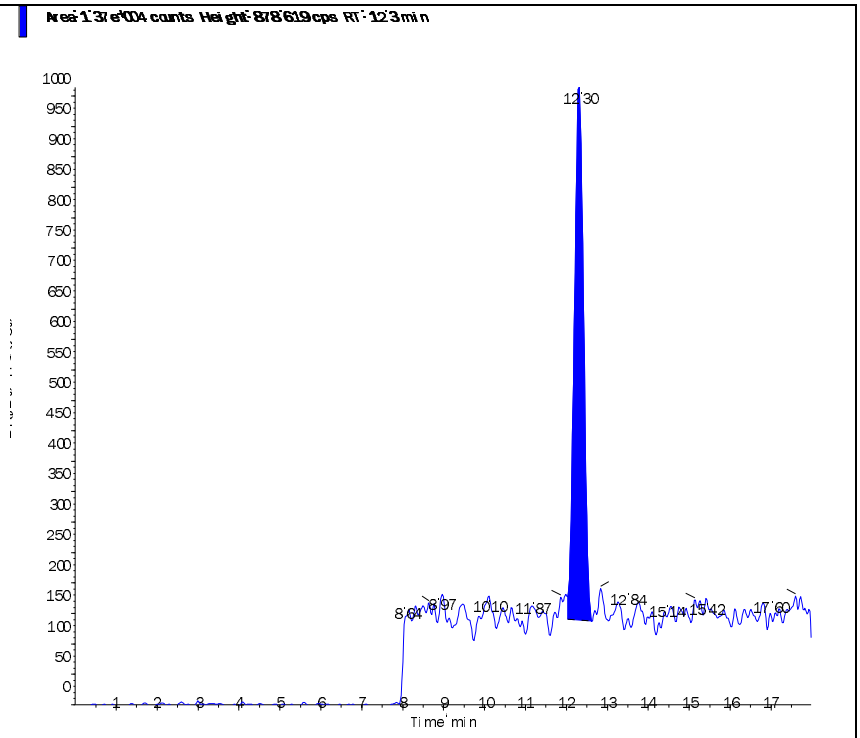
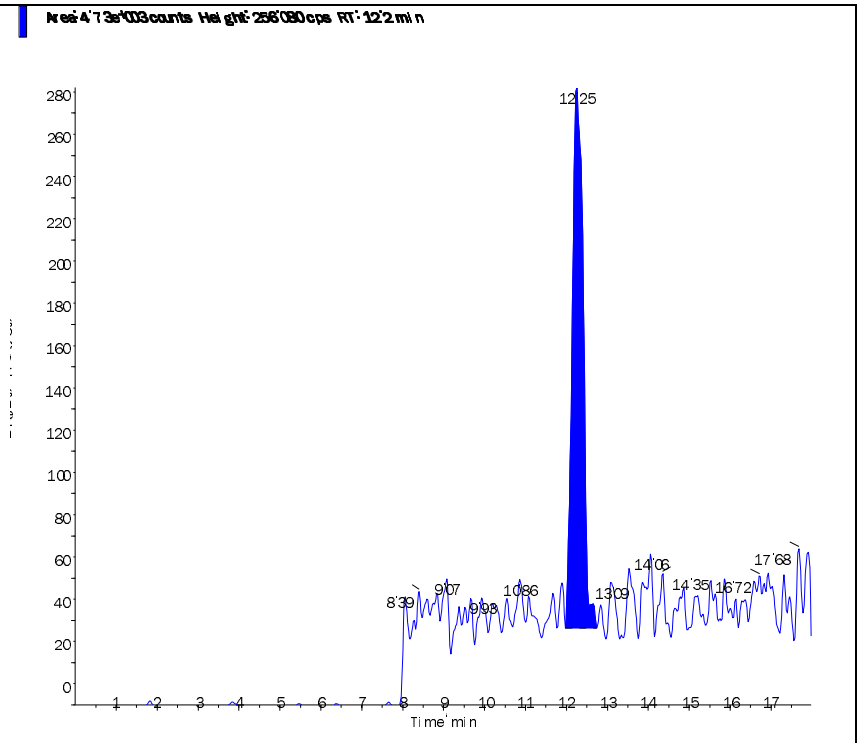
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.270e+05	12.30	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.370e+04	12.30	N/A	0.205
Perchlorate conf	4.730e+03	12.20	N/A	0.217

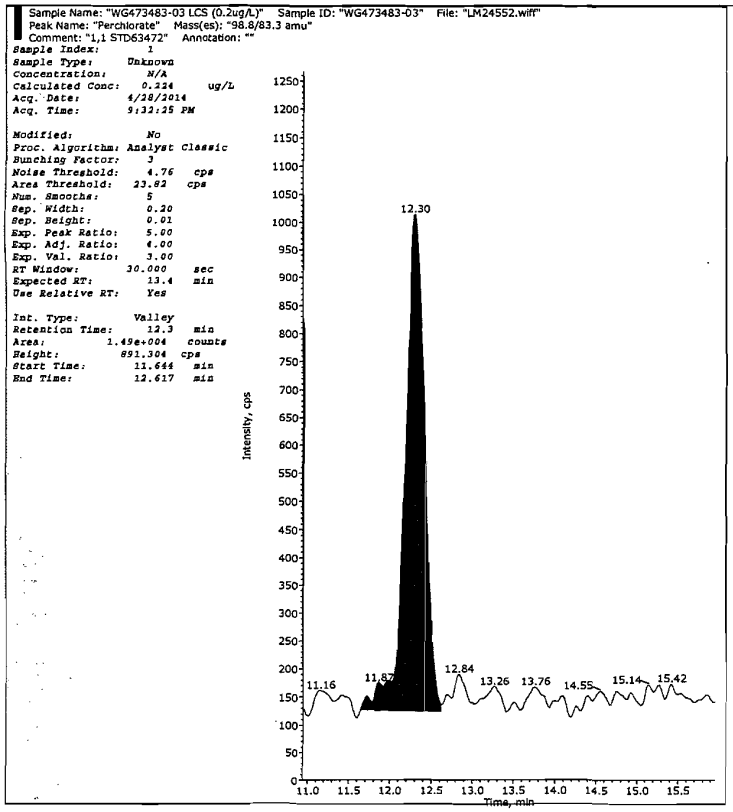
O18LP (Internal Standard)

RT (Exp. RT): 12.30(13.40) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



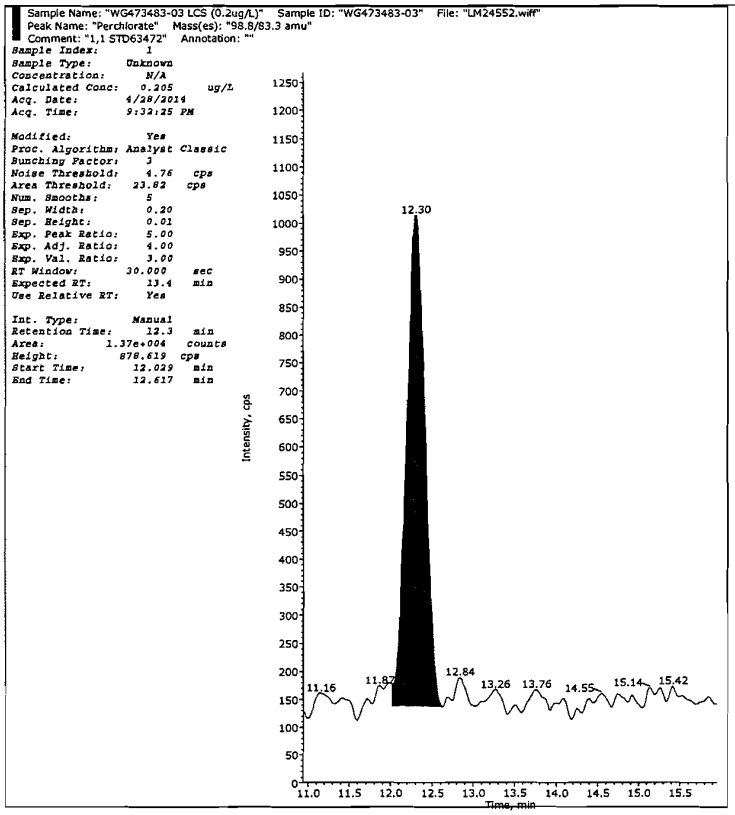
Perchlorate (98.8/83.3 amu) RT (Exp. RT): 12.30 (13.40) min Calculated conc: 0.205 ng/ml Area Ratio: 0.06 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 12.20 (13.40) min Calculated conc: 0.217 ng/ml Area Ratio: 0.021 Sample Type: (Unknown)	

Printing Time: 12:59:00 PM
Printing Date: Wednesday, April 30, 2014



Collected by: N/A
Electronic Signature: no
Operator: lcms1

Printing Time: 1:40:04 PM
Printing Date: Wednesday, April 30, 2014



#4
JWR 04/30/14
mlw 4/30/14

Collected by: N/A
Electronic Signature: no
Operator: lcms1

3.0 Attachments

Microbac Laboratories Inc.
Ohio Valley Division Analyst List
May 1, 2014

001 – BIO-CHEM TESTING WVDEP 220	002 – REIC Consultants, Inc. WVDEP 060
003 – Sturm Environmental	004 – MICROBAC PITTSBURGH
005 – ES LABORATORIES	006 – ALCOSAN LABORATORIES
007 – ALS LABORATORIES	008 – BENCHMARK LABORATORIES
010 – MICROBAC CHICAGOLAND	ADC – ANTHONY D. CANTER
ADG – APRIL D. GREENE	AWE – ANDREW W. ESSIG
AZH – AFTER HOURS	BAF – BRICE A. FENTON
BJO – BRIAN J. OGDEN	BKT – BRENDAN TORRENCE
BLG – BRENDA L. GREENWALT	BRG – BRENDA R. GREGORY
CAA – CASSIE A. AUGENSTEIN	CAF – CHERYL A. FLOWERS
CEB – CHAD E. BARNES	CLC – CHRYS L. CRAWFORD
CLS – CARA L. STRICKLER	CLW – CHARISSA L. WINTERS
CPD – CHAD P. DAVIS	CSH – CHRIS S. HILL
DAK – DEAN A. K	DCM – DAVID C. MERCKLE
DEV – DAVID E. VANDENBERG	DIH – DEANNA I. HESSON
DLB – DAVID L. BUMGARNER	DLP – DOROTHY L. PAYNE
DSM – DAVID S. MOSSOR	ECL – ERIC C. LAWSON
ENY – EMILY N. YOAK	EPT – ETHAN P. TIDD
ERP – ERIN R. PORTER	FJB – FRANCES J. BOLDEN
JBK – JEREMY B. KINNEY	JDH – JUSTIN D. HESSON
JDS – JARED D. SMITH	JLL – JOHN L. LENT
JWR – JOHN W. RICHARDS	JWS – JACK W. SHEAVES
JYH – JI Y. HU	KAJ – KELLIE A. JOHNSON
KDW – KATHRYN D. WELCH	KEB – KATIE E. BARNES
KHR – KIM H. RHODES	KRA – KATHY R. ALBERTSON
KRB – KAELY R. BECKER	KRP – KATHY R. PARSONS
LKN – LINDA K. NEDEFF	LLS – LARRY L. STEPHENS
LSB – LESLIE S. BUCINA	MBK – MORGAN B. KNOWLTON
MDA – MIKE D. ALBERTSON	MDC – MIKE D. COCHRAN
MES – MARY E. SCHILLING	MMB – MAREN M. BEERY
MRT – MICHELLE R. TAYLOR	MSW – MATT S. WILSON
PDM – PIERCE D. MORRIS	PIT – MICROBAC WARRENDALE
PSW – PEGGY S. WEBB	QX – QIN XU
RAH – ROY A. HALSTEAD	REK – BOB E. KYER
RLB – BOB BUCHANAN	RM – RAYMOND MALEKE
RNP – RICK N. PETTY	RS – ROSEMARY SCOTT
SAV – SARAH A. VANDENBERG	SDC – SHALYN D. CONLEY
SEP – SUZANNE J. PAUGH	SLM – STEPHANIE L. MOSSBURG
SLP – SHERI L. PFALZGRAF	TLC – TYLER L. CORDELL
TMB – TIFFANY M. BAILEY	TMM – TAMMY M. MORRIS
TPA – TYLER P. AMRINE	VC – VICKI COLLIER
WJB – WILL J. BEASLEY	WRR – WESLEY R. RICHARDS
WTD – WADE T. DELONG	XXX – UNAVAILABLE OR SUBCONTRACT

Microbac Laboratories Inc.
List of Valid Qualifiers
May 01, 2014

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
H1	Sample analysis performed past holding time.
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value; the analyte concentration was less than the RL/LOQ.
J,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentativlely identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL).
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, H1	Not detected; Sample analysis performed past holding time.
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Analyte was not detected. The concentration is below the reported LOD.
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

AECOM

Chain of Custody Record

COC Number:

Laboratory: Microbac POC: Kathy Albertson	Project Manager: Dave Wacker	Mail to: Linda Raabe	
Address: 158 Starlite Drive	Phone/Fax Number: 210-296-2000		112 East Pecan STE. 400
Marietta, OH 45750	Sampler (print): Scott Beesinger		San Antonio, TX 78205
Phone: 1-800-373-4071			210-296-2000
Client: AECOM	Signature: Scott Beesinger	Fed Ex Airbill No:	
Address: 112 East Pecan Ste. 400			
San Antonio, TX 78205	pH:	Program:	
Turn Around Time: STANDARD			
Project Name/Location: Longhorn		ERPIMS REQUIRED FIELDS	
Project Number: 60256135.0009AA			

Site Name	Sample ID/Location ID	SBD	SED	Date	Time	Comp*	Grab	Matrix	Number of Containers	PERCHLORATE	SA CODE	Cooler ID	LOT CONTROL NUMBERS ABLOT	EBLOT	TBLOT
PERIMETER WELLS	PW 133 - 040214			4/2/14	1255		X	W	1	X					
	PW 134 - 040214			4/2/14	1305		X	W	1	X					

Comments: **STANDARD TAT**

Microbac OVD
Received: 04/03/2014 10:24
By: BOB BUCHANAN 221000052033

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time	Relinquished by: (Signature)
Scott Beesinger	4/2/14	1500	R.F. Buchanan			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Time		Remarks:

*Homogenize all composite samples prior to analysis

Distribution: White to Laboratory, Canary to Project Manager, Pink QA/QC Manager

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L14040302
Account: 2551
Project: 2551.096
Samples: 2
Due Date: 14-APR-2014

Samplenum	Container ID	Products
L14040302-01	345148	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	03-APR-2014 13:43	ERP		
2	ANALYZ	W1	SEM	28-APR-2014 10:05	JWR	CLS	
3	STORE	SEM	A1	01-MAY-2014 10:34	CLS	JWR	

Samplenum	Container ID	Products
L14040302-02	345149	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	03-APR-2014 13:43	ERP		
2	ANALYZ	W1	SEM	28-APR-2014 10:04	JWR	CLS	
3	STORE	SEM	A1	01-MAY-2014 10:34	CLS	JWR	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

NELAP Addendum - April 4, 2014

Non-NELAP LIMS Product and Description

The following is a list of those tests that are not included in the Microbac – OVL NELAP Scope of Accreditation:

Heat of Combustion (BTU)
Total Halide by Bomb Combustion (TX)
Particle Sizing - 200 Mesh (PS200)
Specific Gravity/Density (SPGRAV)
Total Residual Chlorine (CL-TRL)
Total Volatile Solids (all forms) (TVS)
Total Coliform Bacteria (all methods)
Fecal Coliform Bacteria (all methods)
Sulfite (SO3)
Thiodiglycol (TDG-LCMS)
Acetate (HPLC-UV)
Formate (HPLC-UV)
Acetaldehyde (HPLC-UV)
Propionaldehyde (HPLC-UV)
Fluoroborate (ISE)

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVL HPLC02/HPLC-UV

Nitroglycerin
Nitroguanidine
Acetic acid
Butyric acid
Lactic acid
Propionic acid
Pyruvic acid

OVL KNITRO-C-WUV-VIS

Nitrocellulose

OVL MSS01/GC-MS

1,4-Phenylenediamine
1-Methylnaphthalene
1,4-Dioxane
Atrazine
Benzaldehyde
Biphenyl
Caprolactam
Hexamethylphosphoramide (HMPA)
Pentachlorobenzene

Pentachloroethane

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVL MSV0I/GC-MS

1, 1, 2-Trichloro-1,2,2-trifluoroethane
1,3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
T-amylmethylether (TAME)
Tetrahydrofuran (THF)

OVL RSK0I/GC-FID

Isobutane
n-Butane
Propane
Propylene
Propyne

OVL HPLC07/HPLC-MS-MS

Hexamethylphosphoramide (XMPA-LCMS)

SOLID AND HAZARDOUS CHEMICALS

OVL HPLCOS-HPLC-UV

Nitroguanidine

OVL KNITRO-C-S/UV-VIS

Nitrocellulose

OVL MSS0I/GC-MS

1-Methylnaphthalene
Benzaldehyde
Biphenyl
Caprolactam
Pentachloroethane

NELAP Accreditation by Laboratory SOP

SOLID AND HAZARDOUS CHEMICALS

OVL MSV0I/GC-MS

1.3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
n-Hexane
T-amylmethylether (TAME)

Microbac

Laboratory Report Number: L14061094

Kayla Teague
AECOM Technical Services, Inc.
16000 Dallas Parkway
Dallas, TX 75248

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Kathy Albertson – Team Chemist/Data Specialist
(740) 373-4071
Kathy.Albertson@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on July 03 2014

David L. Vandenberg

David Vandenberg – Managing Director

State of Origin: TX
Accrediting Authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: DOD Ver 4.1

Microbac

Lab Report #: L14061094
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

The following discrepancies were noted:

Discrepancy	Resolution
Sample ID PW108-061714: There is no time listed on the sample. Logged per the chain of custody. CJR	Please proceed.

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
0019552	I	2.0		J2317156804	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	No
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	NA
12	Were VOA samples free of headspace (less than 6mm)?	NA

Microbac

Lab Report #: L14061094
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
PW133-061714	L14061094-01	06/17/2014 08:15	06/18/2014 09:46
PW134-061714	L14061094-02	06/17/2014 09:10	06/18/2014 09:46
PW112-061714	L14061094-03	06/17/2014 10:40	06/18/2014 09:46
PW108-061714	L14061094-04	06/17/2014 13:50	06/18/2014 09:46
PW110-061714	L14061094-05	06/17/2014 15:30	06/18/2014 09:46

Microbac REPORT L14061094
PREPARED FOR AECOM Technical Services, Inc.
WORK ID:

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1.0 Summary Data

1.1 Narratives

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14061094
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG482628	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-07-03 00:00:00		

Laboratory Data Package Cover Page

	R1	Field chain-of-custody documentation;
	R2	Sample identification cross-reference;
	R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a.if required for the project, tentatively identified compounds (TICs).
	R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
	R5	Test reports/summary forms for blank samples;
	R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
	R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
	R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
	R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
	R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Mike Cochran		Semivolatiles Supervisor	2014-07-03 18:46:26

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14061094
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG482628	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-07-03 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification	X				
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports					
Were all samples prepared and analyzed within holding times?	X				
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?			X		
Were % moisture (or solids) reported for all soil and sediment samples?			X		
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?			X		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
Test reports/summary forms for blank samples	X				
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	X				

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14061094
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG482628	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-07-03 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?			X		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			X		
Were MS/MSD analyzed at the appropriate frequency?			X		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			X		
Were MS/MSD RPDs within laboratory QC limits?			X		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			X		
Were analytical duplicates analyzed at the appropriate frequency?			X		
Were RPDs or relative standard deviations within the laboratory QC limits?			X		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14061094
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG482628	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-07-03 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?	X				
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?	X				
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?	X				
Were ion abundance data within the method-required QC limits?	X				
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?	X				
Raw data (NELAC Section 5.5.10)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?	X				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?			X		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
Method detection limit (MDL) studies					

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14061094
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG482628	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-07-03 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter “R” must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter “S” should be retained and made available upon request for the appropriate retention period;

2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

3. NA = Not applicable;

4. NR = Not reviewed;

5. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

The Exception Report for each “No” or “Not Reviewed (NR)” item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14061094
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG482628	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-07-03 00:00:00		

the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [ ] This laboratory meets an exception under 30 TAC §25.6 and was last inspection by [ ] TCEQ or [ ] _____ on **(enter date of last inspection**). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report

1.2 Certificate of Analysis

Microbac

Lab Report #: L14061094
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14061094-01	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	PW133-061714	**Prep Method:**	6850	**Prep Date:**	07/01/2014 16:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	06/30/2014 18:14
Workgroup #:	WG482628	**Analyst:**	JWR	**Run Date:**	07/02/2014 00:40
Collect Date:	06/17/2014 08:15	**Dilution:**	1	**File ID:**	1LM.LM25928
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.887		0.400	0.200	0.100

Certificate of Analysis

Sample #:	L14061094-02	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	PW134-061714	**Prep Method:**	6850	**Prep Date:**	07/01/2014 16:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	06/30/2014 18:14
Workgroup #:	WG482628	**Analyst:**	JWR	**Run Date:**	07/02/2014 01:56
Collect Date:	06/17/2014 09:10	**Dilution:**	1	**File ID:**	1LM.LM25932
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.989		0.400	0.200	0.100

Certificate of Analysis

Sample #:	L14061094-03	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	PW112-061714	**Prep Method:**	6850	**Prep Date:**	07/01/2014 16:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	06/30/2014 18:14
Workgroup #:	WG482628	**Analyst:**	JWR	**Run Date:**	07/02/2014 02:15
Collect Date:	06/17/2014 10:40	**Dilution:**	1	**File ID:**	1LM.LM25933
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.458		0.400	0.200	0.100

Certificate of Analysis

Microbac

Lab Report #: L14061094
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Sample #:	L14061094-04	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	PW108-061714	**Prep Method:**	6850	**Prep Date:**	07/01/2014 16:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	06/30/2014 18:14
Workgroup #:	WG482628	**Analyst:**	JWR	**Run Date:**	07/02/2014 02:34
Collect Date:	06/17/2014 13:50	**Dilution:**	1	**File ID:**	1LM.LM25934
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.200	U	0.400	0.200	0.100

U	Analyte was not detected. The concentration is below the reported LOD.

Microbac

Lab Report #: L14061094
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14061094-05	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	PW110-061714	**Prep Method:**	6850	**Prep Date:**	07/01/2014 16:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	06/30/2014 18:14
Workgroup #:	WG482628	**Analyst:**	JWR	**Run Date:**	07/02/2014 02:53
Collect Date:	06/17/2014 15:30	**Dilution:**	1	**File ID:**	1LM.LM25935
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.200	U	0.400	0.200	0.100

U	Analyte was not detected. The concentration is below the reported LOD.

Microbac

Lab Report #: L14061094
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

2.0 Full Sample Data Package

2.1 General Chromatography Data

2.1.1 6850 LC/MS Data

2.1.1.1 Summary Data

Microbac

Lab Report #: L14061094
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14061094-01	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	PW133-061714	**Prep Method:**	6850	**Prep Date:**	07/01/2014 16:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	06/30/2014 18:14
Workgroup #:	WG482628	**Analyst:**	JWR	**Run Date:**	07/02/2014 00:40
Collect Date:	06/17/2014 08:15	**Dilution:**	1	**File ID:**	1LM.LM25928
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.887		0.400	0.200	0.100

Certificate of Analysis

Sample #:	L14061094-02	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	PW134-061714	**Prep Method:**	6850	**Prep Date:**	07/01/2014 16:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	06/30/2014 18:14
Workgroup #:	WG482628	**Analyst:**	JWR	**Run Date:**	07/02/2014 01:56
Collect Date:	06/17/2014 09:10	**Dilution:**	1	**File ID:**	1LM.LM25932
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.989		0.400	0.200	0.100

Certificate of Analysis

Sample #:	L14061094-03	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	PW112-061714	**Prep Method:**	6850	**Prep Date:**	07/01/2014 16:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	06/30/2014 18:14
Workgroup #:	WG482628	**Analyst:**	JWR	**Run Date:**	07/02/2014 02:15
Collect Date:	06/17/2014 10:40	**Dilution:**	1	**File ID:**	1LM.LM25933
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.458		0.400	0.200	0.100

Certificate of Analysis

Microbac

Lab Report #: L14061094
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Sample #:	L14061094-04	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	PW108-061714	**Prep Method:**	6850	**Prep Date:**	07/01/2014 16:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	06/30/2014 18:14
Workgroup #:	WG482628	**Analyst:**	JWR	**Run Date:**	07/02/2014 02:34
Collect Date:	06/17/2014 13:50	**Dilution:**	1	**File ID:**	1LM.LM25934
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.200	U	0.400	0.200	0.100

U	Analyte was not detected. The concentration is below the reported LOD.

Microbac

Lab Report #: L14061094
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14061094-05	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	PW110-061714	**Prep Method:**	6850	**Prep Date:**	07/01/2014 16:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	06/30/2014 18:14
Workgroup #:	WG482628	**Analyst:**	JWR	**Run Date:**	07/02/2014 02:53
Collect Date:	06/17/2014 15:30	**Dilution:**	1	**File ID:**	1LM.LM25935
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.200	U	0.400	0.200	0.100

U	Analyte was not detected. The concentration is below the reported LOD.

Microbac

Lab Report #: L14061094
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

2.1.1.2 QC Summary Data

Example Calculation 6850 - Perchlorate

Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of internal standard (IS) = Rx/Ristd

x = amount ratio = concentration analyte/concentration internal standard (IS) = Cx / Cistd

m = slope from curve (1.45)

b = intercept from curve (-0.00242)

y = 1.45x + -0.00242

Step 2: Substitute the value for y

where y = 12600/226000 = 0.055752

Step 3: Solve for x

x = (y - b)/m = 0.0040119

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(x) = (5 ug/L)(0.040119) = 0.200594 ug/L

Example Calculation - Water:

Slope from curve, m:	1.45
Intercept from curve, b:	-0.00242
Response of analyte, Rx:	12600
Response of Internal Standard , Ristd:	226000
Concentration of IS, Cistd (ug/L):	5.00
Response Ratio:	0.05575
Amount Ratio:	0.04012
Analyte Concentration, Cx (ug/L) :	0.200594

Example Calculation - Soil:

Analyte Concentration, Cx (ug/L):	0.20059
Amount of soil extracted (g):	5.00
Final volume of extract (mL):	50.00
Percent solids (Pct wt.)	100
Concentration in soil (ug/kg):	2.005938

Perchlorate Conductivity Check
(perchlorate1)

Conductivity Probe
Calibration Check: 1404 /1410 µs/cm

Working MCT Level: 10,000 µs/cm

Sample		Conductivity (µs/cm)	Pretreatment or Dilution Needed
WG482628-01	MCT	9,800.0	
-02	BLK	0.0	
-03	LCS	0.0	
-04	LCS2	0.0	
L14060973-01		2,560.0	
L14061020-01		2,070.0	
-02		1,029.0	
-03		1,253.0	
-05		1,242.0	
-07		1,068.0	
-08		1,224.0	
-09		1,303.0	
-13		1,461.0	
-14		622.0	
-15		5,990.0	
-17		1,840.0	
-19		132.4	
-21		2,550.0	
-23		1,303.0	
L14061094-01		191.0	
-02		98.2	
-03		9,510.0	
-04		246.0	
-05		7,290.0	

Analyst: MJR

Date/Time: 07/02/2014 / 16:10

DCN#103679

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 063014_JWR.TXT

Analyst1: JWR Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 131115254-1

Eluent ID#:

Column 1 ID: KP-RPPX250 Column 2 ID: NA

Workgroups: Analytical WG482162 (waters)

Internal STD: COA17578 Surrogate STD: NA Calibration STD STD65194 (06/30/2014)

CCV STD: STD65194 LCS STD: STD65194 MS/MSD STD: STD65194

Comments: ICAL WG482296 : Alternate Source STD65196

Samples L14060734(-07,-08) had no consistent historical results. These samples were screened on 06/27/2014 and analyzed at dilutions based on their screen results.

All other samples analyzed at dilutions were based on their historical results.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM25865	WG482296-01 CCB	1	1		06/30/14 16:02
2	1LM.LM25866	WG482296-02 STD (0.1 ug/L)	1	1	STD65194	06/30/14 16:21
3	1LM.LM25867	WG482296-03 STD (0.2 ug/L)	1	1	STD65194	06/30/14 16:40
4	1LM.LM25868	WG482296-04 STD (0.5 ug/L)	1	1	STD65194	06/30/14 16:59
5	1LM.LM25869	WG482296-05 STD (1.0 ug/L)	1	1	STD65194	06/30/14 17:18
6	1LM.LM25870	WG482296-06 STD (2.0 ug/L)	1	1	STD65194	06/30/14 17:36
7	1LM.LM25871	WG482296-07 STD (5.0 ug/L)	1	1	STD65194	06/30/14 17:55
8	1LM.LM25872	WG482296-08 STD (10 ug/L)	1	1	STD65194	06/30/14 18:14
9	1LM.LM25873	WG482296-09 SSCV (1.0 ug/L)	1	1	STD65196	06/30/14 18:33
10	1LM.LM25874	WG482163-01 CCB	1	1		06/30/14 18:52
11	1LM.LM25875	WG482163-02 CCV (1.0ug/L)	1	1	STD65194	06/30/14 19:11
12	1LM.LM25876	WG482162-07 MRL (0.2ug/L)	1	1	STD65194	06/30/14 19:30
13	1LM.LM25877	WG482162-01 MCT (0.2ug/L)	1	1	STD65194	06/30/14 19:49
14	1LM.LM25878	WG482162-02 BLANK	1	1		06/30/14 20:08
15	1LM.LM25879	WG482162-03 LCS (0.2ug/L)	1	1	STD65194	06/30/14 20:27
16	1LM.LM25880	L14060549-01	1	1		06/30/14 20:46
17	1LM.LM25881	L14060549-02	1	1		06/30/14 21:05
18	1LM.LM25882	L14060550-01	1	1		06/30/14 21:24
19	1LM.LM25883	L14060734-01 (5,000x)	1	5000		06/30/14 21:43
20	1LM.LM25884	L14060734-02 (20,000x)	1	20000		06/30/14 22:02
21	1LM.LM25885	L14060734-03 (10,000x)	1	10000		06/30/14 22:21
22	1LM.LM25886	L14060734-05 (1,000x)	1	1000		06/30/14 22:39
23	1LM.LM25887	WG482163-03 CCV (1.0ug/L)	1	1	STD65194	06/30/14 22:58
24	1LM.LM25888	WG482162-08 MRL (0.2ug/L)	1	1	STD65194	06/30/14 23:17
25	1LM.LM25889	WG482163-04 CCB	1	1		06/30/14 23:36
26	1LM.LM25890	L14060734-06 (10,000x)	1	10000		06/30/14 23:55
27	1LM.LM25891	L14060734-07 (10x)	1	10		07/01/14 00:14
28	1LM.LM25892	L14060734-08 (10x)	1	10		07/01/14 00:33
29	1LM.LM25893	L14060734-09 (5,000x)	1	5000		07/01/14 00:52
30	1LM.LM25894	L14060734-10 (20,000x)	1	20000		07/01/14 01:11
31	1LM.LM25895	L14060734-12 RS (20,000x)	1	20000		07/01/14 01:30

Page: 1 Approved: 01-JUL-14

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 063014_JWR.TXT

Analyst1: JWR Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 131115254-1

Eluent ID#:

Workgroups: Column 1 ID: KP-RPPX250 Column 2 ID: NA

Analytical WG482162 (waters)

Internal STD: COA17578 Surrogate STD: NA STD65194 (06/30/2014)

CCV STD: STD65194 LCS STD: STD65194 STD65194

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
32	1LM.LM25896	L14060734-13 MS (20,000x)	1	20000	STD65194	07/01/14 01:49
33	1LM.LM25897	L14060734-14 MSD (20,000x)	1	20000	STD65194	07/01/14 02:08
34	1LM.LM25898	L14060734-15	1	1		07/01/14 02:27
35	1LM.LM25899	L14060734-17	1	1		07/01/14 02:46
36	1LM.LM25900	WG482163-05 CCV (1.0ug/L)	1	1	STD65194	07/01/14 03:05
37	1LM.LM25901	WG482162-09 MRL (0.2ug/L)	1	1	STD65194	07/01/14 03:24
38	1LM.LM25902	WG482163-06 CCB	1	1		07/01/14 03:42

Comments

Seq.	Rerun	Dil.	Reason	Analytes
32				
	L14060734-13 MS (20,000x) : The MS %Rec is above the advisory limit. The parent sample to this MS has a perchlorate concentration greater than that of the MS/MSD-spiking solution. In additon, at this level of dilution, the spiked amount has been diluted below the detection limit.			
33				
	L14060734-14 MSD (20,000x) : The MSD %Rec is above the advisory limit. The parent sample to this MSD has a perchlorate concentration greater than that of the MS/MSD-spiking solution. In additon, at this level of dilution, the spiked amount has been diluted below the detection limit.			

Page: 2 Approved: 01-JUL-14

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 070114_JWR.TXT

Analyst1: JWR Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 131115254-1

Eluent ID#:

Workgroups: Column 1 ID: KP-RPPX250 Column 2 ID: NA

Analytical WG482628 (waters)

Internal STD: COA17578 Surrogate STD: NA Calibration STD STD65194 (06/30/2014)

CCV STD: STD65194 LCS STD: STD65194 MS/MSD STD: STD65194

Comments: All samples initially analyzed at dilutions were based on their historical results.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM25903	WG482635-01 CCB	1	1		07/01/14 16:47
2	1LM.LM25904	WG482635-02 CCV (1.0ug/L)	1	1	STD65194	07/01/14 17:06
3	1LM.LM25905	WG482628-05 MRL (0.2ug/L)	1	1	STD65194	07/01/14 17:25
4	1LM.LM25906	WG482628-01 MCT (0.2ug/L)	1	1	STD65194	07/01/14 17:44
5	1LM.LM25907	WG482628-02 BLANK	1	1		07/01/14 18:03
6	1LM.LM25908	WG482628-03 LCS (0.2ug/L)	1	1	STD65194	07/01/14 18:22
7	1LM.LM25909	WG482628-04 LCS2 (0.2ug/L)	1	1	STD65194	07/01/14 18:41
8	1LM.LM25910	L14060973-01	1	1		07/01/14 18:59
9	1LM.LM25911	L14061020-01	1	1		07/01/14 19:18
10	1LM.LM25912	L14061020-02 (10x) (NR)	1	10		07/01/14 19:37
11	1LM.LM25913	L14061020-03	1	1		07/01/14 19:56
12	1LM.LM25914	L14061020-05 (NR)	1	1		07/01/14 20:15
13	1LM.LM25915	L14061020-07 (NR)	1	1		07/01/14 20:34
14	1LM.LM25916	WG482635-03 CCV (1.0ug/L)	1	1	STD65194	07/01/14 20:53
15	1LM.LM25917	WG482628-06 MRL (0.2ug/L)	1	1	STD65194	07/01/14 21:12
16	1LM.LM25918	WG482635-04 CCB	1	1		07/01/14 21:31
17	1LM.LM25919	L14061020-08 (10,000x)	1	10000		07/01/14 21:50
18	1LM.LM25920	L14061020-09 (NR)	1	1		07/01/14 22:09
19	1LM.LM25921	L14061020-13	1	1		07/01/14 22:28
20	1LM.LM25922	L14061020-14	1	1		07/01/14 22:47
21	1LM.LM25923	L14061020-15	1	1		07/01/14 23:06
22	1LM.LM25924	L14061020-17	1	1		07/01/14 23:25
23	1LM.LM25925	L14061020-19 (5x)	1	5		07/01/14 23:44
24	1LM.LM25926	L14061020-21 (250x)	1	250		07/02/14 00:03
25	1LM.LM25927	L14061020-23 (50,000x)	1	50000		07/02/14 00:21
26	1LM.LM25928	L14061094-01	1	1		07/02/14 00:40
27	1LM.LM25929	WG482635-05 CCV (1.0ug/L)	1	1	STD65194	07/02/14 00:59
28	1LM.LM25930	WG482628-07 MRL (0.2ug/L)	1	1	STD65194	07/02/14 01:18
29	1LM.LM25931	WG482635-06 CCB	1	1		07/02/14 01:37
30	1LM.LM25932	L14061094-02	1	1		07/02/14 01:56
31	1LM.LM25933	L14061094-03	1	1		07/02/14 02:15
32	1LM.LM25934	L14061094-04	1	1		07/02/14 02:34
33	1LM.LM25935	L14061094-05	1	1		07/02/14 02:53

Page: 1 Approved: 03-JUL-14

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 070114_JWR.TXT

Analyst1: JWR Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 131115254-1

Eluent ID#:

Column 1 ID: KP-RPPX250 Column 2 ID: NA

Workgroups: Analytical WG482628 (waters)

Internal STD: COA17578 Surrogate STD: NA STD65194 (06/30/2014)

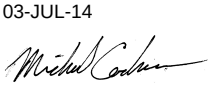
CCV STD: STD65194 LCS STD: STD65194 STD65194

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
34	1LM.LM25936	WG482635-07 CCV (1.0ug/L)	1	1	STD65194	07/02/14 03:12
35	1LM.LM25937	WG482628-08 MRL (0.2ug/L)	1	1	STD65194	07/02/14 03:31
36	1LM.LM25938	WG482635-08 CCB	1	1		07/02/14 03:50
37	1LM.LM25939	WG482635-09 CCV (1.0ug/L)	1	1	STD65194	07/02/14 11:20
38	1LM.LM25940	WG482628-09 MRL (0.2ug/L)	1	1	STD65194	07/02/14 11:39
39	1LM.LM25941	WG482635-10 CCB	1	1		07/02/14 11:58
40	1LM.LM25942	L14061020-02 (RR Neat)	1	1		07/02/14 12:17
41	1LM.LM25943	L14061020-03 (RR Neat) (NR)	1	1		07/02/14 12:36
42	1LM.LM25944	L14061020-05 (RR Neat) (NR)	1	1		07/02/14 12:55
43	1LM.LM25945	L14061020-05 (RR 10x)	1	10		07/02/14 13:14
44	1LM.LM25946	L14061020-07 (RR 20x)	1	20		07/02/14 13:33
45	1LM.LM25947	L14061020-09 (RR 10x)	1	10		07/02/14 13:52
46	1LM.LM25948	WG482635-11 CCV (1.0ug/L)	1	1	STD65194	07/02/14 14:11
47	1LM.LM25949	WG482628-10 MRL (0.2ug/L)	1	1	STD65194	07/02/14 14:30
48	1LM.LM25950	WG482635-12 CCB	1	1		07/02/14 14:49

Comments

Seq.	Rerun	Dil.	Reason	Analytes
10	X	1	Analyzed too dilute	
	L14061020-02 (10x) (NR) : This sample was reanalyzed neat on the end of this run.			
11				
	L14061020-03 : The results for this sample do not correlate with the results for it's field duplicate (sample L14061020-05). This sample will be refiltered from it's bottle and reanalyzed neat on the end of this run for comparison of results.			
12	X	10	Over Calibration Range	
	L14061020-05 (NR) : This sample is a field duplicate of sample L14061020-03. The results for this sample do not correlate with the results of sample L14061020-03. This sample will be refiltered from it's bottle and reanalyzed (neat and at a 10x dilution) on the end of this run for comparison of results.			
13	X	20	Over Calibration Range	
	L14061020-07 (NR) : This sample was reanalyzed at a 20x dilution on the end of this run.			
18	X	10	Over Calibration Range	
	L14061020-09 (NR) : This sample was reanalyzed at a 10x dilution on the end of this run.			
41				
	L14061020-03 (RR Neat) (NR) : The results for this sample due to refiltration have not changed. The initial results for this sample analyzed neat will be reported.			
42	X	10	Over Calibration Range	
	L14061020-05 (RR Neat) (NR) : The results for this sample due to refiltration have not changed. This sample was reanalyzed at a 10x dilution immediately following this injection.			

Page: 2 Approved: 03-JUL-14



Microbac Laboratories Inc.

Data Checklist

Date: 30-JUN-2014
Analyst: JWR
Analyst: NA
Method: 6850
Instrument: LCMS1
Curve Workgroup: WG482296
Runlog ID: 61933
Analytical Workgroups: L14060549, 0550, 0734

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	ND
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	X
Recoveries	DL @ 20,000X
%RPD	X
Interference check sample (ICS) (LCMS)	MCT
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	NA
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	
Check for completeness	X
Primary Reviewer	JWR
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
01-JUL-2014

Secondary Reviewer:
01-JUL-2014

CHECKLIST1 - Modified 03/05/2008
Generated: JUL-01-2014 14:25:53

Microbac Laboratories Inc.

Data Checklist

Date: 01-JUL-2014
Analyst: JWR
Analyst: NA
Method: 6850
Instrument: LCMS1
Curve Workgroup: NA
Runlog ID: 61977
Analytical Workgroups: L14060973, 1020, 1094 (WATERS)

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	ND
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	MCT
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	
Check for completeness	X
Primary Reviewer	JWR
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
02-JUL-2014

Secondary Reviewer:
03-JUL-2014

CHECKLIST1 - Modified 03/05/2008
Generated: JUL-03-2014 10:44:58

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 6850 AAB#: WG482628

Login Number: L14061094

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
PW133-061714	01	06/17/14					07/01/2014	14.3	28		07/02/14	.4	28	
PW134-061714	02	06/17/14					07/01/2014	14.3	28		07/02/14	.4	28	
PW112-061714	03	06/17/14					07/01/2014	14.2	28		07/02/14	.4	28	
PW108-061714	04	06/17/14					07/01/2014	14.1	28		07/02/14	.4	28	
PW110-061714	05	06/17/14					07/01/2014	14	28		07/02/14	.5	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 3638585
Report generated 07/03/2014 11:11

METHOD BLANK SUMMARY

Login Number: L14061094
Work Group: WG482628
Blank File ID: 1LM.LM25907
Blank Sample ID: WG482628-02
Prep Date: 07/01/14 16:00
Instrument ID: LCMS1
Analyzed Date: 07/01/14 18:03
Method: 6850
Analyst: JWR

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
QCMRL	WG482628-05	1LM.LM25905	07/01/14 17:25	01
MCT	WG482628-01	1LM.LM25906	07/01/14 17:44	01
LCS	WG482628-03	1LM.LM25908	07/01/14 18:22	01
LCS2	WG482628-04	1LM.LM25909	07/01/14 18:41	01
QCMRL	WG482628-06	1LM.LM25917	07/01/14 21:12	01
PW133-061714	L14061094-01	1LM.LM25928	07/02/14 00:40	01
QCMRL	WG482628-07	1LM.LM25930	07/02/14 01:18	01
PW134-061714	L14061094-02	1LM.LM25932	07/02/14 01:56	01
PW112-061714	L14061094-03	1LM.LM25933	07/02/14 02:15	01
PW108-061714	L14061094-04	1LM.LM25934	07/02/14 02:34	01
PW110-061714	L14061094-05	1LM.LM25935	07/02/14 02:53	01
QCMRL	WG482628-08	1LM.LM25937	07/02/14 03:31	01
QCMRL	WG482628-09	1LM.LM25940	07/02/14 11:39	01
QCMRL	WG482628-10	1LM.LM25949	07/02/14 14:30	01

Report Name: BLANK_SUMMARY
PDF File ID: 3638586
Report generated 07/03/2014 11:11

Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L14061094 Prep Date: 07/01/14 16:00 Sample ID: WG482628-02
Instrument ID: LCMS1 Run Date: 07/01/14 18:03 Prep Method: 6850
File ID: 1LM.LM25907 Analyst: JWR Method: 6850
Workgroup (AAB#): WG482628 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-30-JUN-14

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Perchlorate	0.100	0.400	0.100	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 3638587
03-JUL-2014 11:11

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L14061094 Analyst: JWR Prep Method: 6850
Instrument ID: LCMS1 Matrix: Water Method: 6850
Workgroup (AAB#): WG482628 Units: ug/L
QC Key: DOD4 Lot #: STD65194

Sample ID: WG482628-03 LCS File ID: 1LM.LM25908 Run Date: 07/01/2014 18:22
Sample ID: WG482628-04 LCS2 File ID: 1LM.LM25909 Run Date: 07/01/2014 18:41

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Perchlorate	0.200	0.202	101	0.200	0.200	100	0.995	80 - 120	15	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 3638588
Report generated: 07/03/2014 11:11

Login Number: L14061094
Analytical Method: 6850
ICAL Workgroup: WG482296
Instrument ID: LCMS1
Initial Calibration Date: 30-JUN-14 18:14
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
Perchlorate		1.250	3.88	1.00000	

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008
PDF File ID: 3639345
Report generated 07/03/2014 11:11

Login Number: L14061094
Analytical Method: 6850
Instrument ID: LCMS1
Initial Calibration Date: 30-JUN-14 18:14
Column ID: F

Analyte	WG482296-02			WG482296-03			WG482296-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	0.100	7280.00000	1.217	0.200	15400.0000	1.340	0.500	35900.0000	1.215

INT_CAL - Modified 03/06/2008
PDF File ID: 3639345
Report generated 07/03/2014 11:11

Login Number: L14061094
Analytical Method: 6850
Instrument ID: LCMS1
Initial Calibration Date: 30-JUN-14 18:14
Column ID: F

Analyte	WG482296-05			WG482296-06			WG482296-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	1.00	71900.0000	1.226	2.00	147000.000	1.274	5.00	351000.000	1.224

INT_CAL - Modified 03/06/2008
PDF File ID: 3639345
Report generated 07/03/2014 11:11

Login Number: L14061094
Analytical Method: 6850
Instrument ID: LCMS1
Initial Calibration Date: 30-JUN-14 18:14
Column ID: F

Analyte	WG482296-08		
	CONC	RESP	RF
Perchlorate	10.0	680000.000	1.251

INT_CAL - Modified 03/06/2008
PDF File ID: 3639345
Report generated 07/03/2014 11:11

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L14061094 Run Date: 06/30/2014 Sample ID: WG482296-09
Instrument ID: LCMS1 Run Time: 18:33 Method: 6850
File ID: 1LM.LM25873 Analyst: JWR QC Key: DOD4
ICal Workgroup: WG482296 Cal ID: LCMS1 - 30-JUN-14

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Perchlorate		1.00	1.02	ug/L	1.27	2.00	15	

* Exceeds %D Limit

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 3639346
Report generated 07/03/2014 11:11

Login Number: L14061094 Run Date: 07/01/2014 Sample ID: WG482635-01
Instrument ID: LCMS1 Run Time: 16:47 Method: 6850
File ID: 1LM.LM25903 Analyst: JWR Units: ug/L
Workgroup (AAB#): WG482628 Cal ID: LCMS1 - 30-JUN-14
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3638591
Report generated 07/03/2014 11:11

Login Number: L14061094 Run Date: 07/01/2014 Sample ID: WG482635-04
Instrument ID: LCMS1 Run Time: 21:31 Method: 6850
File ID: 1LM.LM25918 Analyst: JWR Units: ug/L
Workgroup (AAB#): WG482628 Cal ID: LCMS1 - 30-JUN-14
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3638591
Report generated 07/03/2014 11:11

Login Number: L14061094 Run Date: 07/02/2014 Sample ID: WG482635-06
Instrument ID: LCMS1 Run Time: 01:37 Method: 6850
File ID: 1LM.LM25931 Analyst: JWR Units: ug/L
Workgroup (AAB#): WG482628 Cal ID: LCMS1 - 30-JUN-14
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3638591
Report generated 07/03/2014 11:11

Login Number: L14061094 Run Date: 07/02/2014 Sample ID: WG482635-08
Instrument ID: LCMS1 Run Time: 03:50 Method: 6850
File ID: 1LM.LM25938 Analyst: JWR Units: ug/L
Workgroup (AAB#): WG482628 Cal ID: LCMS1 - 30-JUN-14
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3638591
Report generated 07/03/2014 11:11

Login Number: L14061094 Run Date: 07/02/2014 Sample ID: WG482635-10
Instrument ID: LCMS1 Run Time: 11:58 Method: 6850
File ID: 1LM.LM25941 Analyst: JWR Units: ug/L
Workgroup (AAB#): WG482628 Cal ID: LCMS1 - 30-JUN-14
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3638591
Report generated 07/03/2014 11:11

Login Number: L14061094 Run Date: 07/02/2014 Sample ID: WG482635-12
Instrument ID: LCMS1 Run Time: 14:49 Method: 6850
File ID: 1LM.LM25950 Analyst: JWR Units: ug/L
Workgroup (AAB#): WG482628 Cal ID: LCMS1 - 30-JUN-14
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3638591
Report generated 07/03/2014 11:11

Login Number: L14061094 Run Date: 07/01/2014 Sample ID: WG482635-02
Instrument ID: LCMS1 Run Time: 17:06 Method: 6850
File ID: 1LM.LM25904 Analyst: JWR QC Key: DOD4
Workgroup (AAB#): WG482628 Cal ID: LCMS1 - 30-JUN-14
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.04	ug/L	1.30	4.00	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 3638590
Report generated 07/03/2014 11:11

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L14061094 Run Date: 07/01/2014 Sample ID: WG482635-03

Instrument ID: LCMS1 Run Time: 20:53 Method: 6850

File ID: 1LM.LM25916 Analyst: JWR QC Key: DOD4

Workgroup (AAB#): WG482628 Cal ID: LCMS1 - 30-JUN-14

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	0.995	ug/L	1.24	0.500	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008

PDF File ID: 3638590

Report generated 07/03/2014 11:11

Login Number: L14061094 Run Date: 07/02/2014 Sample ID: WG482635-05
Instrument ID: LCMS1 Run Time: 00:59 Method: 6850
File ID: 1LM.LM25929 Analyst: JWR QC Key: DOD4
Workgroup (AAB#): WG482628 Cal ID: LCMS1 - 30-JUN-14
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	0.986	ug/L	1.23	1.40	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 3638590
Report generated 07/03/2014 11:11

Login Number: L14061094 Run Date: 07/02/2014 Sample ID: WG482635-07
Instrument ID: LCMS1 Run Time: 03:12 Method: 6850
File ID: 1LM.LM25936 Analyst: JWR QC Key: DOD4
Workgroup (AAB#): WG482628 Cal ID: LCMS1 - 30-JUN-14
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	0.974	ug/L	1.21	2.60	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 3638590
Report generated 07/03/2014 11:11

Login Number: L14061094 Run Date: 07/02/2014 Sample ID: WG482635-09
Instrument ID: LCMS1 Run Time: 11:20 Method: 6850
File ID: 1LM.LM25939 Analyst: JWR QC Key: DOD4
Workgroup (AAB#): WG482628 Cal ID: LCMS1 - 30-JUN-14
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.02	ug/L	1.27	2.00	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 3638590
Report generated 07/03/2014 11:11

Login Number: L14061094 Run Date: 07/02/2014 Sample ID: WG482635-11
Instrument ID: LCMS1 Run Time: 14:11 Method: 6850
File ID: 1LM.LM25948 Analyst: JWR QC Key: DOD4
Workgroup (AAB#): WG482628 Cal ID: LCMS1 - 30-JUN-14
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	0.994	ug/L	1.24	0.600	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 3638590
Report generated 07/03/2014 11:11

Login Number: L14061094 Run Date: 07/01/2014 Sample ID: WG482628-05
Instrument ID: LCMS1 Run Time: 17:25 Prep Method: 6850
File ID: 1LM.LM25905 Analyst: JWR Method: 6850
Workgroup (AAB#): WG482628 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-30-JUN-14

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.207	104	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3638589
Report generated 07/03/2014 11:11

Login Number: L14061094 Run Date: 07/01/2014 Sample ID: WG482628-06
Instrument ID: LCMS1 Run Time: 21:12 Prep Method: 6850
File ID: 1LM.LM25917 Analyst: JWR Method: 6850
Workgroup (AAB#): WG482628 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-30-JUN-14

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.203	102	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3638589
Report generated 07/03/2014 11:11

Login Number: L14061094 Run Date: 07/02/2014 Sample ID: WG482628-07
Instrument ID: LCMS1 Run Time: 01:18 Prep Method: 6850
File ID: 1LM.LM25930 Analyst: JWR Method: 6850
Workgroup (AAB#): WG482628 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-30-JUN-14

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.190	95.0	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3638589
Report generated 07/03/2014 11:11

Login Number: L14061094 Run Date: 07/02/2014 Sample ID: WG482628-08
Instrument ID: LCMS1 Run Time: 03:31 Prep Method: 6850
File ID: 1LM.LM25937 Analyst: JWR Method: 6850
Workgroup (AAB#): WG482628 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-30-JUN-14

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.198	99.0	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3638589
Report generated 07/03/2014 11:11

Login Number: L14061094 Run Date: 07/02/2014 Sample ID: WG482628-09
Instrument ID: LCMS1 Run Time: 11:39 Prep Method: 6850
File ID: 1LM.LM25940 Analyst: JWR Method: 6850
Workgroup (AAB#): WG482628 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-30-JUN-14

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.207	104	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3638589
Report generated 07/03/2014 11:11

Login Number: L14061094 Run Date: 07/02/2014 Sample ID: WG482628-10
Instrument ID: LCMS1 Run Time: 14:30 Prep Method: 6850
File ID: 1LM.LM25949 Analyst: JWR Method: 6850
Workgroup (AAB#): WG482628 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-30-JUN-14

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.204	102	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3638589
Report generated 07/03/2014 11:11

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO AVERAGE OF ICAL)

Login Number: L14061094
Instrument ID: LCMS1
Workgroup (AAB#): WG482628

ICAL CCV Number: WG482296-05
CAL ID: LCMS1-30-JUN-14
Matrix: WATER

Sample Number	Dilution	Tag	IS-1
WG482296	NA	NA	289000
Upper Limit	NA	NA	433500
Lower Limit	NA	NA	144500
L14061094-01	1.00	01	307000
L14061094-02	1.00	01	316000
L14061094-03	1.00	01	316000
L14061094-04	1.00	01	303000
L14061094-05	1.00	01	308000
WG482628-02	1.00	01	305000
WG482628-03	1.00	01	302000
WG482628-04	1.00	01	298000

IS-1 - O18LP

Underline = Response outside limits

INTERNAL_STD_AVG_ICAL - Modified 03/10/2010
PDF File ID: 3638592
Report generated 07/03/2014 11:11

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**	6850	**Samplenum:**	L14061094-01
Instrument:	LCMS1	**Prep Date:**	07/01/2014 16:00	**File ID:**	1LM.LM25928
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/02/2014 00:40	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	67800	23500	2.89	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**	6850	**Samplenum:**	L14061094-02
Instrument:	LCMS1	**Prep Date:**	07/01/2014 16:00	**File ID:**	1LM.LM25932
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/02/2014 01:56	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	77800	26800	2.90	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**	6850	**Samplenum:**	L14061094-03
Instrument:	LCMS1	**Prep Date:**	07/01/2014 16:00	**File ID:**	1LM.LM25933
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/02/2014 02:15	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	36100	12000	3.01	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**	6850	**Samplenum:**	L14061094-04
Instrument:	LCMS1	**Prep Date:**	07/01/2014 16:00	**File ID:**	1LM.LM25934
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/02/2014 02:34	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	4290	1290	3.33	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**	6850	**Samplenum:**	L14061094-05
Instrument:	LCMS1	**Prep Date:**	07/01/2014 16:00	**File ID:**	1LM.LM25935
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/02/2014 02:53	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	7470	3120	2.39	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482296-02
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25866
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	06/30/2014 16:21	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	7280	2590	2.81	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482296-03
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25867
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	06/30/2014 16:40	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	15400	4930	3.12	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482296-04
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25868
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	06/30/2014 16:59	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	35900	12900	2.78	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482296-05
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25869
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	06/30/2014 17:18	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	71900	24200	2.97	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482296-06
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25870
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	06/30/2014 17:36	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	147000	50100	2.93	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482296-07
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25871
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	06/30/2014 17:55	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	351000	120000	2.93	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482296-08
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25872
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	06/30/2014 18:14	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	680000	233000	2.92	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482296-09
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25873
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	06/30/2014 18:33	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	70500	23600	2.99	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**	6850	**Samplenum:**	WG482628-01
Instrument:	LCMS1	**Prep Date:**	07/01/2014 16:00	**File ID:**	1LM.LM25906
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/01/2014 17:44	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	14300	4540	3.15	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**	6850	**Samplenum:**	WG482628-02
Instrument:	LCMS1	**Prep Date:**	07/01/2014 16:00	**File ID:**	1LM.LM25907
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/01/2014 18:03	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	670	64.9	10.3	2.3	3.8	*

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**	6850	**Samplenum:**	WG482628-03
Instrument:	LCMS1	**Prep Date:**	07/01/2014 16:00	**File ID:**	1LM.LM25908
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/01/2014 18:22	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	15300	5440	2.81	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**	6850	**Samplenum:**	WG482628-04
Instrument:	LCMS1	**Prep Date:**	07/01/2014 16:00	**File ID:**	1LM.LM25909
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/01/2014 18:41	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	15000	5440	2.76	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**	6850	**Samplenum:**	WG482628-05
Instrument:	LCMS1	**Prep Date:**	07/01/2014 16:00	**File ID:**	1LM.LM25905
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/01/2014 17:25	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	15100	4870	3.10	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**	6850	**Samplenum:**	WG482628-06
Instrument:	LCMS1	**Prep Date:**	07/01/2014 16:00	**File ID:**	1LM.LM25917
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/01/2014 21:12	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	15200	4900	3.10	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**	6850	**Samplenum:**	WG482628-07
Instrument:	LCMS1	**Prep Date:**	07/01/2014 16:00	**File ID:**	1LM.LM25930
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/02/2014 01:18	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	15200	5200	2.92	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**	6850	**Samplenum:**	WG482628-08
Instrument:	LCMS1	**Prep Date:**	07/01/2014 16:00	**File ID:**	1LM.LM25937
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/02/2014 03:31	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	15800	5380	2.94	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**	6850	**Samplenum:**	WG482628-09
Instrument:	LCMS1	**Prep Date:**	07/01/2014 16:00	**File ID:**	1LM.LM25940
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/02/2014 11:39	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	15700	5640	2.78	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**	6850	**Samplenum:**	WG482628-10
Instrument:	LCMS1	**Prep Date:**	07/01/2014 16:00	**File ID:**	1LM.LM25949
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/02/2014 14:30	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	15600	5400	2.89	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482635-01
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25903
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/01/2014 16:47	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	1980	589	3.36	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482635-02
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25904
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/01/2014 17:06	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	75200	24100	3.12	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482635-03
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25916
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/01/2014 20:53	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	72800	25000	2.91	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482635-04
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25918
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/01/2014 21:31	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	1800	560	3.21	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482635-05
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25929
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/02/2014 00:59	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	77300	26100	2.96	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482635-06
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25931
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/02/2014 01:37	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	1780	662	2.69	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482635-07
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25936
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/02/2014 03:12	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	77300	25500	3.03	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482635-08
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25938
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/02/2014 03:50	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	1650	689	2.39	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482635-09
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25939
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/02/2014 11:20	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	76700	25700	2.98	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482635-10
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25941
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/02/2014 11:58	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	0.000	0.000	0.000	2.3	3.8	*

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482635-11
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25948
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/02/2014 14:11	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	75800	26500	2.86	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14061094	**Prep Method:**		**Samplenum:**	WG482635-12
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM25950
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG482628	**Analysis Date:**	07/02/2014 14:49	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	0.000	169	0.000	2.3	3.8	*

2.1.1.3 Sample Data

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Data File	LM25928.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/2/2014 12:40:52 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

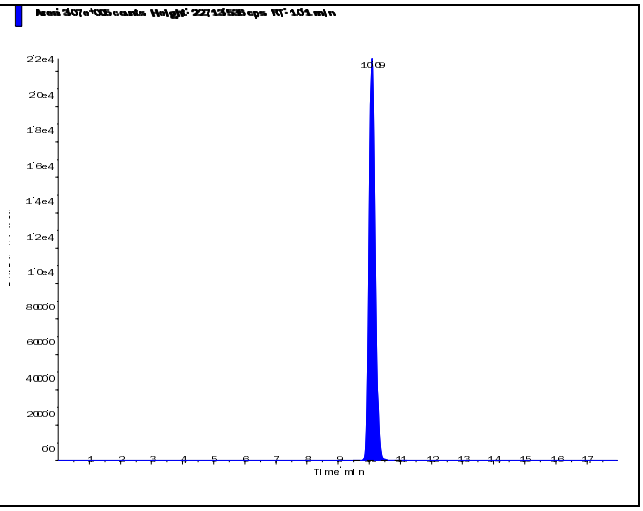
Sample Name	L14061094-01	**Injection Vial**	23.00
Data File	LM25928.wiff	**Injection Volume**	10.00
Acquisition Date	7/2/2014 12:40:52 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	L14061094-01	**Dilution Factor**	1.00
Sample Comment	1,1 (Hist)	**Weight to Volume**	0.00

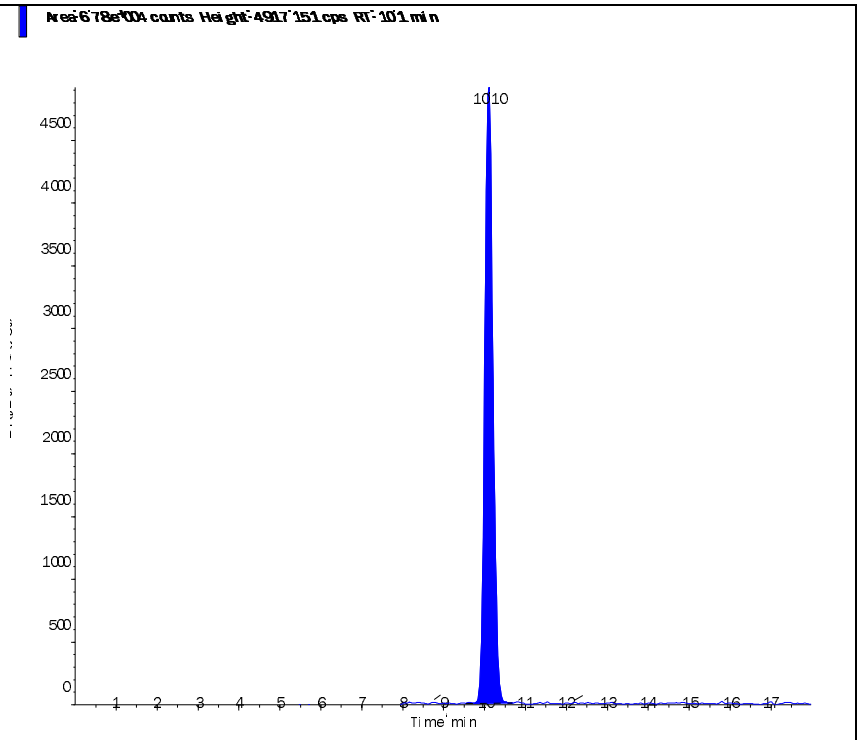
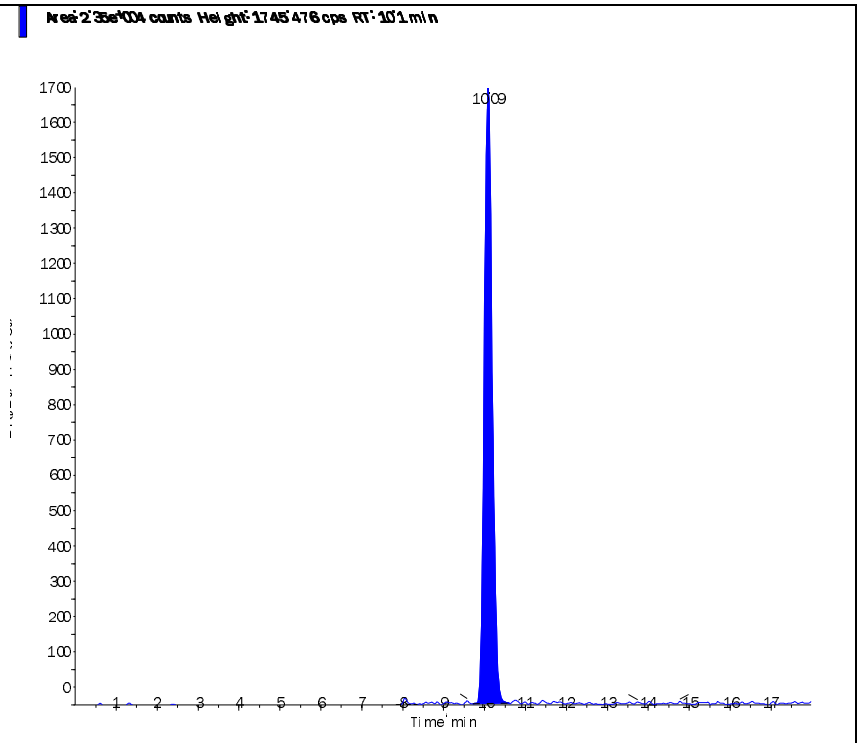
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.070e+05	10.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	6.780e+04	10.10	N/A	0.887
Perchlorate conf	2.350e+04	10.10	N/A	0.896

O18LP (Internal Standard)

RT (Exp. RT): 10.10(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.10 (10.10) min Calculated conc: 0.887 ng/ml Area Ratio: 0.221 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.10 (10.10) min Calculated conc: 0.896 ng/ml Area Ratio: 0.077 Sample Type: (Unknown)	

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Data File	LM25932.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/2/2014 1:56:36 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

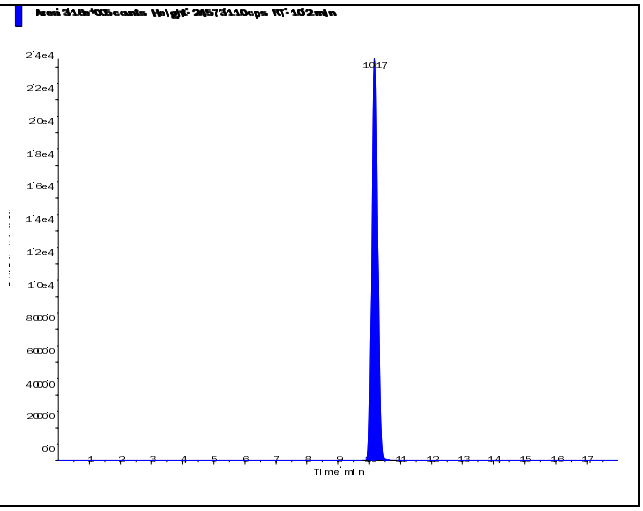
Sample Name	L14061094-02	**Injection Vial**	24.00
Data File	LM25932.wiff	**Injection Volume**	10.00
Acquisition Date	7/2/2014 1:56:36 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	L14061094-02	**Dilution Factor**	1.00
Sample Comment	1,1 (Hist)	**Weight to Volume**	0.00

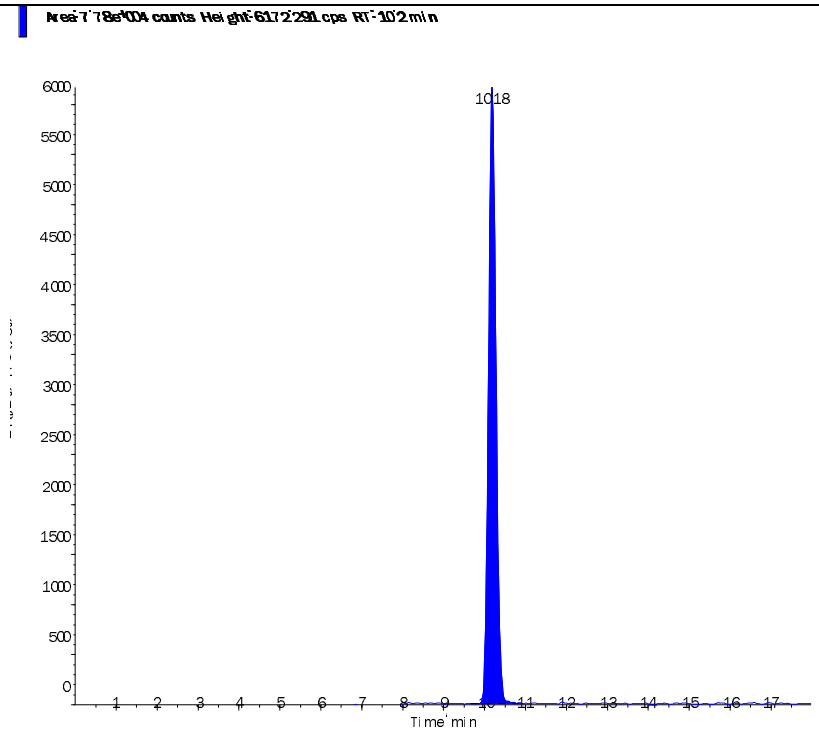
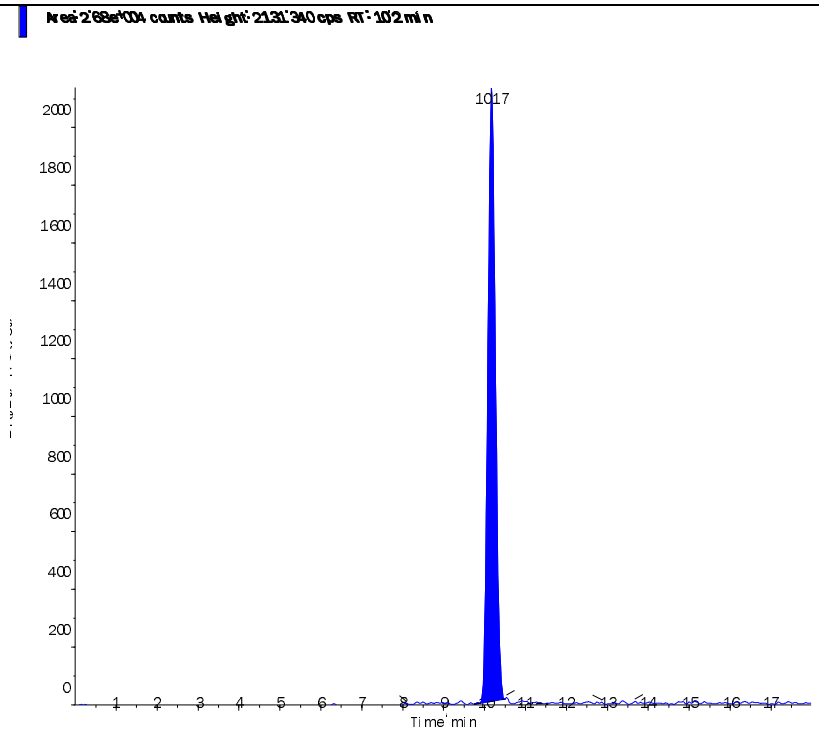
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.160e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.780e+04	10.20	N/A	0.989
Perchlorate conf	2.680e+04	10.20	N/A	0.993

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.989 ng/ml Area Ratio: 0.247 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.993 ng/ml Area Ratio: 0.085 Sample Type: (Unknown)	

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Data File	LM25933.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/2/2014 2:15:32 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

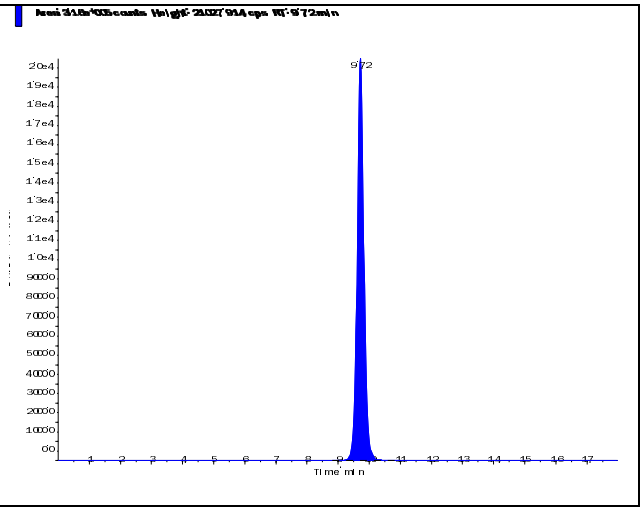
Sample Name	L14061094-03	**Injection Vial**	25.00
Data File	LM25933.wiff	**Injection Volume**	10.00
Acquisition Date	7/2/2014 2:15:32 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	L14061094-03	**Dilution Factor**	1.00
Sample Comment	1,1 (Hist)	**Weight to Volume**	0.00

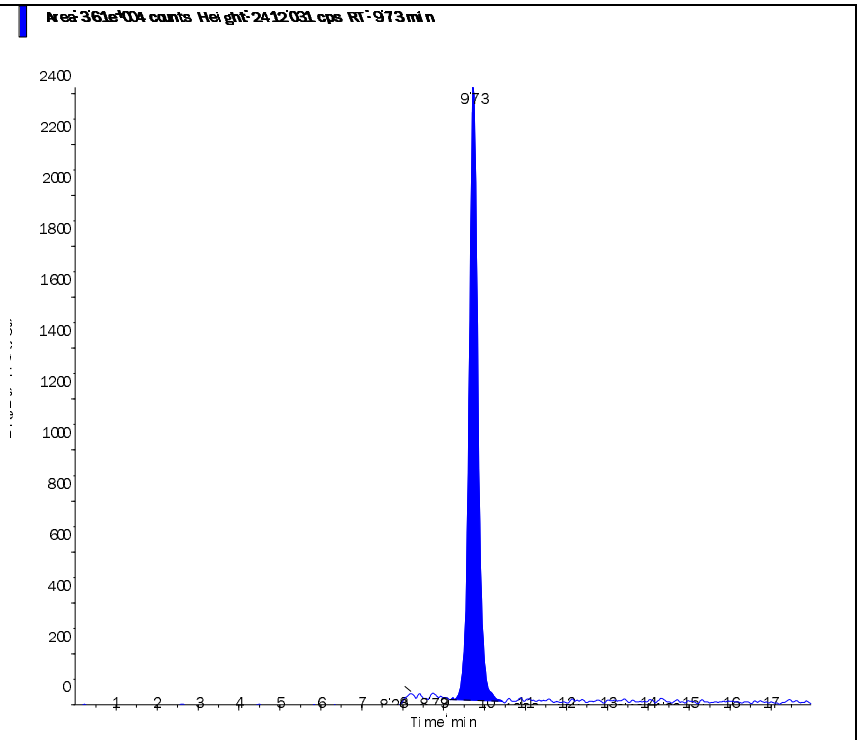
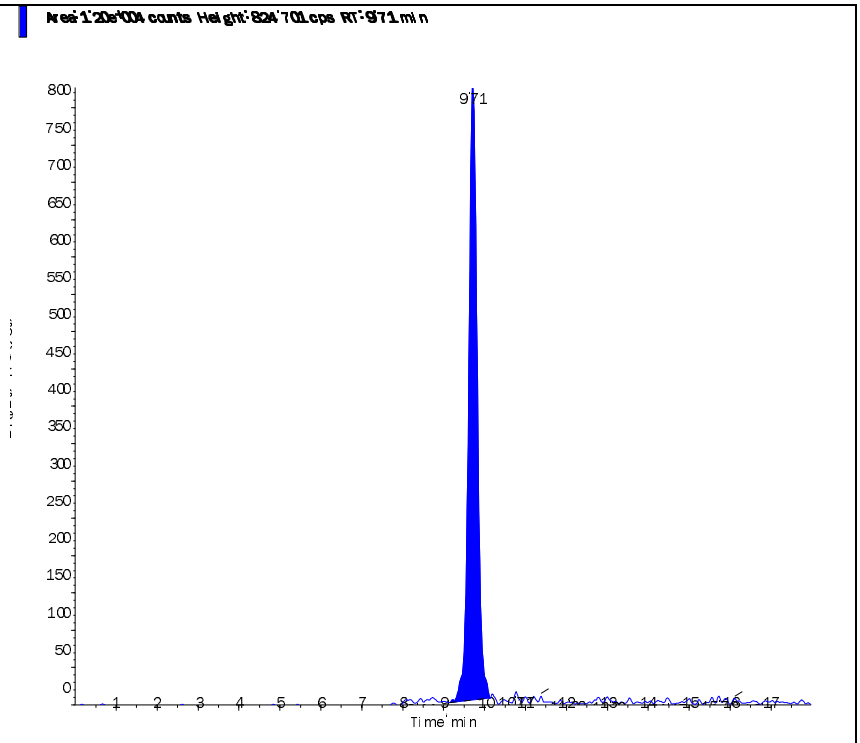
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.160e+05	9.72	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	3.610e+04	9.73	N/A	0.458
Perchlorate conf	1.200e+04	9.71	N/A	0.444

O18LP (Internal Standard)

RT (Exp. RT): 9.72(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 9.73 (10.10) min Calculated conc: 0.458 ng/ml Area Ratio: 0.114 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 9.71 (10.10) min Calculated conc: 0.444 ng/ml Area Ratio: 0.038 Sample Type: (Unknown)	

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Data File	LM25934.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/2/2014 2:34:28 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

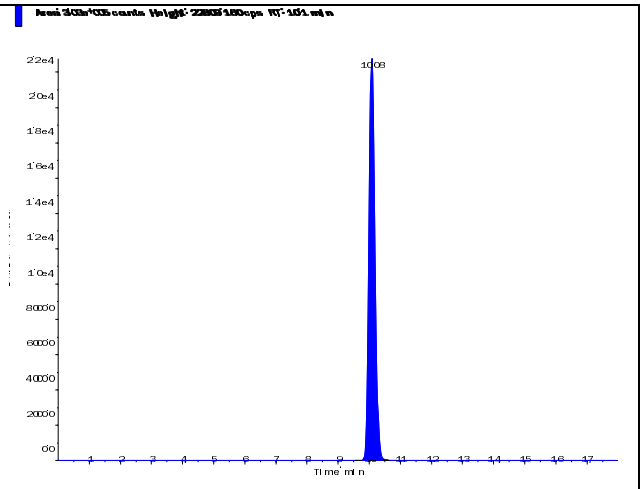
Sample Name	L14061094-04	**Injection Vial**	26.00
Data File	LM25934.wiff	**Injection Volume**	10.00
Acquisition Date	7/2/2014 2:34:28 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	L14061094-04	**Dilution Factor**	1.00
Sample Comment	1,1 (Hist)	**Weight to Volume**	0.00

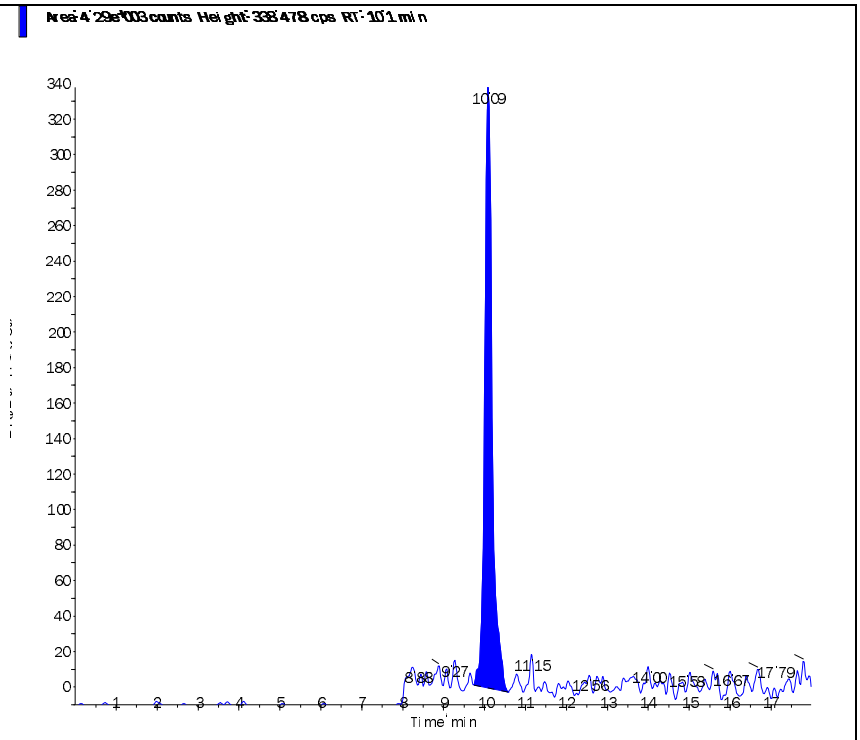
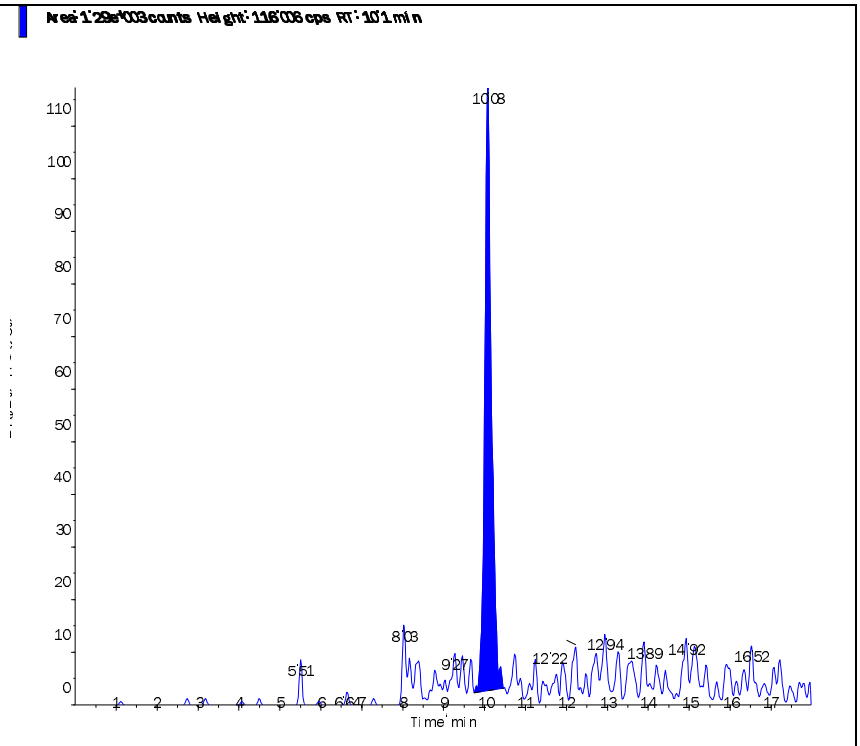
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.030e+05	10.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	4.290e+03	10.10	N/A	0.0554
Perchlorate conf	1.290e+03	10.10	N/A	0.049

O18LP (Internal Standard)

RT (Exp. RT): 10.10(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.10 (10.10) min Calculated conc: 0.0554 ng/ml Area Ratio: 0.014 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.10 (10.10) min Calculated conc: 0.049 ng/ml Area Ratio: 0.004 Sample Type: (Unknown)	

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Data File	LM25935.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/2/2014 2:53:23 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

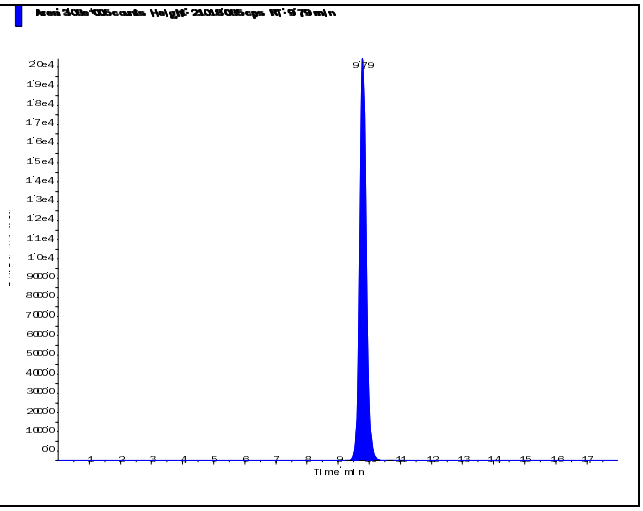
Sample Name	L14061094-05	**Injection Vial**	27.00
Data File	LM25935.wiff	**Injection Volume**	10.00
Acquisition Date	7/2/2014 2:53:23 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	L14061094-05	**Dilution Factor**	1.00
Sample Comment	1,1 (Hist)	**Weight to Volume**	0.00

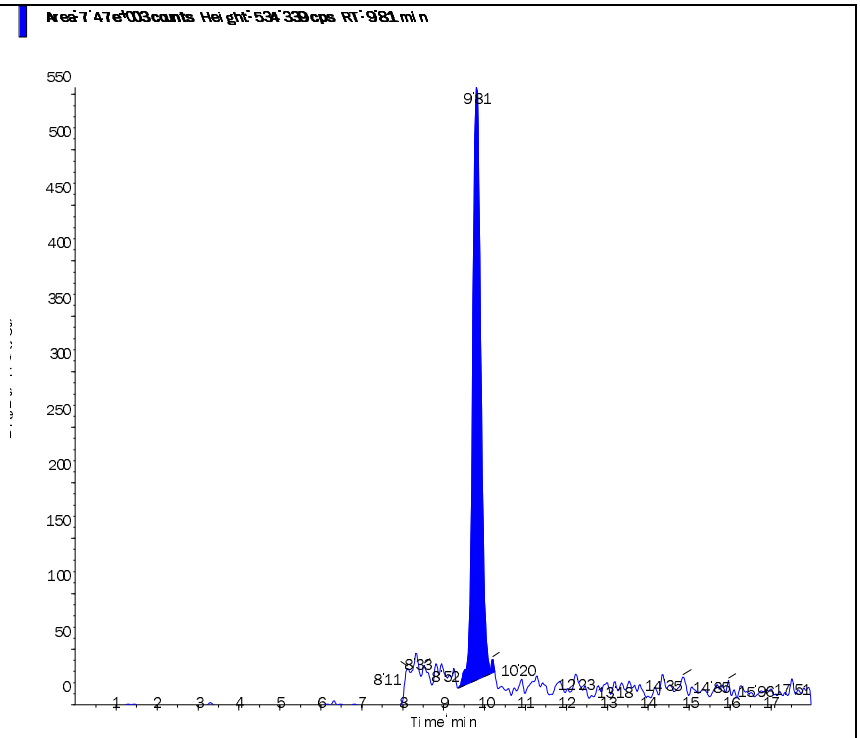
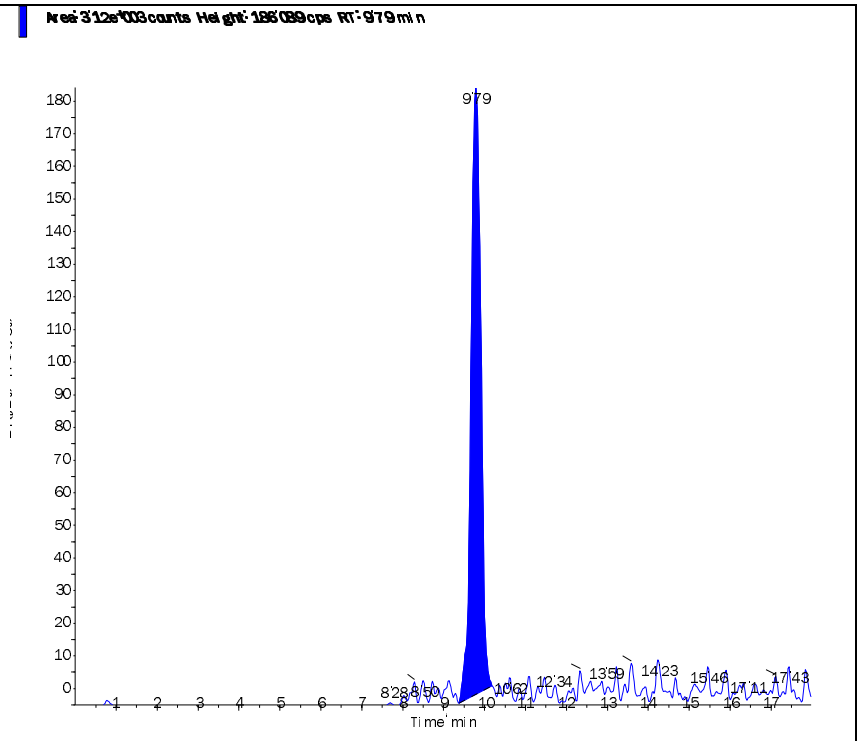
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.080e+05	9.79	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.470e+03	9.81	N/A	0.0958
Perchlorate conf	3.120e+03	9.79	N/A	0.118

O18LP (Internal Standard)

RT (Exp. RT): 9.79(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 9.81 (10.10) min Calculated conc: 0.0958 ng/ml Area Ratio: 0.024 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 9.79 (10.10) min Calculated conc: 0.118 ng/ml Area Ratio: 0.01 Sample Type: (Unknown)	

2.1.1.4 Standards Data

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Data File	LM25865.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	6/30/2014 4:02:20 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

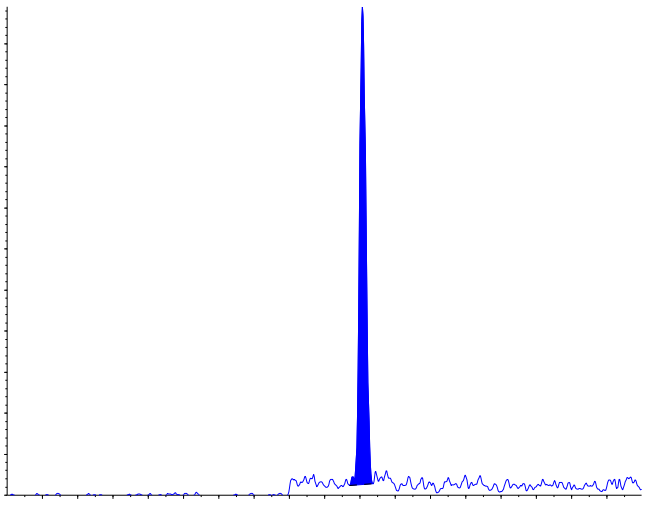
Sample Name	WG482296-01 CCB	**Injection Vial**	1.00
Data File	LM25865.wiff	**Injection Volume**	10.00
Acquisition Date	6/30/2014 4:02:20 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482296-01	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

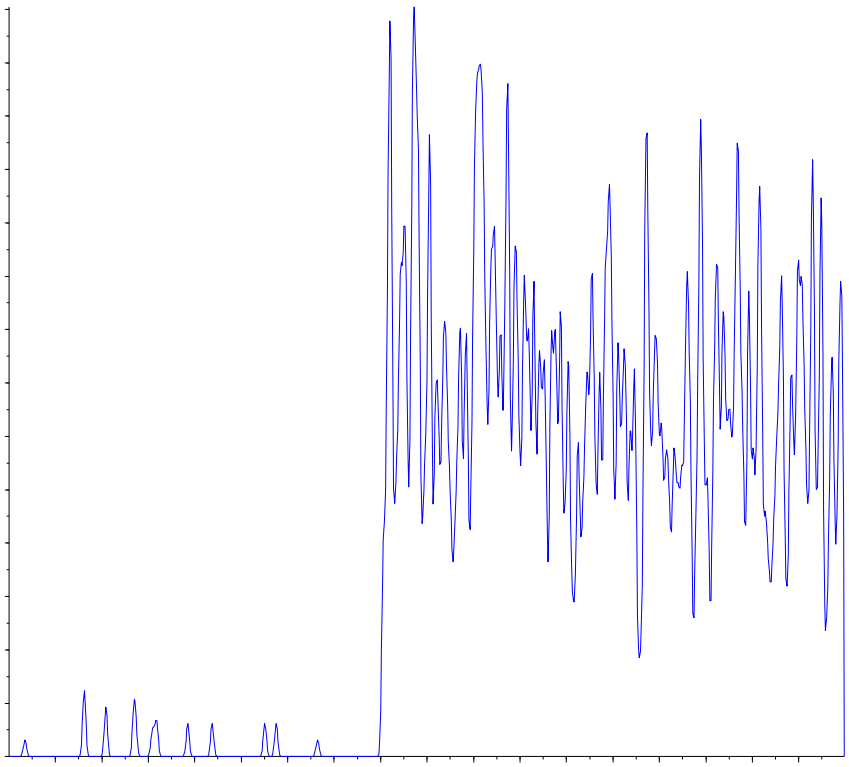
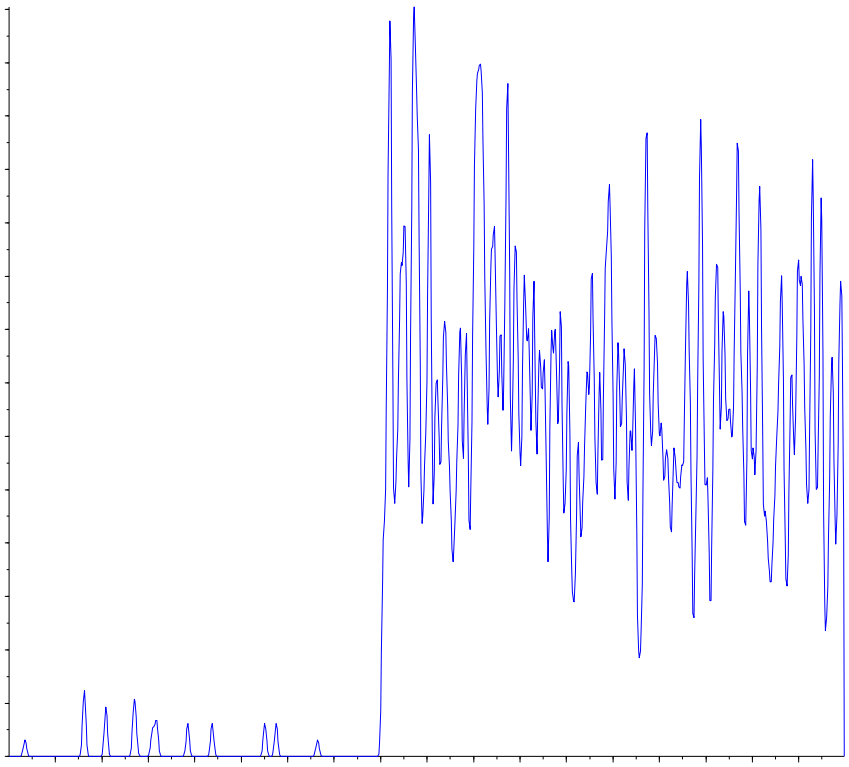
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.860e+05	10.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	0.000e+00	0.00	N/A	No Peak
Perchlorate conf	9.900e+01	10.00	N/A	0.0033

O18LP (Internal Standard)

RT (Exp. RT): 10.10(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 0.00 (10.10) min Calculated conc: No Peak ng/ml Area Ratio: 0.00 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.00 (10.10) min Calculated conc: 0.0033 ng/ml Area Ratio: 0.00 Sample Type: (Unknown)	

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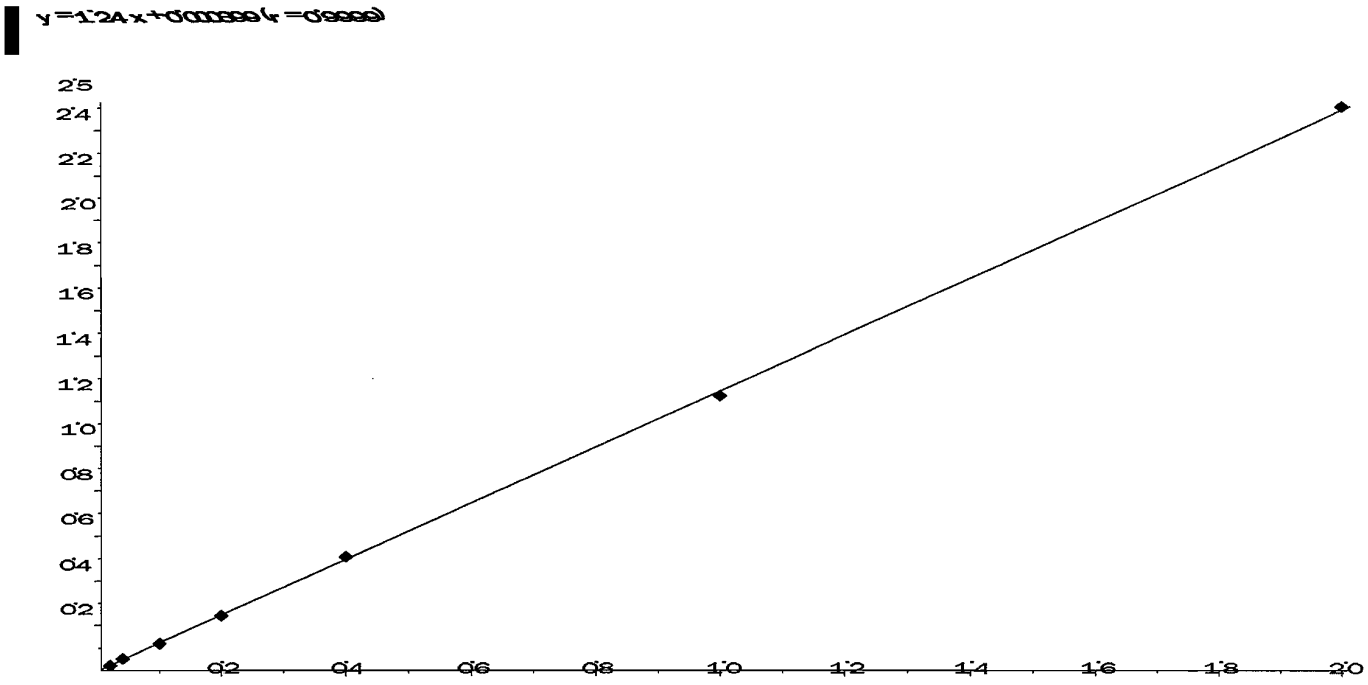
Analyte Name: **Perchlorate**
Internal Standard: O18LP

Data File	LM25865.wiff	**Result Table**	063014_JWR.rdb
Acquisition Date	6/30/2014 4:02:20 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

Regression Equation: y = 1.24 x + 0.000399 (r = 0.9999)

Expected Concentration	Number of Values	Mean Calculated Concentration	% Accuracy	Std. Deviation	%CV
0.10	1	0.10	96.2	N/A	N/A
0.20	1	0.21	106.9	N/A	N/A
0.50	1	0.49	97.3	N/A	N/A
1.00	1	0.98	98.4	N/A	N/A
2.00	1	2.05	102.3	N/A	N/A
5.00	1	4.92	98.3	N/A	N/A
10.00	1	10.06	100.6	N/A	N/A



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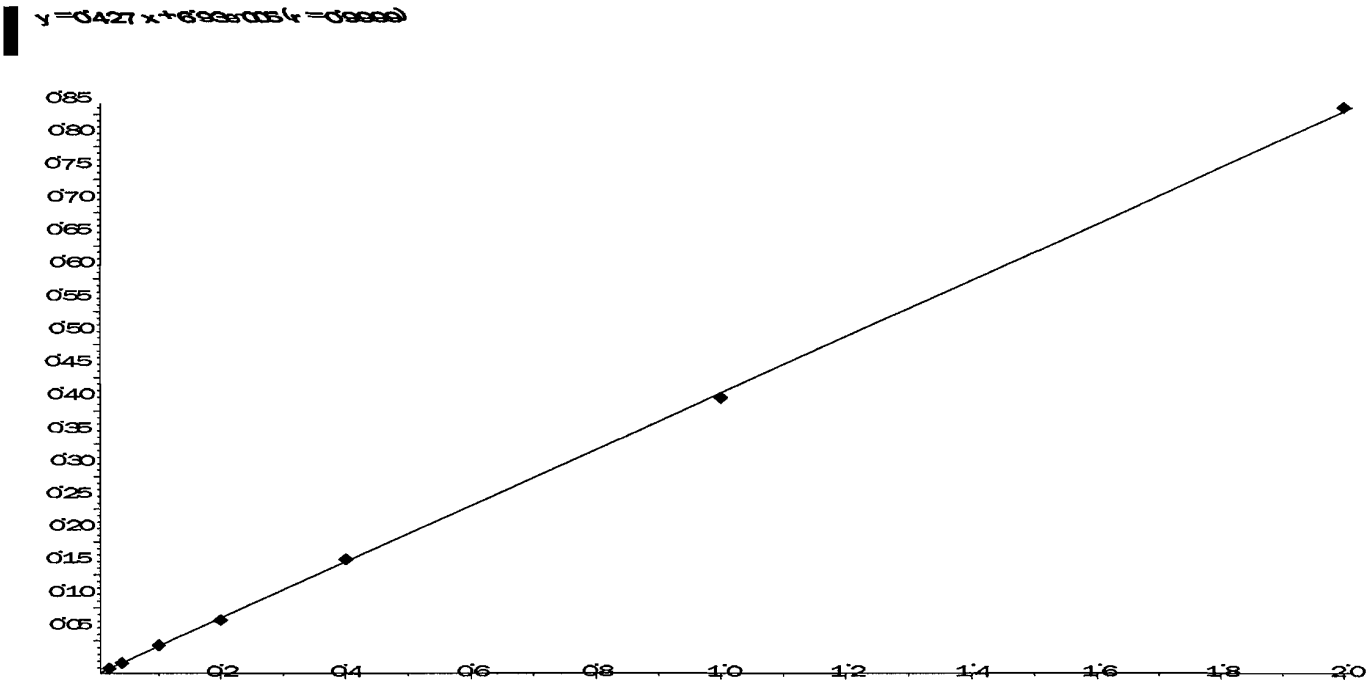
Printed: 7/1/2014 1:43 PM

Analyte Name: **Perchlorate conf**
Internal Standard: O18LP

Data File	LM25865.wiff	**Result Table**	063014_JWR.rdb
Acquisition Date	6/30/2014 4:02:20 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

Regression Equation: y = 0.427 x + 6.93e-005 (r = 0.9999)

Expected Concentration	Number of Values	Mean Calculated Concentration	% Accuracy	Std. Deviation	%CV
0.10	1	0.10	100.6	N/A	N/A
0.20	1	0.20	100.0	N/A	N/A
0.50	1	0.51	101.9	N/A	N/A
1.00	1	0.96	96.5	N/A	N/A
2.00	1	2.04	102.0	N/A	N/A
5.00	1	4.91	98.3	N/A	N/A
10.00	1	10.07	100.7	N/A	N/A



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Data File	LM25866.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	6/30/2014 4:21:15 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

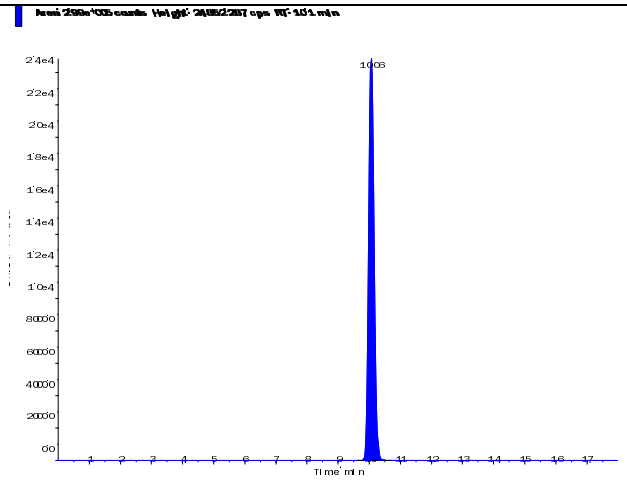
Sample Name	WG482296-02 STD (0.1 ug/L)	**Injection Vial**	2.00
Data File	LM25866.wiff	**Injection Volume**	10.00
Acquisition Date	6/30/2014 4:21:15 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482296-02	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.990e+05	10.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.280e+03	10.10	0.10	0.0962
Perchlorate conf	2.590e+03	10.10	0.10	0.101

O18LP (Internal Standard)

RT (Exp. RT): 10.10(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



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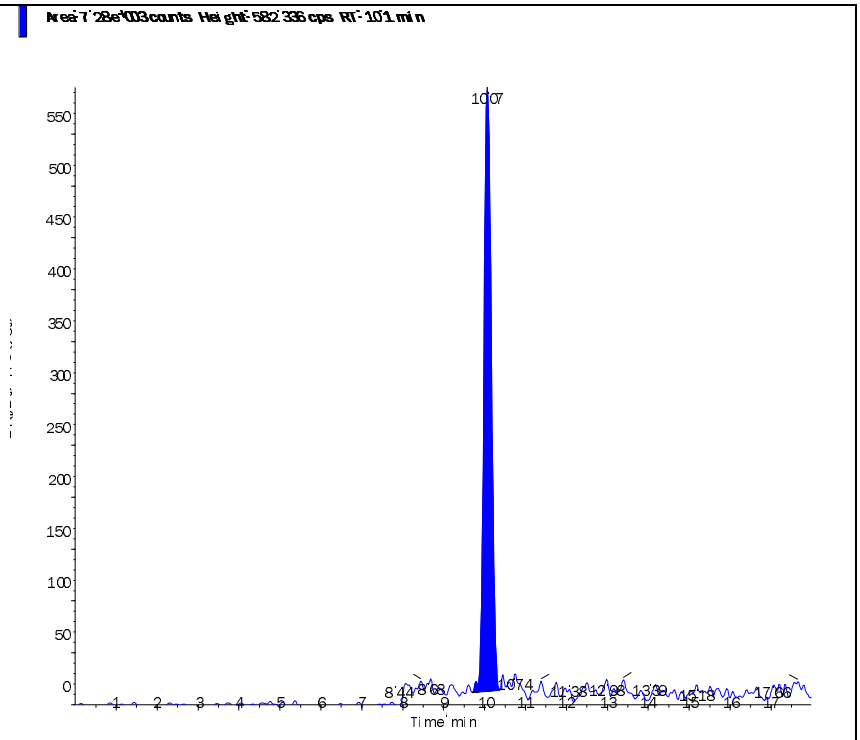
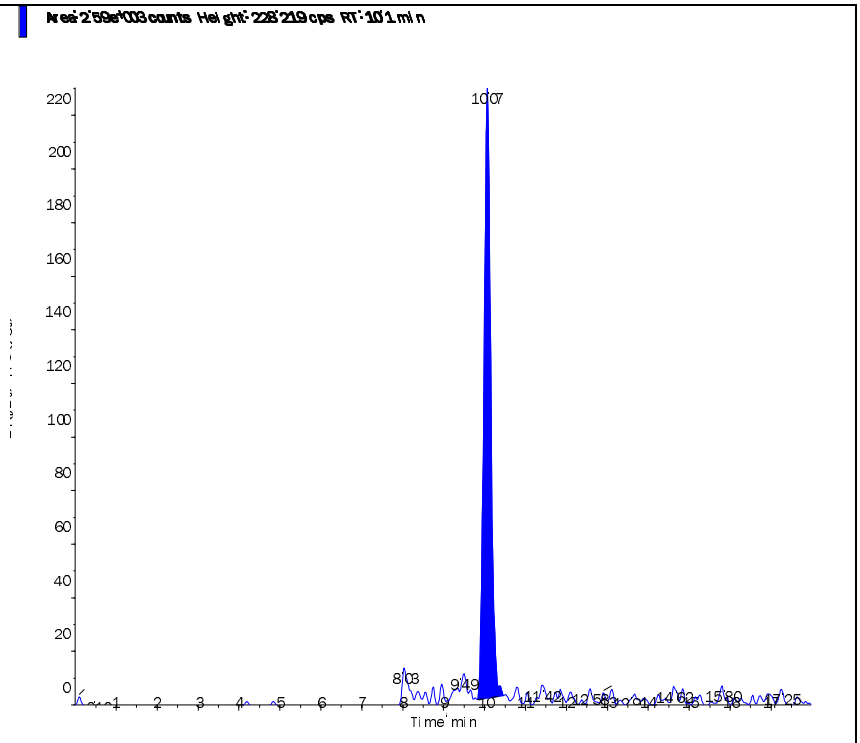
Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.10 (10.10) min Calculated conc: 0.0962 ng/ml Area Ratio: 0.024 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.10 (10.10) min Calculated conc: 0.101 ng/ml Area Ratio: 0.009 Sample Type: (Standard)	

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Printed: 7/2/2014 5:38 PM

Data File	LM25867.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	6/30/2014 4:40:12 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

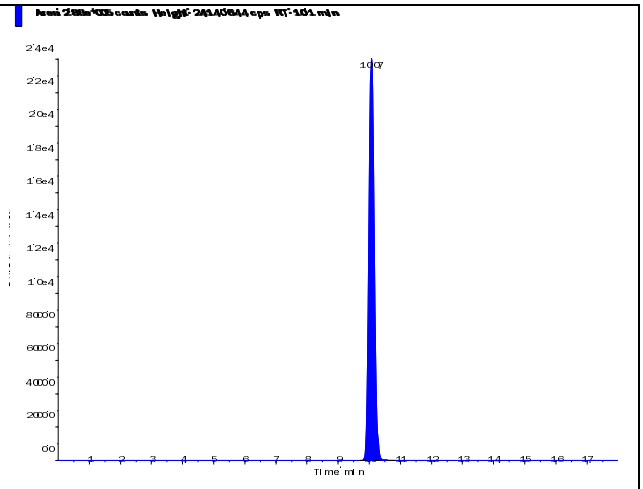
Sample Name	WG482296-03 STD (0.2 ug/L)	**Injection Vial**	3.00
Data File	LM25867.wiff	**Injection Volume**	10.00
Acquisition Date	6/30/2014 4:40:12 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482296-03	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

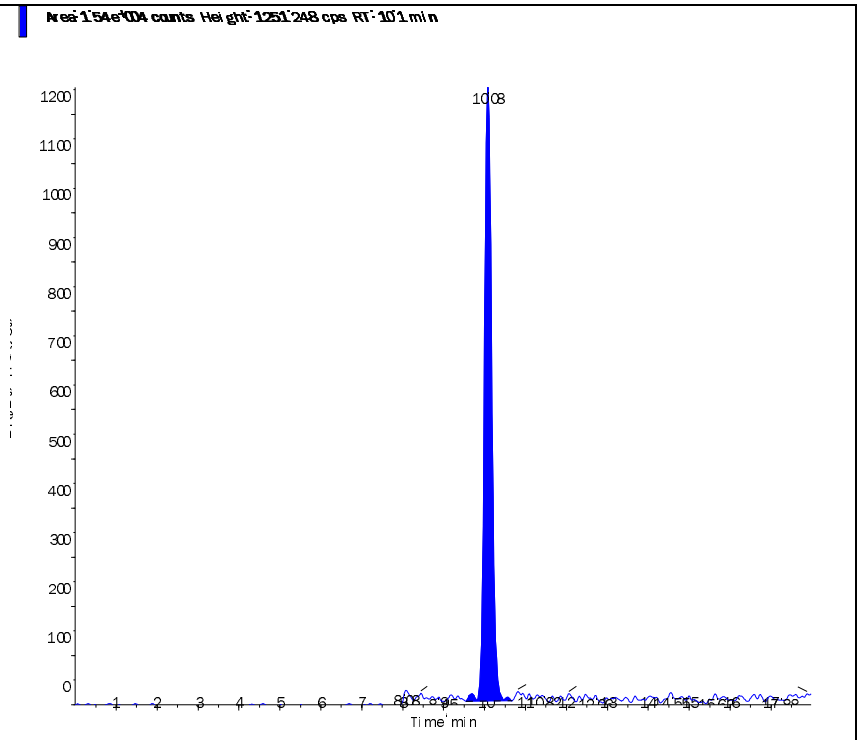
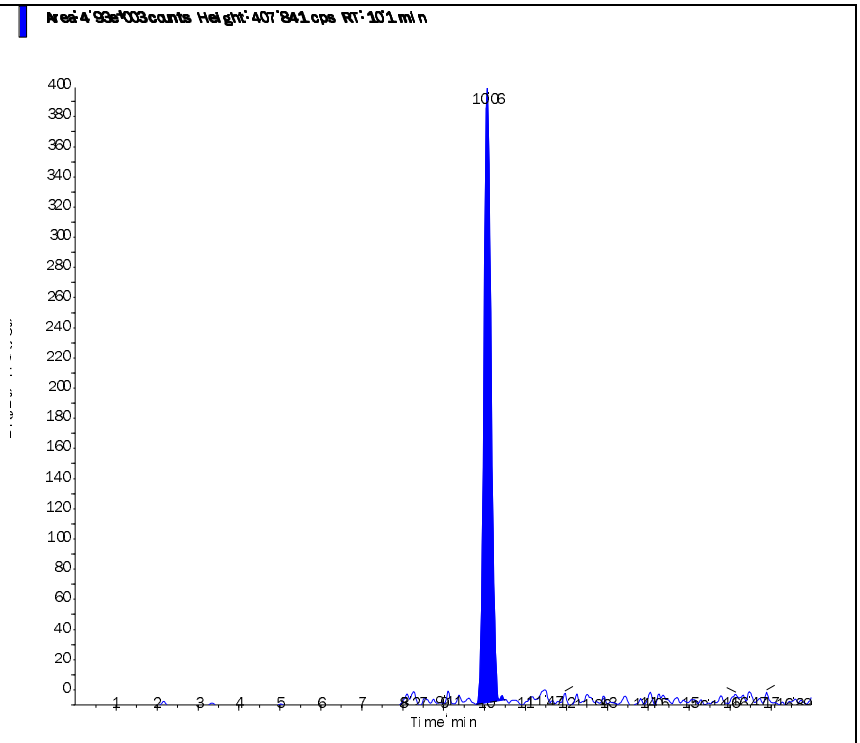
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.880e+05	10.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.540e+04	10.10	0.20	0.214
Perchlorate conf	4.930e+03	10.10	0.20	0.20

O18LP (Internal Standard)

RT (Exp. RT): 10.10(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.10 (10.10) min Calculated conc: 0.214 ng/ml Area Ratio: 0.054 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.10 (10.10) min Calculated conc: 0.20 ng/ml Area Ratio: 0.017 Sample Type: (Standard)	

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Data File	LM25868.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	6/30/2014 4:59:04 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

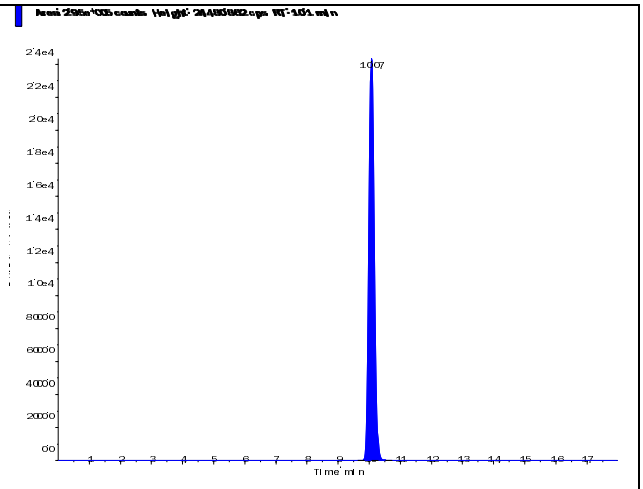
Sample Name	WG482296-04 STD (0.5 ug/L)	**Injection Vial**	4.00
Data File	LM25868.wiff	**Injection Volume**	10.00
Acquisition Date	6/30/2014 4:59:04 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482296-04	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

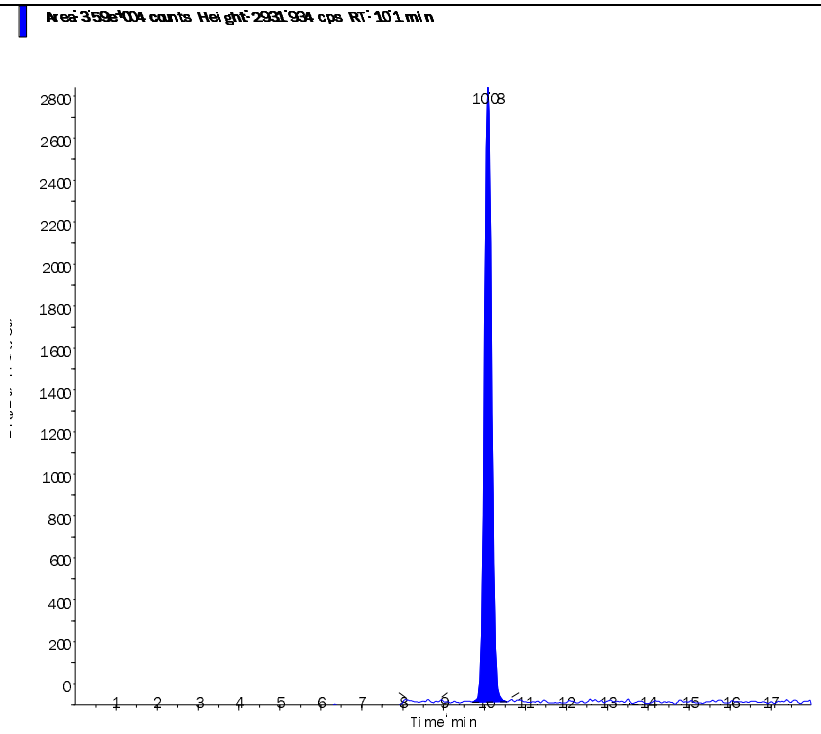
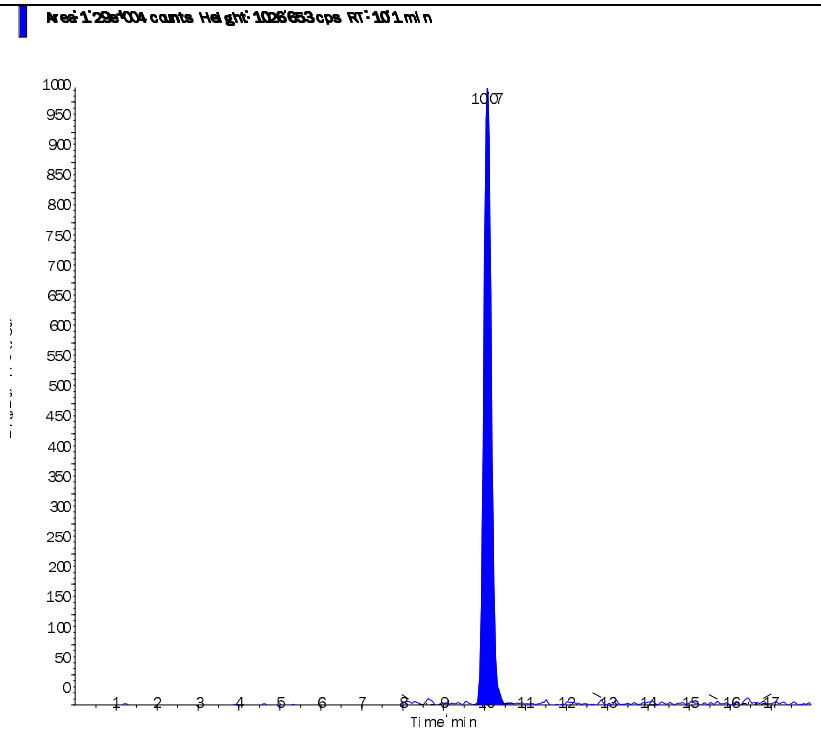
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.950e+05	10.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	3.590e+04	10.10	0.50	0.487
Perchlorate conf	1.290e+04	10.10	0.50	0.509

O18LP (Internal Standard)

RT (Exp. RT): 10.10(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.10 (10.10) min Calculated conc: 0.487 ng/ml Area Ratio: 0.121 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.10 (10.10) min Calculated conc: 0.509 ng/ml Area Ratio: 0.044 Sample Type: (Standard)	

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Data File	LM25869.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	6/30/2014 5:18:01 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

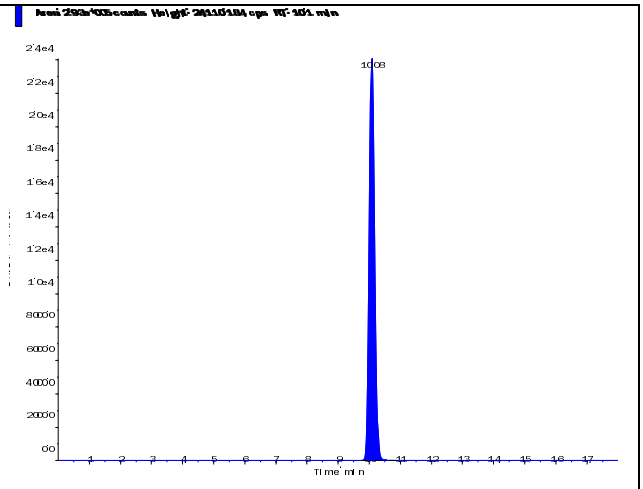
Sample Name	WG482296-05 STD (1.0 ug/L)	**Injection Vial**	5.00
Data File	LM25869.wiff	**Injection Volume**	10.00
Acquisition Date	6/30/2014 5:18:01 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482296-05	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.930e+05	10.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.190e+04	10.10	1.00	0.984
Perchlorate conf	2.420e+04	10.10	1.00	0.965

O18LP (Internal Standard)

RT (Exp. RT): 10.10(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



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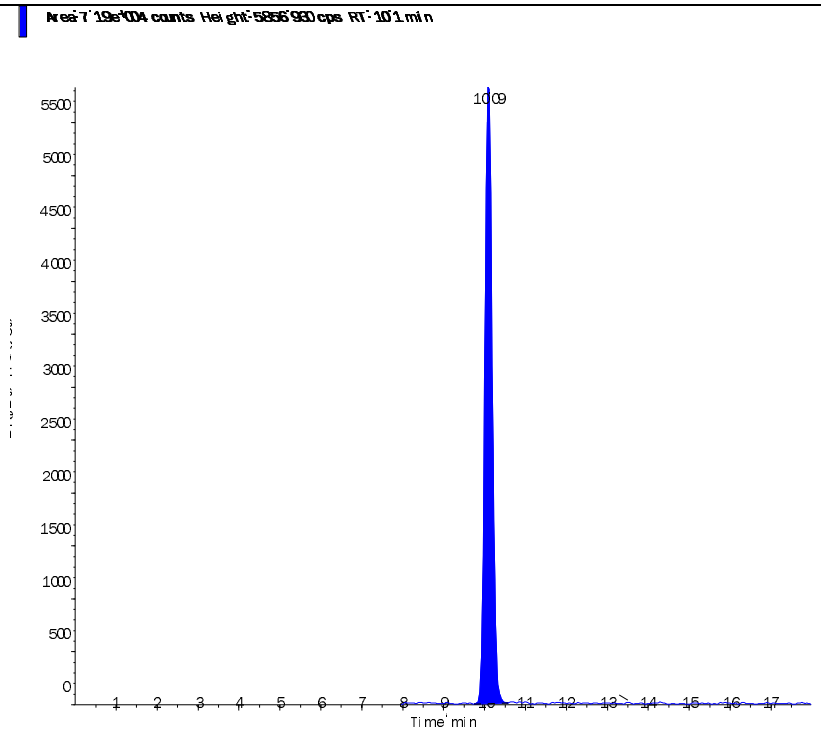
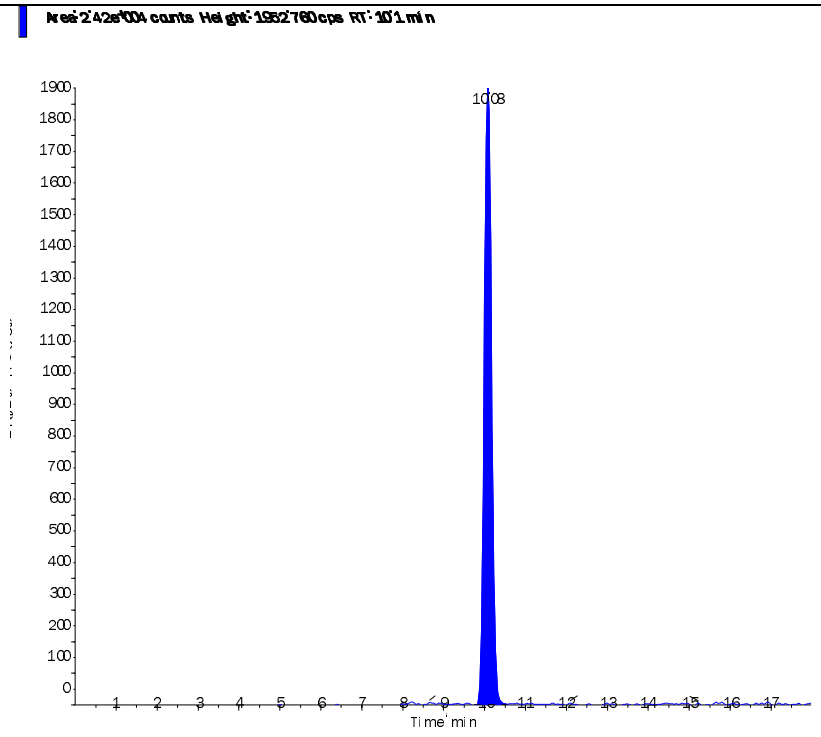
Perchlorate (98.8/83.3 amu) RT (Exp. RT): Calculated conc: Area Ratio: Sample Type:	 10.10 (10.10) min 0.984 ng/ml 0.245 (Standard)



Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): Calculated conc: Area Ratio: Sample Type:	 10.10 (10.10) min 0.965 ng/ml 0.082 (Standard)



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Printed: 7/2/2014 5:39 PM

Data File	LM25870.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	6/30/2014 5:36:57 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

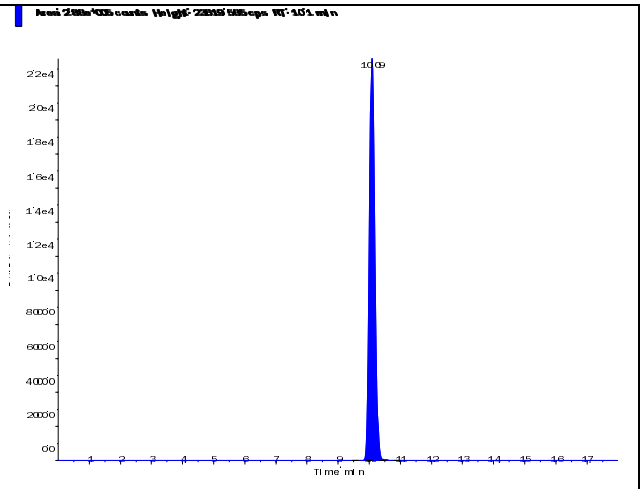
Sample Name	WG482296-06 STD (2.0 ug/L)	**Injection Vial**	6.00
Data File	LM25870.wiff	**Injection Volume**	10.00
Acquisition Date	6/30/2014 5:36:57 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482296-06	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

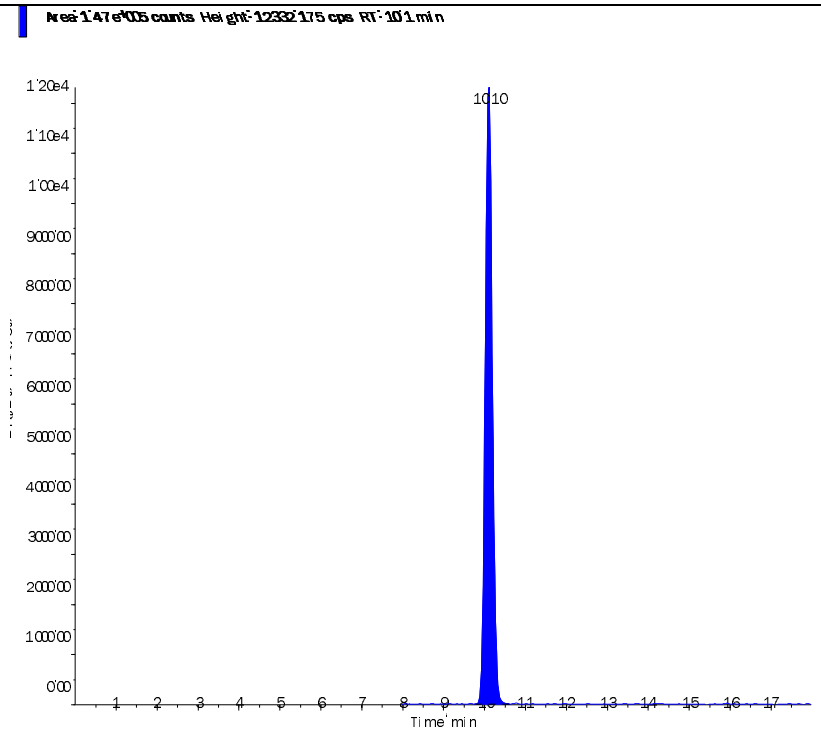
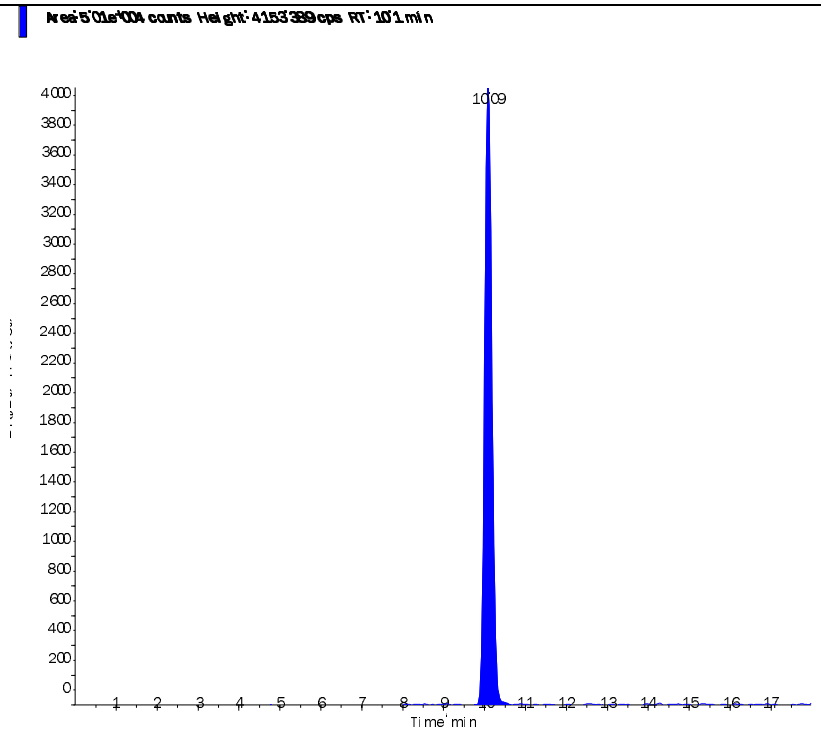
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.880e+05	10.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.470e+05	10.10	2.00	2.05
Perchlorate conf	5.010e+04	10.10	2.00	2.04

O18LP (Internal Standard)

RT (Exp. RT): 10.10(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.10 (10.10) min Calculated conc: 2.05 ng/ml Area Ratio: 0.509 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.10 (10.10) min Calculated conc: 2.04 ng/ml Area Ratio: 0.174 Sample Type: (Standard)	

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Data File	LM25871.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	6/30/2014 5:55:53 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

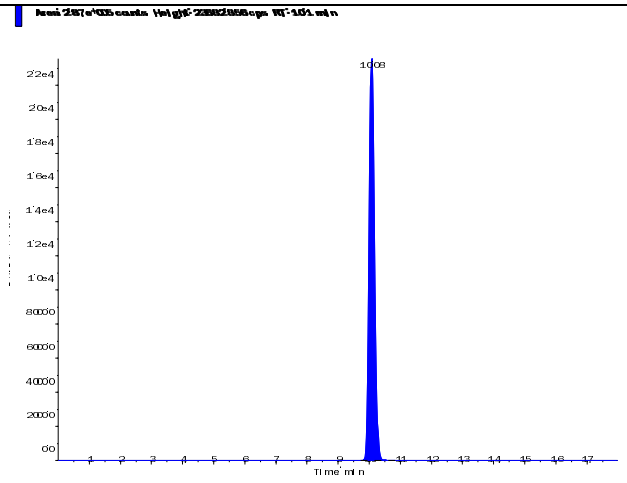
Sample Name	WG482296-07 STD (5.0 ug/L)	**Injection Vial**	7.00
Data File	LM25871.wiff	**Injection Volume**	10.00
Acquisition Date	6/30/2014 5:55:53 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482296-07	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

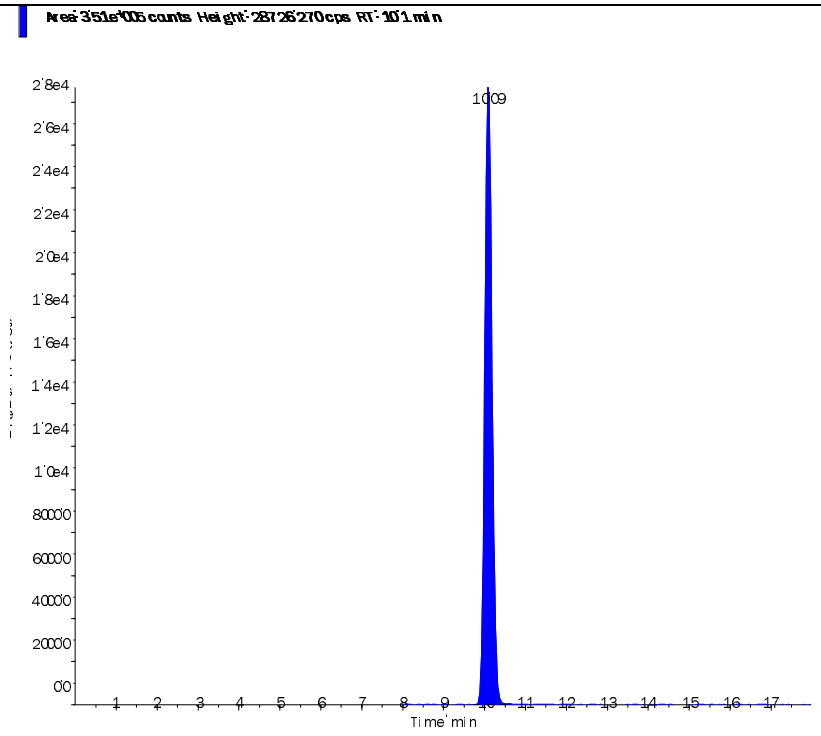
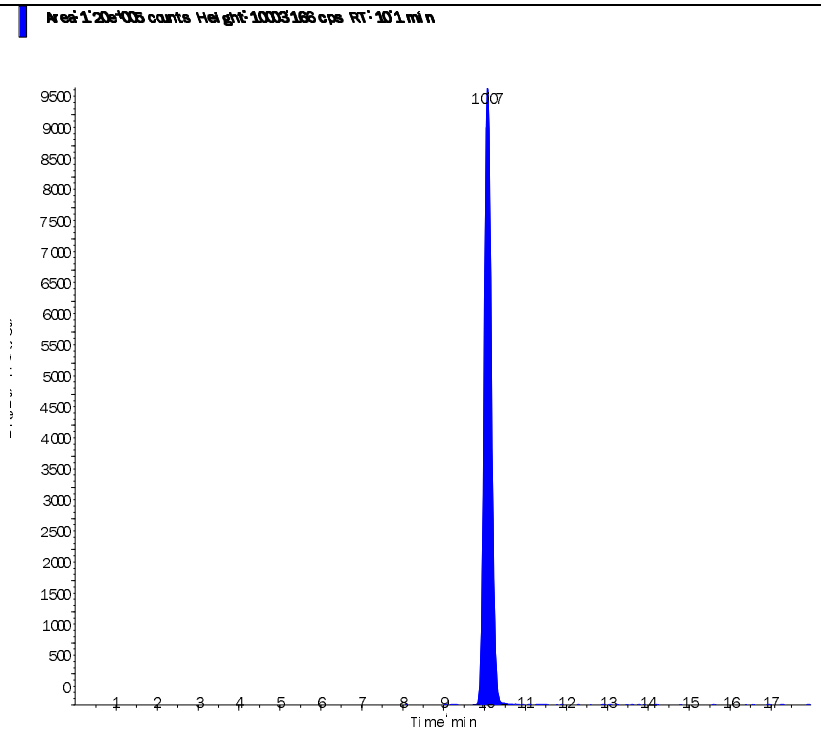
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.870e+05	10.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	3.510e+05	10.10	5.00	4.92
Perchlorate conf	1.200e+05	10.10	5.00	4.91

O18LP (Internal Standard)

RT (Exp. RT): 10.10(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.10 (10.10) min Calculated conc: 4.92 ng/ml Area Ratio: 1.224 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.10 (10.10) min Calculated conc: 4.91 ng/ml Area Ratio: 0.419 Sample Type: (Standard)	

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Data File	LM25872.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	6/30/2014 6:14:52 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

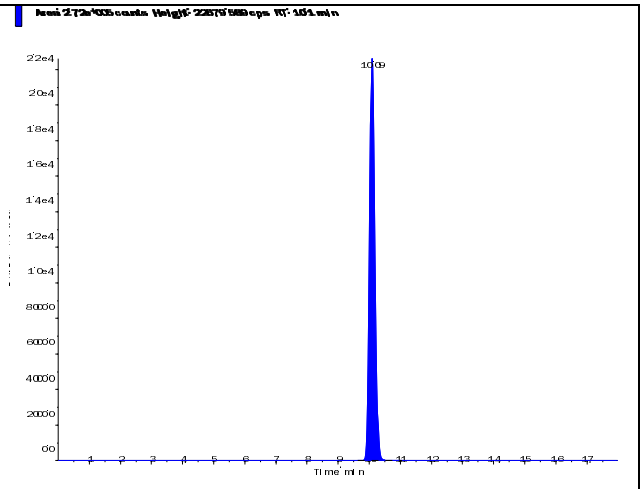
Sample Name	WG482296-08 STD (10 ug/L)	**Injection Vial**	8.00
Data File	LM25872.wiff	**Injection Volume**	10.00
Acquisition Date	6/30/2014 6:14:52 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482296-08	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

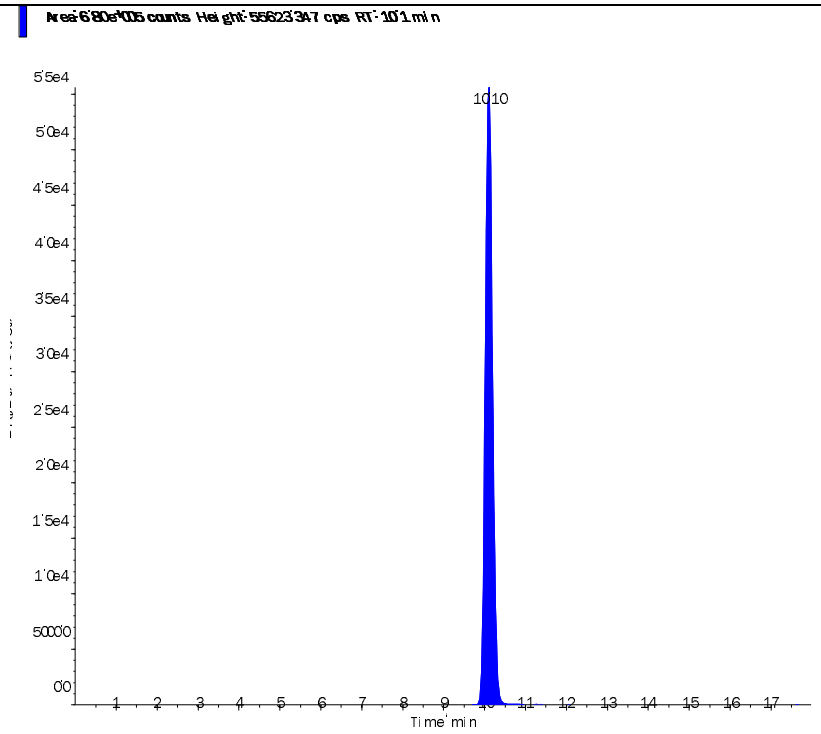
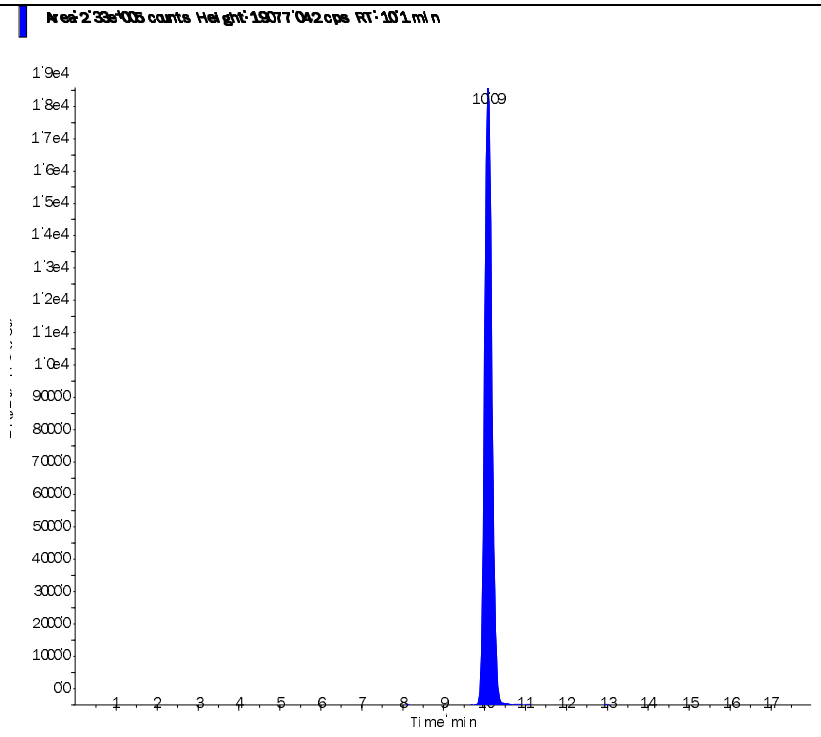
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.720e+05	10.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	6.800e+05	10.10	10.00	10.10
Perchlorate conf	2.330e+05	10.10	10.00	10.10

O18LP (Internal Standard)

RT (Exp. RT): 10.10(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.10 (10.10) min Calculated conc: 10.10 ng/ml Area Ratio: 2.503 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.10 (10.10) min Calculated conc: 10.10 ng/ml Area Ratio: 0.859 Sample Type: (Standard)	

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Data File	LM25873.wiff	**Result Table**	063014_JWR.rdb
Acquisition Date	6/30/2014 6:33:47 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

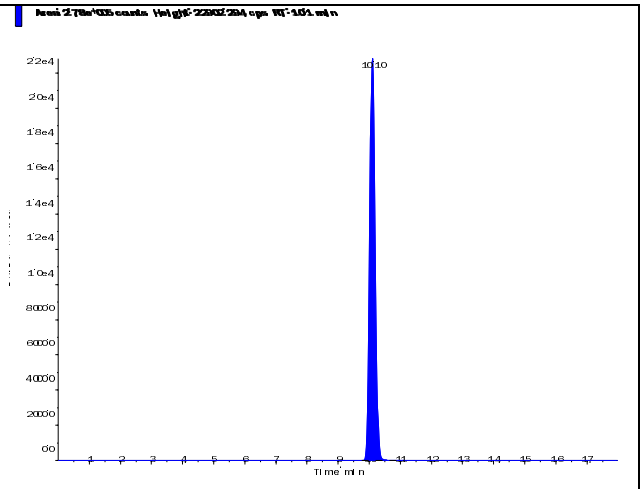
Sample Name	WG482296-09 SSCV (1.0 ug/L)	**Injection Vial**	9.00
Data File	LM25873.wiff	**Injection Volume**	10.00
Acquisition Date	6/30/2014 6:33:47 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	063014_JWR.rdb
Sample ID	WG482296-09	**Dilution Factor**	1.00
Sample Comment	1,1 STD65196	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.780e+05	10.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.050e+04	10.10	1.00	1.02
Perchlorate conf	2.360e+04	10.10	1.00	0.991

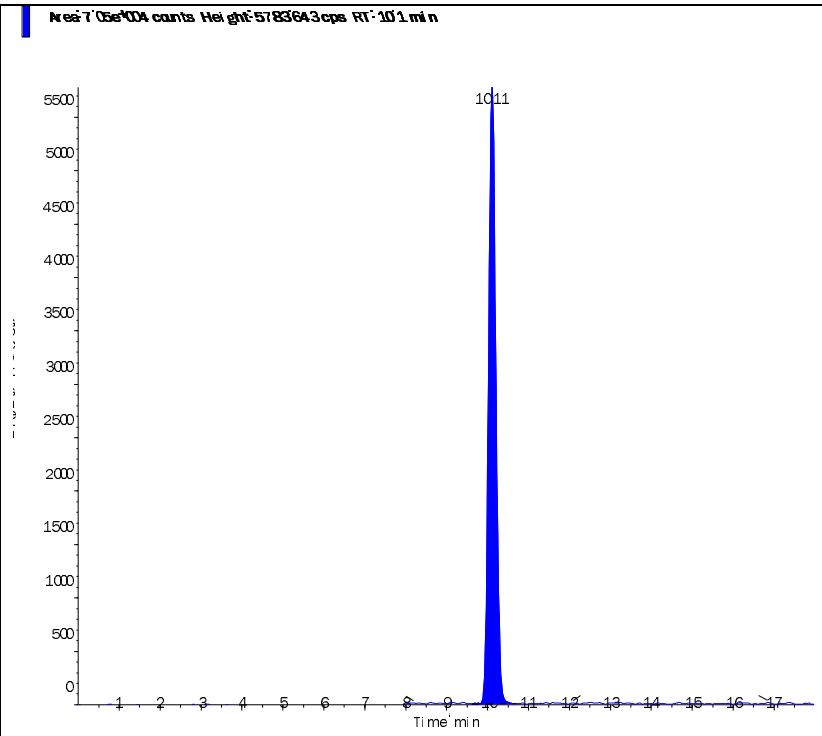
O18LP (Internal Standard)

RT (Exp. RT): 10.10(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



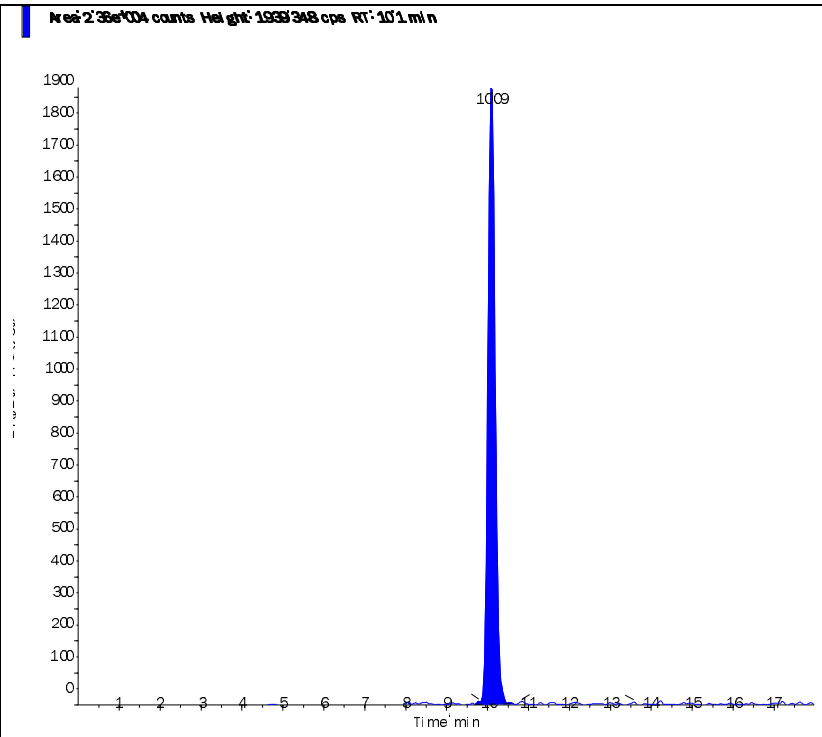
Perchlorate (98.8/83.3 amu)

RT (Exp. RT):	10.10 (10.10) min
Calculated conc:	1.02 ng/ml
Area Ratio:	0.253
Sample Type:	(Quality Control)



Perchlorate conf (100.8/85.2 amu)

RT (Exp. RT):	10.10 (10.10) min
Calculated conc:	0.991 ng/ml
Area Ratio:	0.085
Sample Type:	(Quality Control)



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Data File	LM25904.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/1/2014 5:06:28 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

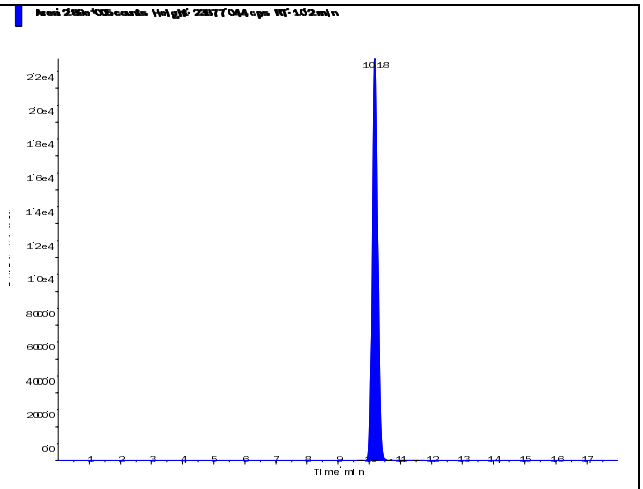
Sample Name	WG482635-02 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM25904.wiff	**Injection Volume**	10.00
Acquisition Date	7/1/2014 5:06:28 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482635-02	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

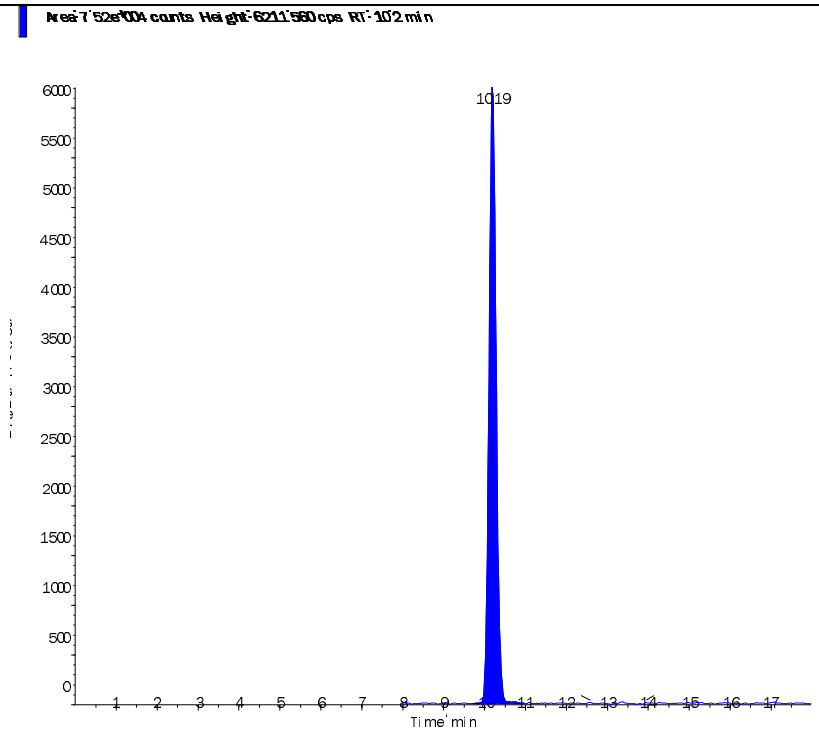
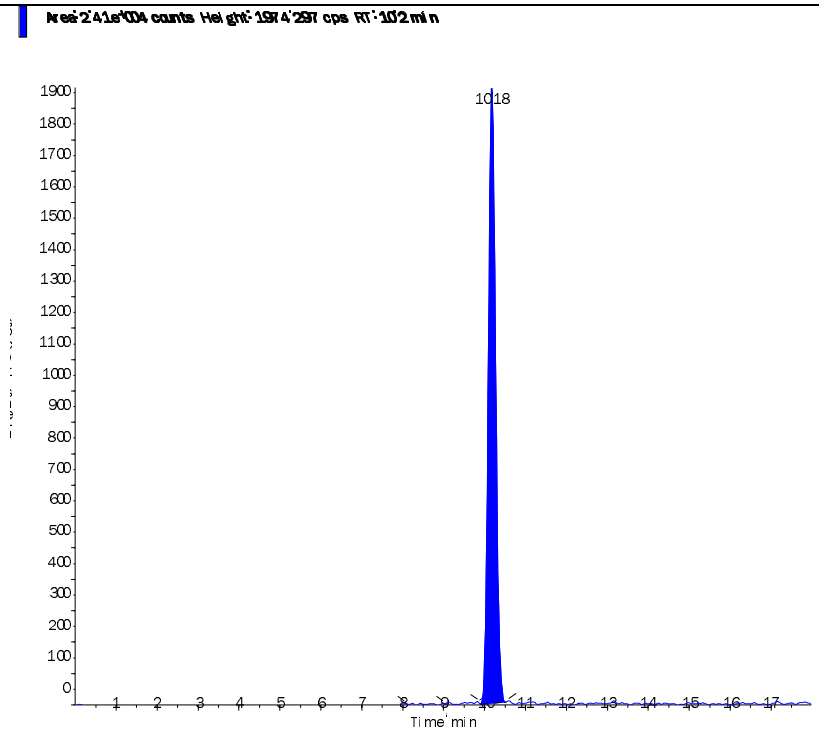
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.890e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.520e+04	10.20	1.00	1.04
Perchlorate conf	2.410e+04	10.20	1.00	0.975

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 1.04 ng/ml Area Ratio: 0.26 Sample Type: (Quality Control)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.975 ng/ml Area Ratio: 0.083 Sample Type: (Quality Control)	

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Data File	LM25916.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/1/2014 8:53:39 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

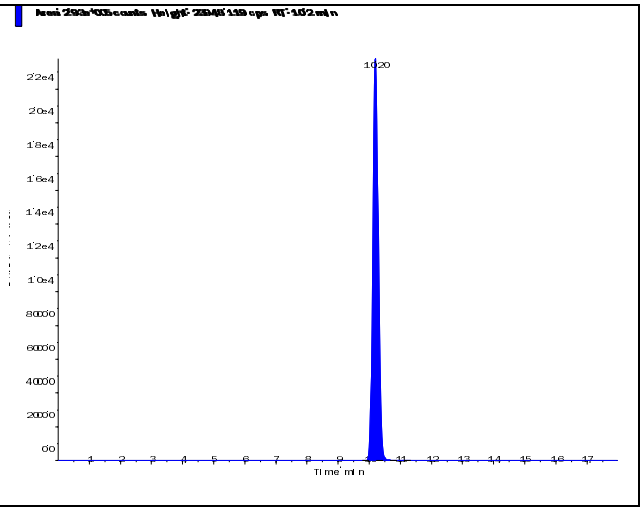
Sample Name	WG482635-03 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM25916.wiff	**Injection Volume**	10.00
Acquisition Date	7/1/2014 8:53:39 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482635-03	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

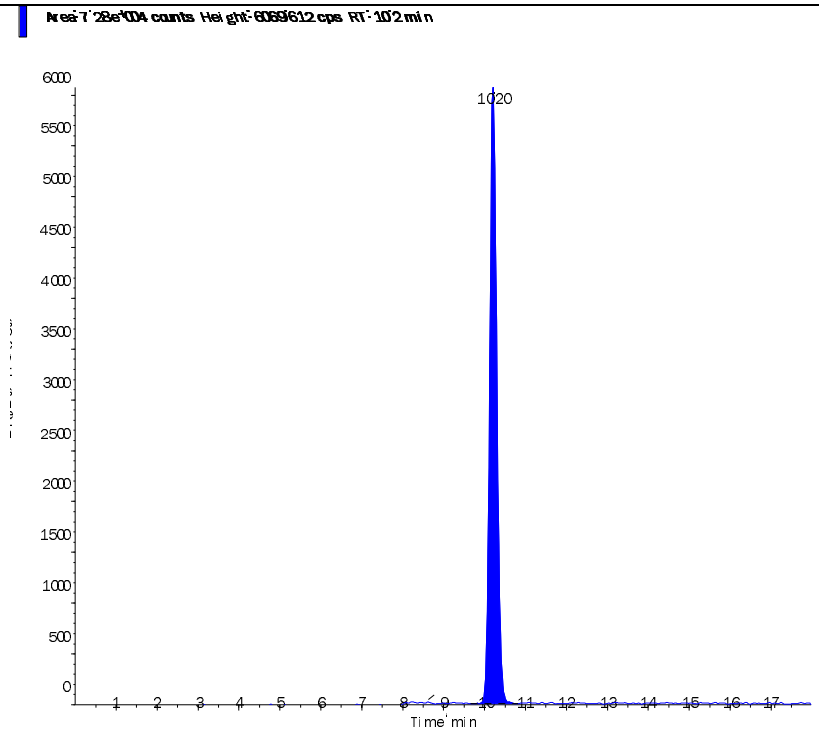
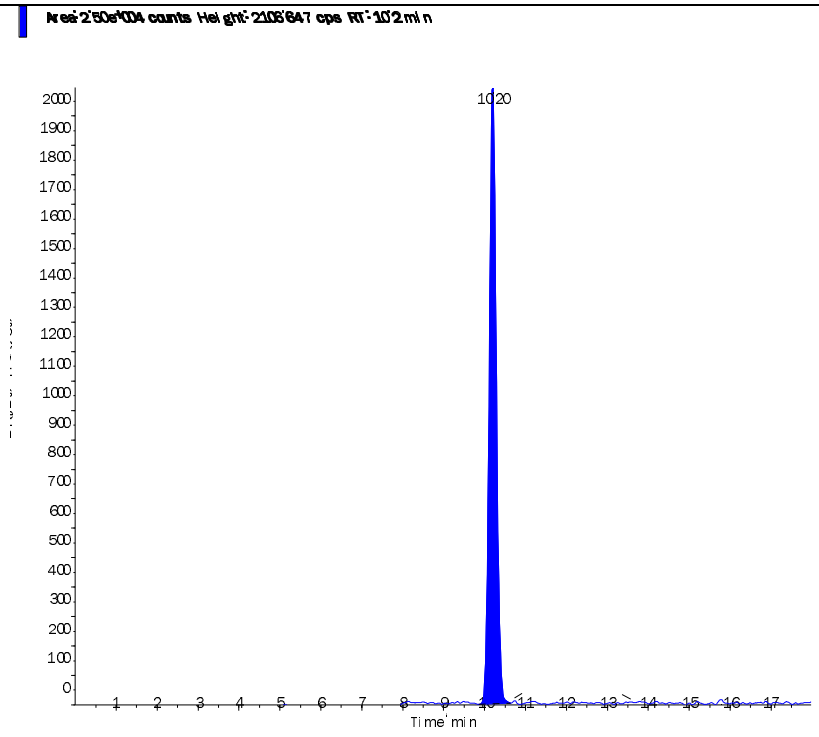
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.930e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.280e+04	10.20	1.00	0.995
Perchlorate conf	2.500e+04	10.20	1.00	1.00

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.995 ng/ml Area Ratio: 0.248 Sample Type: (Quality Control)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 1.00 ng/ml Area Ratio: 0.085 Sample Type: (Quality Control)	

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Data File	LM25929.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/2/2014 12:59:48 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

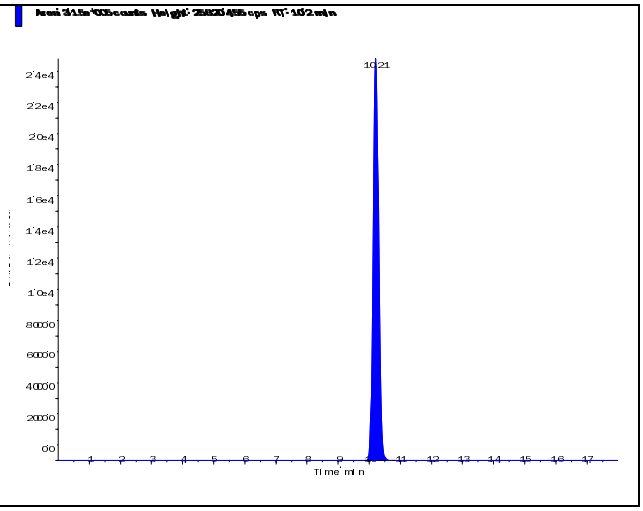
Sample Name	WG482635-05 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM25929.wiff	**Injection Volume**	10.00
Acquisition Date	7/2/2014 12:59:48 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482635-05	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.150e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.730e+04	10.20	1.00	0.986
Perchlorate conf	2.610e+04	10.20	1.00	0.972

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



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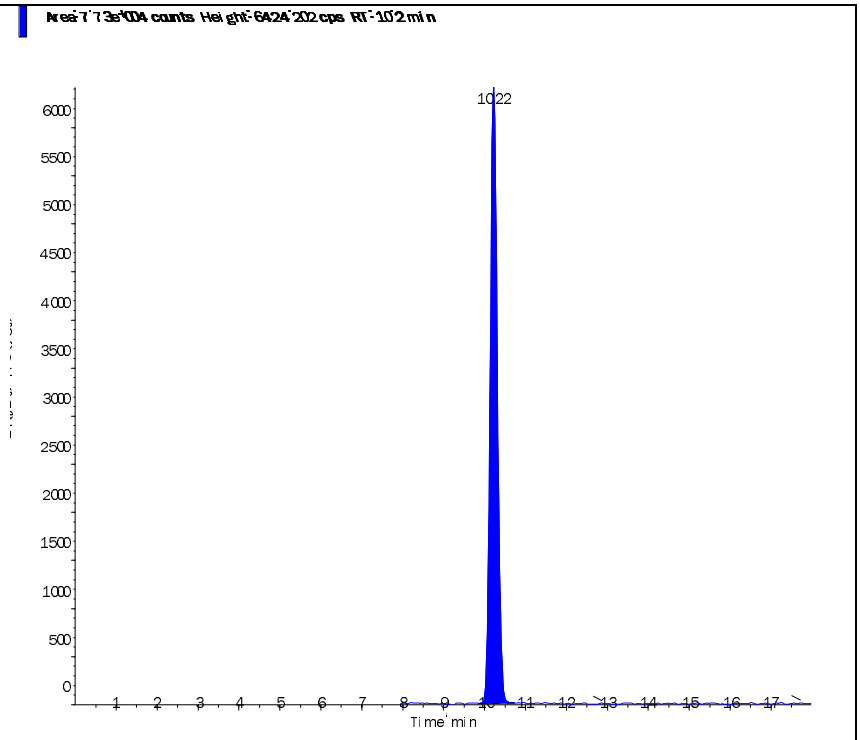
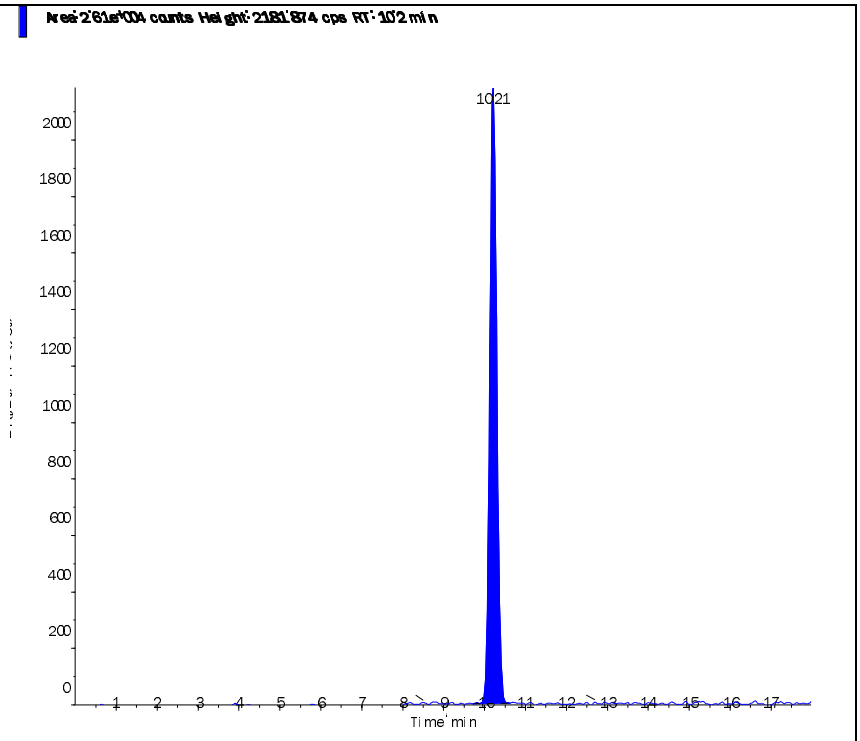
Perchlorate (98.8/83.3 amu)	
RT (Exp. RT):	10.20 (10.10) min
Calculated conc:	0.986 ng/ml
Area Ratio:	0.246
Sample Type:	(Quality Control)



Perchlorate conf (100.8/85.2 amu)	
RT (Exp. RT):	10.20 (10.10) min
Calculated conc:	0.972 ng/ml
Area Ratio:	0.083
Sample Type:	(Quality Control)



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Data File	LM25936.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/2/2014 3:12:21 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

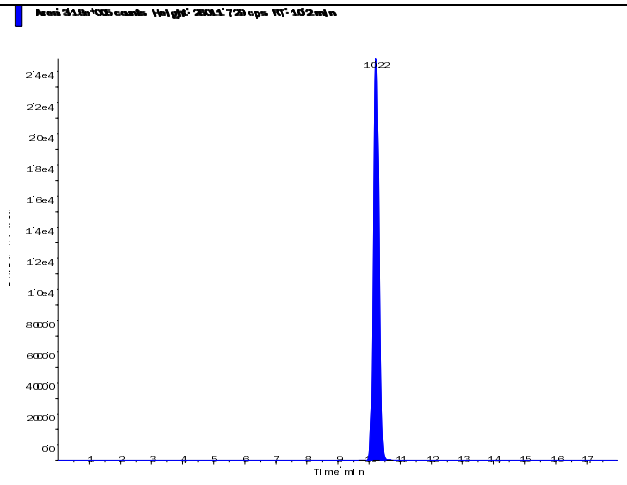
Sample Name	WG482635-07 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM25936.wiff	**Injection Volume**	10.00
Acquisition Date	7/2/2014 3:12:21 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482635-07	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

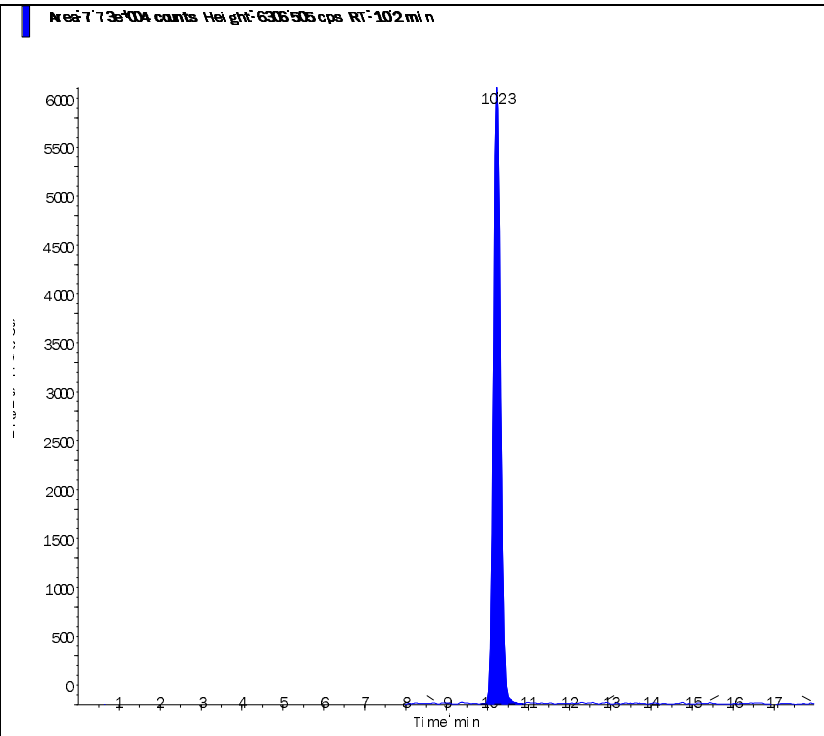
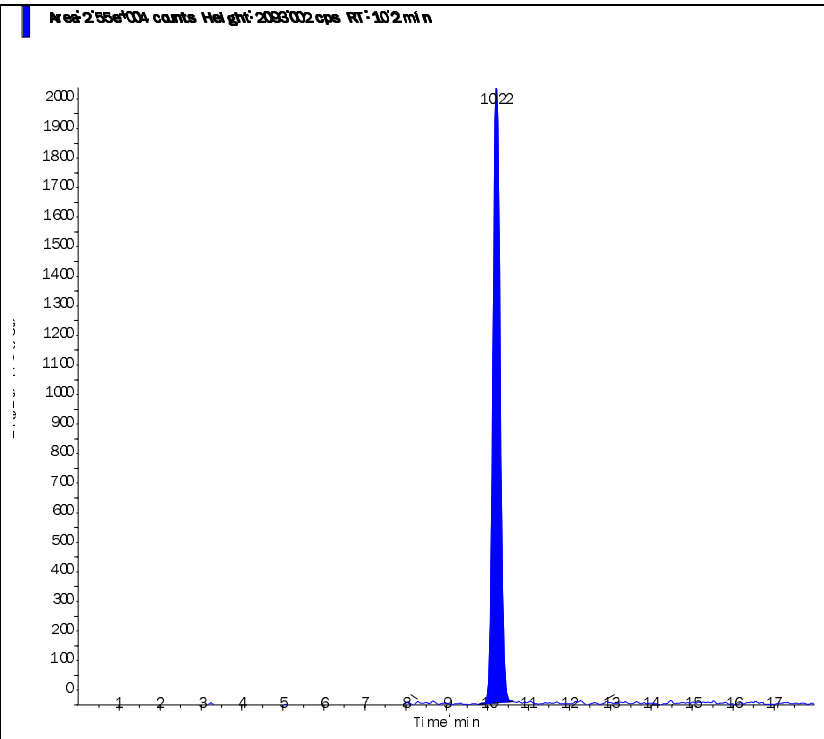
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.180e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.730e+04	10.20	1.00	0.974
Perchlorate conf	2.550e+04	10.20	1.00	0.939

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.974 ng/ml Area Ratio: 0.243 Sample Type: (Quality Control)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.939 ng/ml Area Ratio: 0.08 Sample Type: (Quality Control)	

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Data File	LM25939.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/2/2014 11:20:57 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

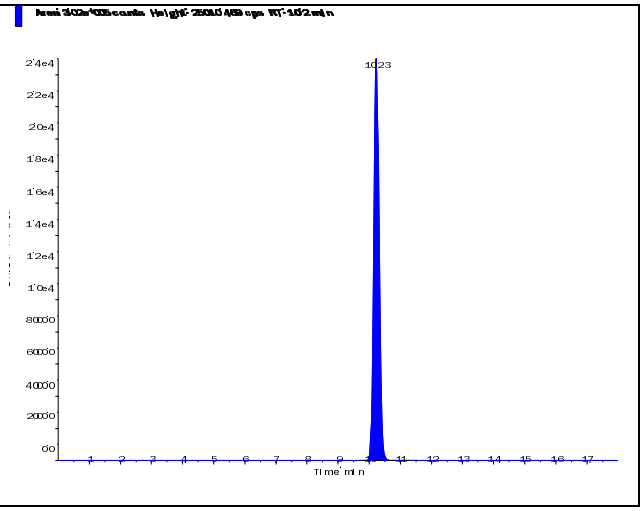
Sample Name	WG482635-09 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM25939.wiff	**Injection Volume**	10.00
Acquisition Date	7/2/2014 11:20:57 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482635-09	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

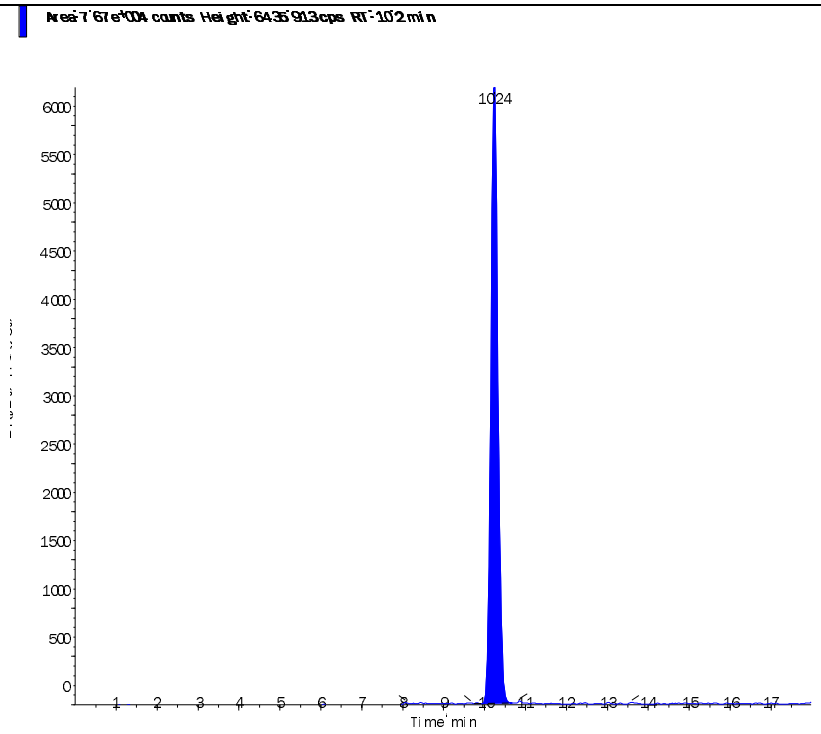
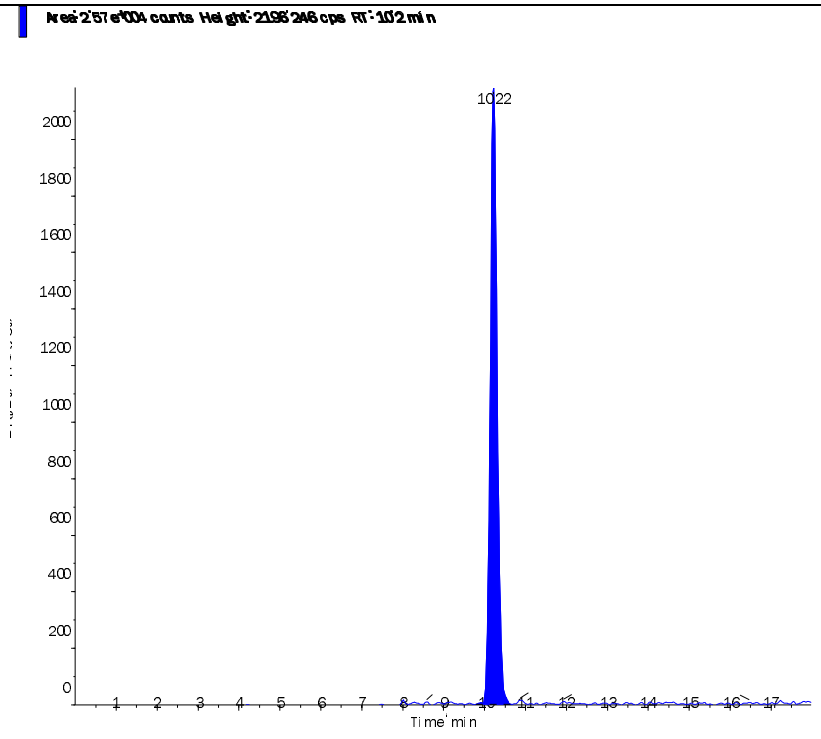
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.020e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.670e+04	10.20	1.00	1.02
Perchlorate conf	2.570e+04	10.20	1.00	0.998

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 1.02 ng/ml Area Ratio: 0.254 Sample Type: (Quality Control)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.998 ng/ml Area Ratio: 0.085 Sample Type: (Quality Control)	

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Data File	LM25948.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/2/2014 2:11:22 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

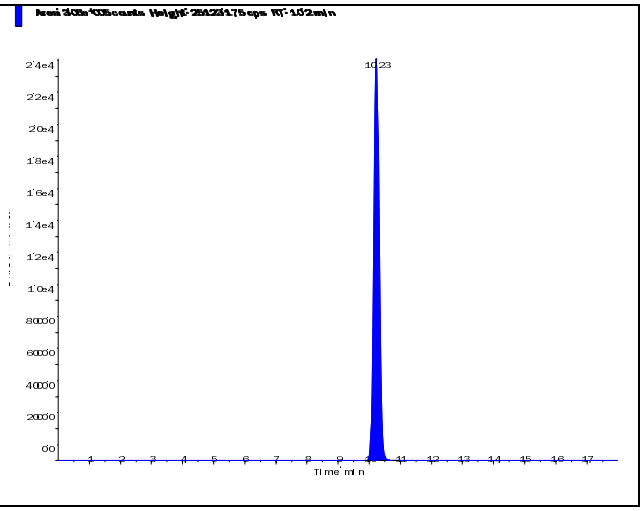
Sample Name	WG482635-11 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM25948.wiff	**Injection Volume**	10.00
Acquisition Date	7/2/2014 2:11:22 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482635-11	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.060e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.580e+04	10.20	1.00	0.994
Perchlorate conf	2.650e+04	10.20	1.00	1.01

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



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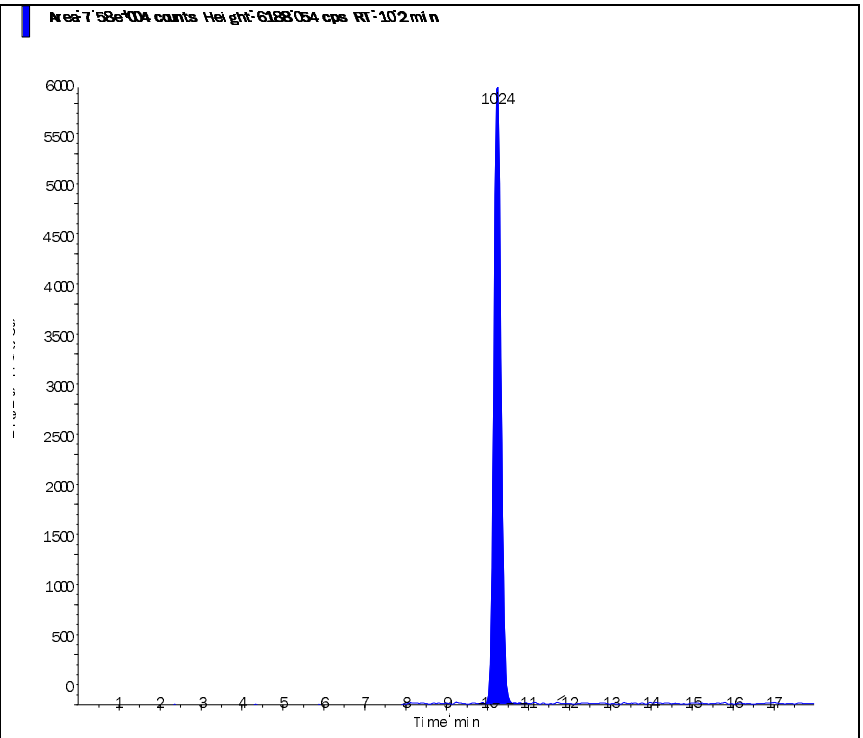
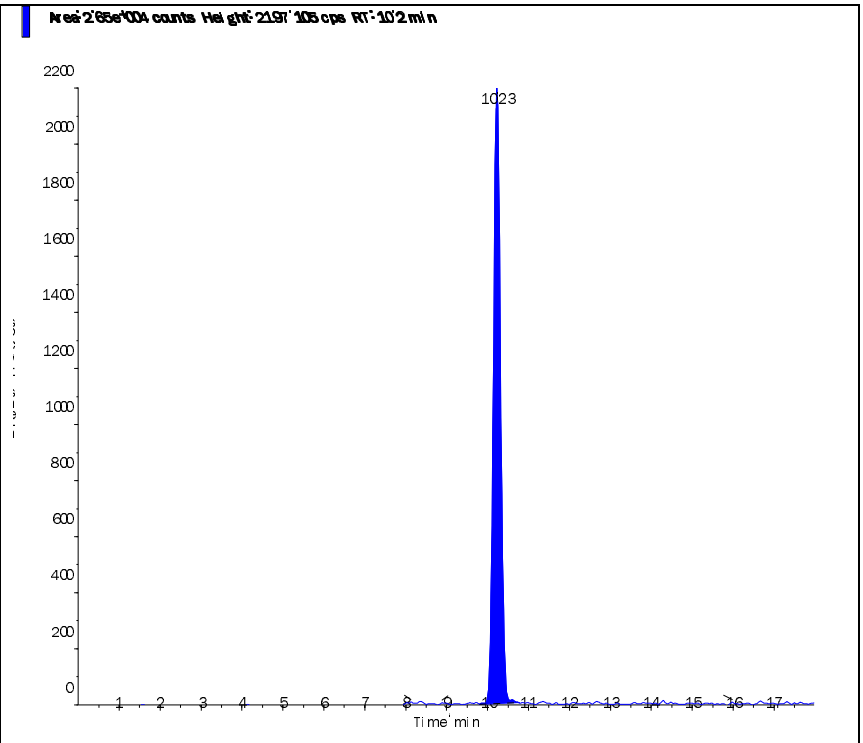
Perchlorate (98.8/83.3 amu)	
RT (Exp. RT): 10.20 (10.10) min	
Calculated conc: 0.994 ng/ml	
Area Ratio: 0.248	
Sample Type: (Quality Control)	

Perchlorate conf (100.8/85.2 amu)	
RT (Exp. RT): 10.20 (10.10) min	
Calculated conc: 1.01 ng/ml	
Area Ratio: 0.087	
Sample Type: (Quality Control)	

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Data File	LM25905.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/1/2014 5:25:22 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

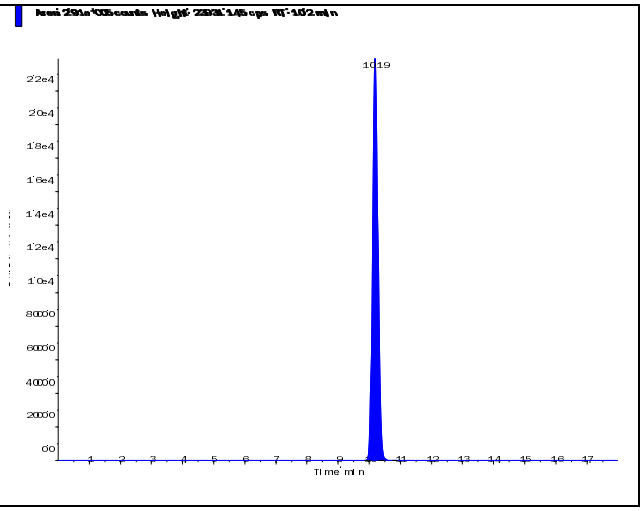
Sample Name	WG482628-05 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM25905.wiff	**Injection Volume**	10.00
Acquisition Date	7/1/2014 5:25:22 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482628-05	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

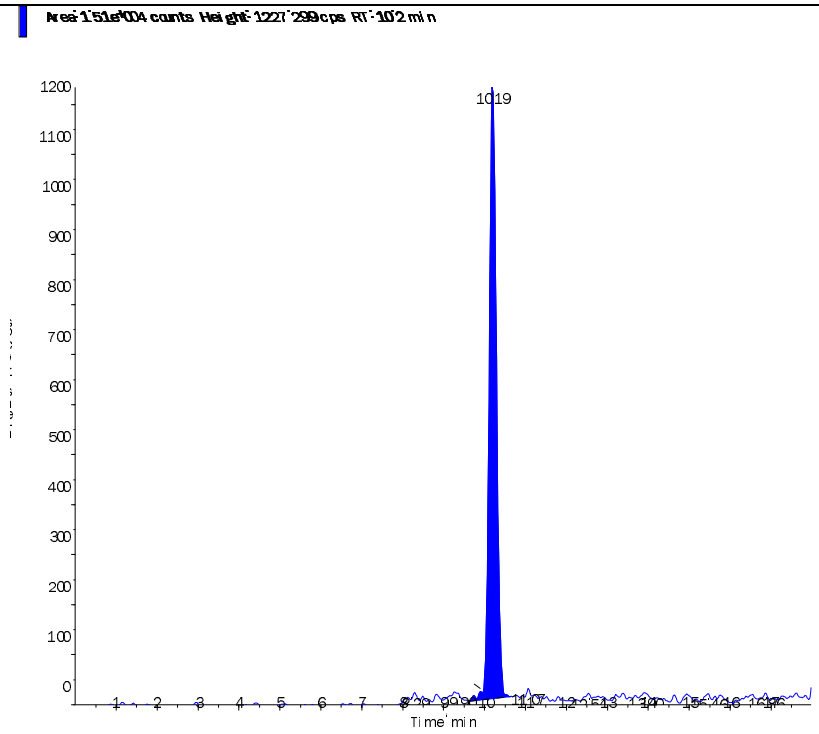
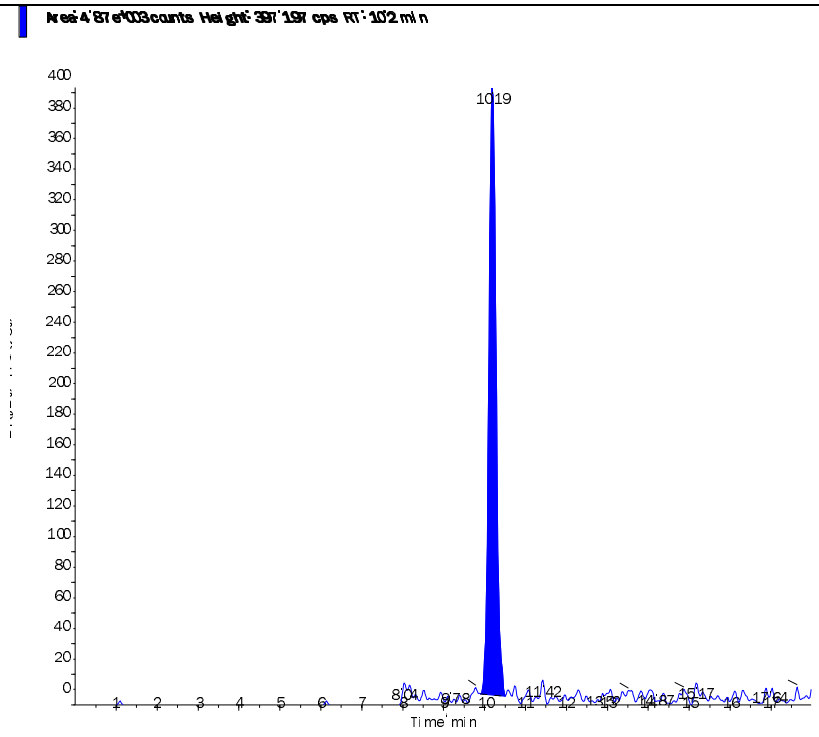
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.910e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.510e+04	10.20	N/A	0.207
Perchlorate conf	4.870e+03	10.20	N/A	0.195

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.207 ng/ml Area Ratio: 0.052 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.195 ng/ml Area Ratio: 0.017 Sample Type: (Unknown)	

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Data File	LM25917.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/1/2014 9:12:33 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

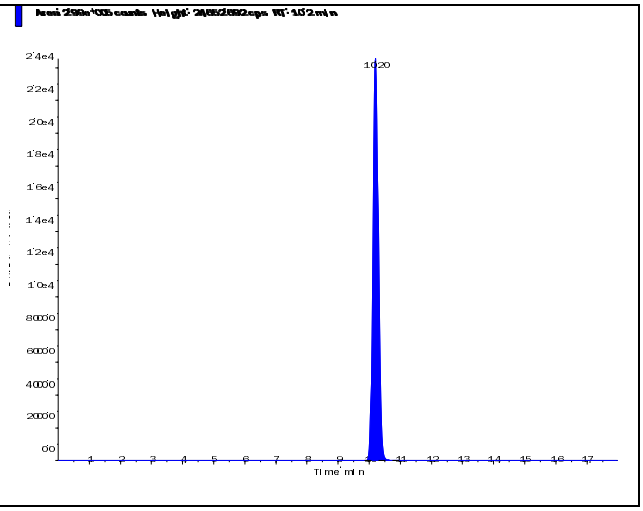
Sample Name	WG482628-06 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM25917.wiff	**Injection Volume**	10.00
Acquisition Date	7/1/2014 9:12:33 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482628-06	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

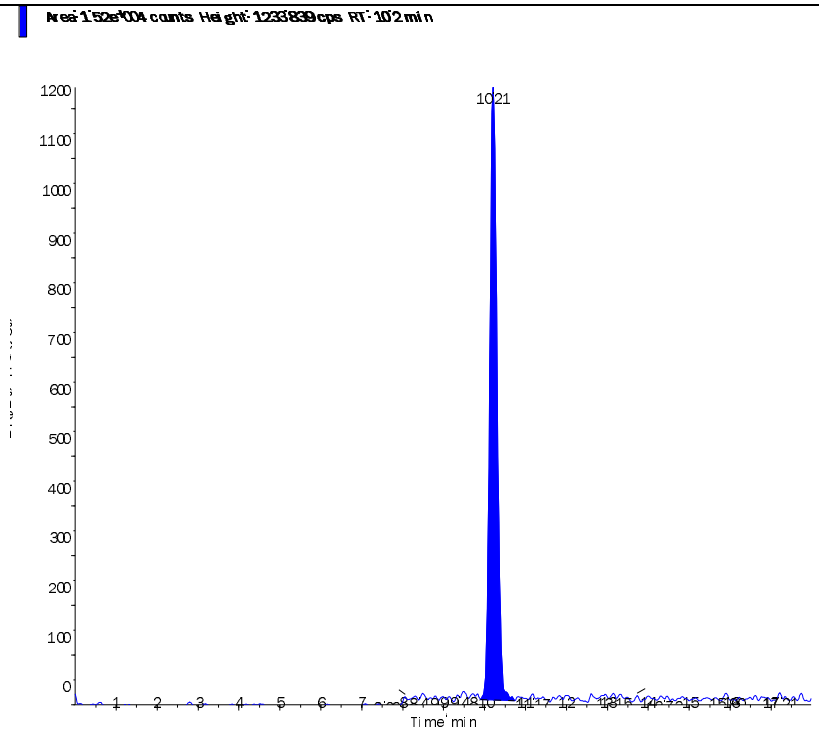
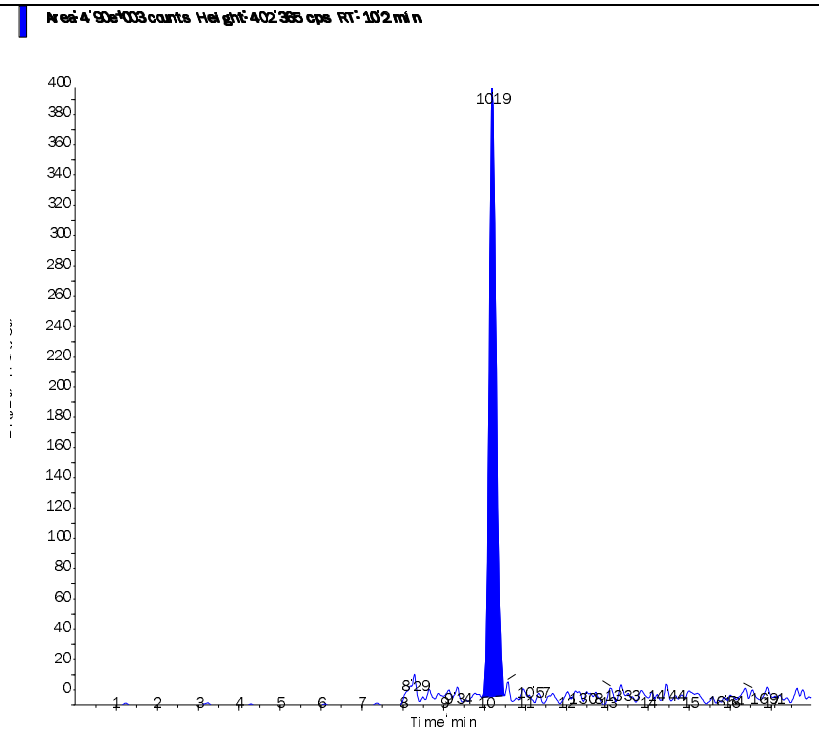
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.990e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.520e+04	10.20	N/A	0.203
Perchlorate conf	4.900e+03	10.20	N/A	0.192

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.203 ng/ml Area Ratio: 0.051 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.192 ng/ml Area Ratio: 0.016 Sample Type: (Unknown)	

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Data File	LM25930.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/2/2014 1:18:45 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

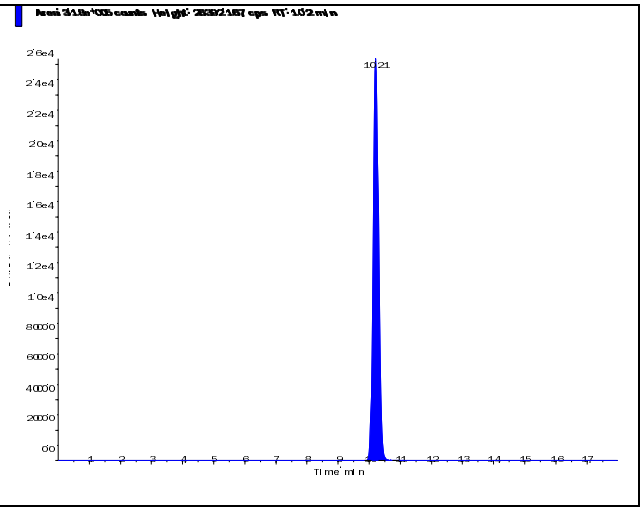
Sample Name	WG482628-07 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM25930.wiff	**Injection Volume**	10.00
Acquisition Date	7/2/2014 1:18:45 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482628-07	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

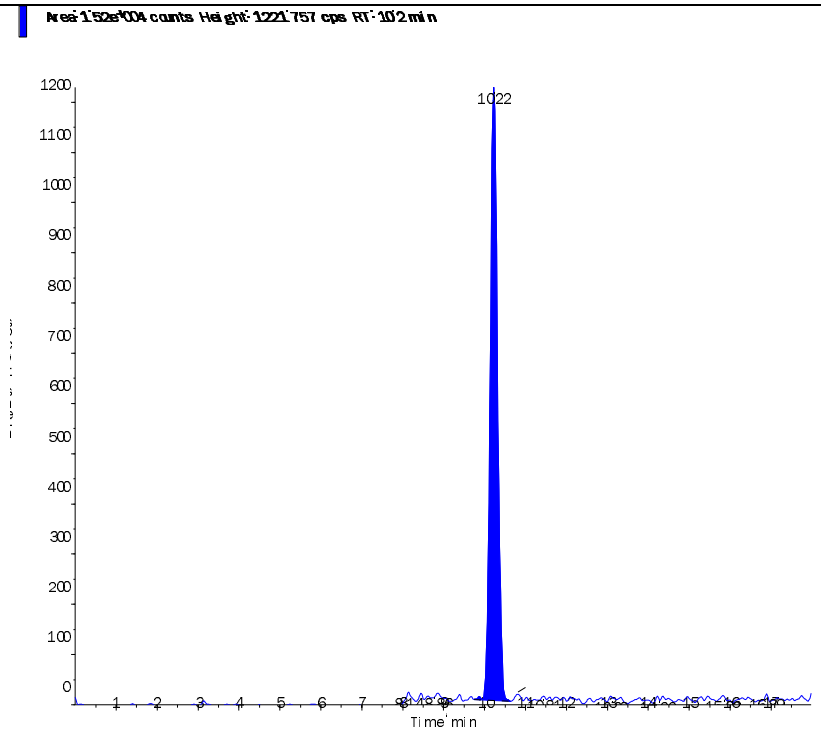
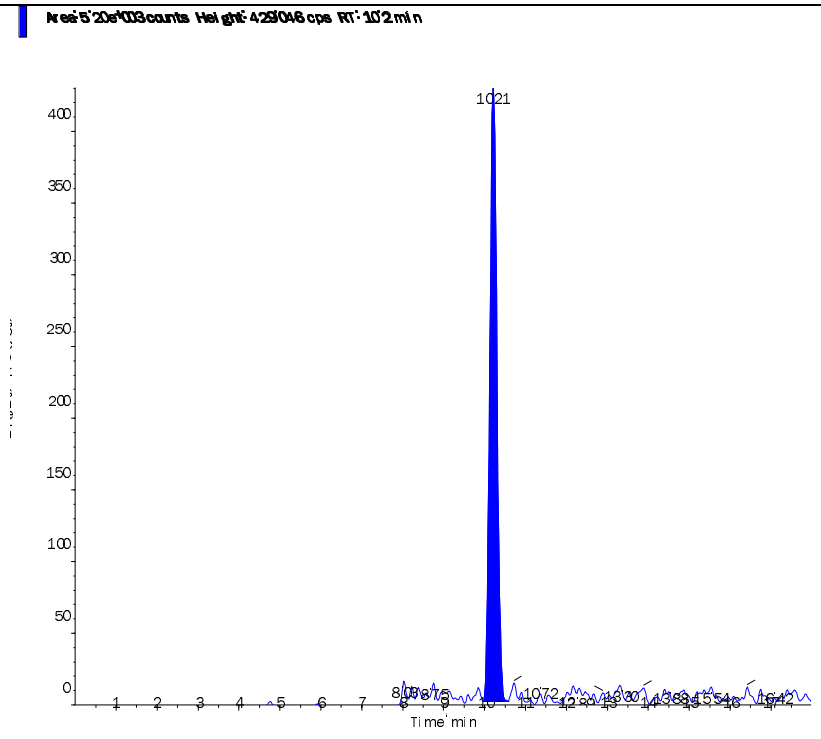
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.180e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.520e+04	10.20	N/A	0.19
Perchlorate conf	5.200e+03	10.20	N/A	0.191

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.19 ng/ml Area Ratio: 0.048 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.191 ng/ml Area Ratio: 0.016 Sample Type: (Unknown)	

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Data File	LM25937.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/2/2014 3:31:16 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

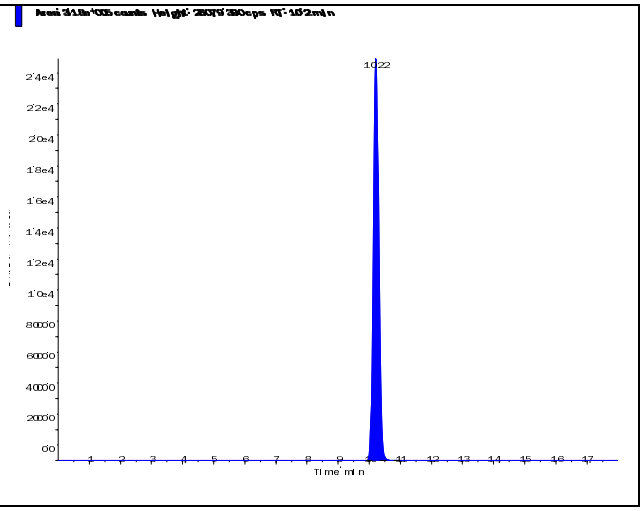
Sample Name	WG482628-08 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM25937.wiff	**Injection Volume**	10.00
Acquisition Date	7/2/2014 3:31:16 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482628-08	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

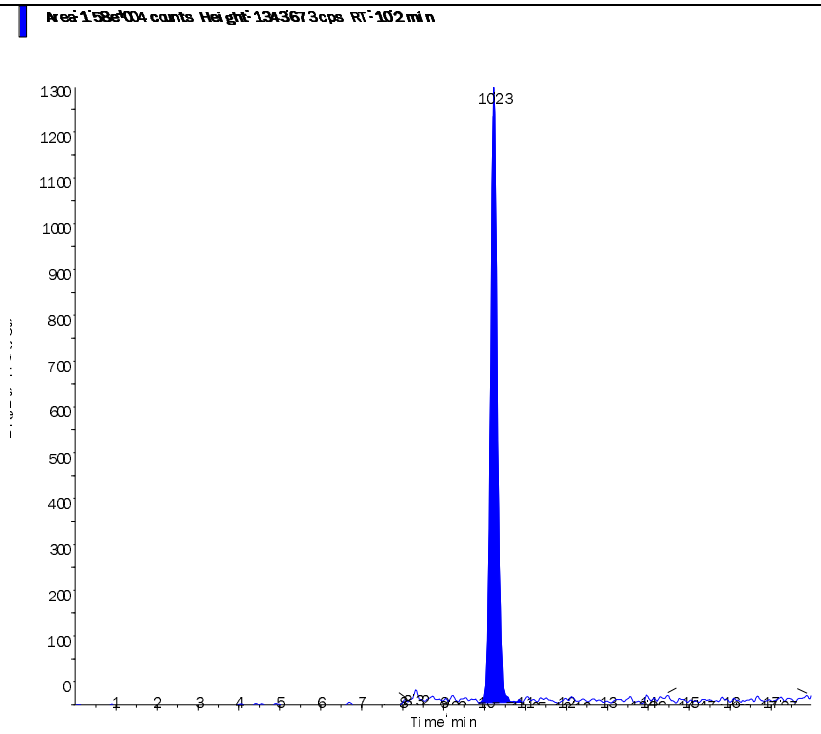
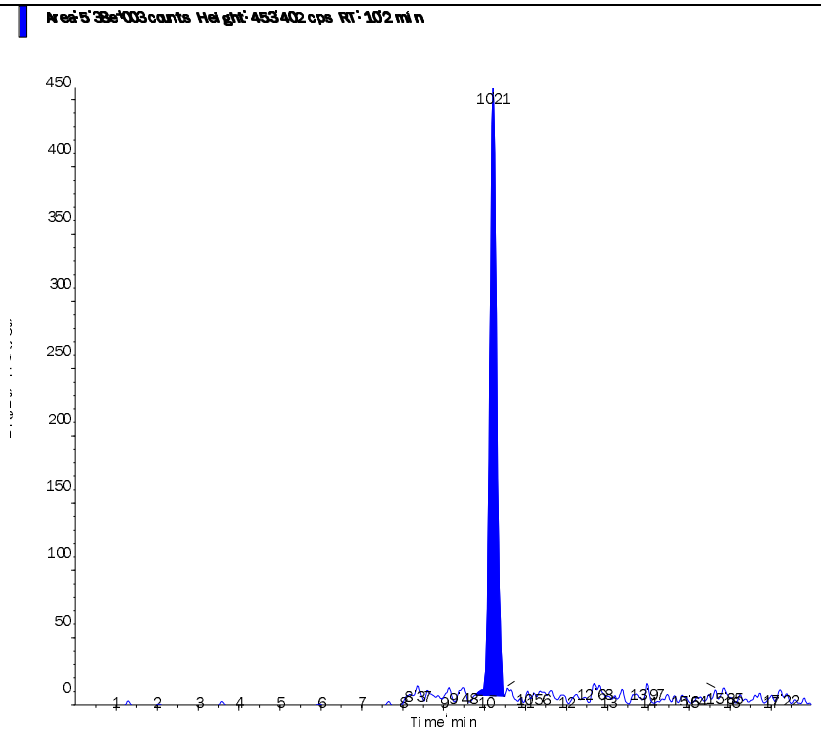
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.180e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.580e+04	10.20	N/A	0.198
Perchlorate conf	5.380e+03	10.20	N/A	0.198

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.198 ng/ml Area Ratio: 0.05 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.198 ng/ml Area Ratio: 0.017 Sample Type: (Unknown)	

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Data File	LM25940.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/2/2014 11:39:51 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

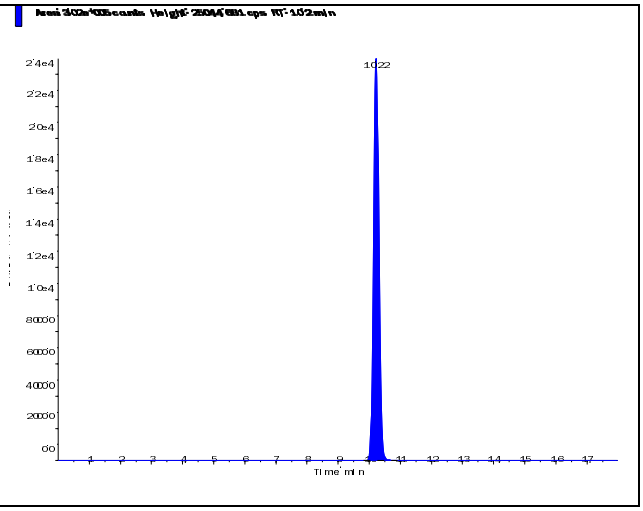
Sample Name	WG482628-09 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM25940.wiff	**Injection Volume**	10.00
Acquisition Date	7/2/2014 11:39:51 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482628-09	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

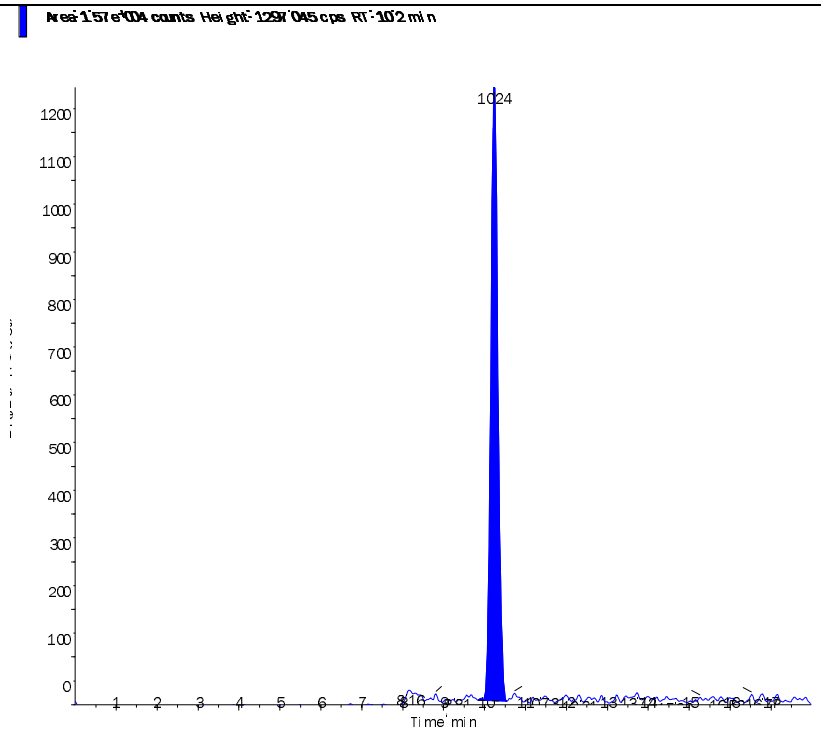
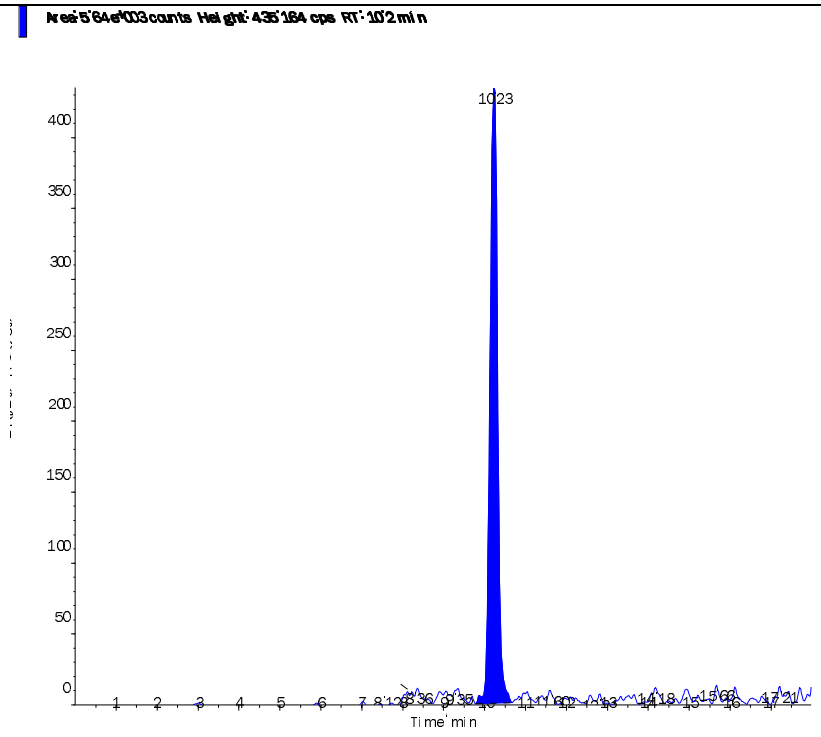
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.020e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.570e+04	10.20	N/A	0.207
Perchlorate conf	5.640e+03	10.20	N/A	0.218

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.207 ng/ml Area Ratio: 0.052 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.218 ng/ml Area Ratio: 0.019 Sample Type: (Unknown)	

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Data File	LM25949.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/2/2014 2:30:18 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

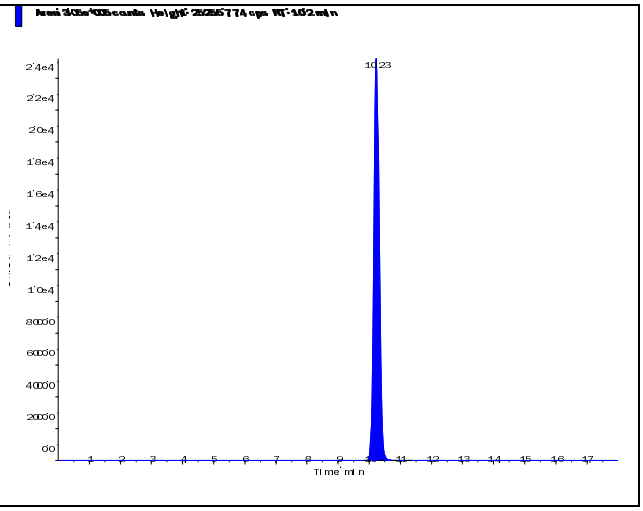
Sample Name	WG482628-10 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM25949.wiff	**Injection Volume**	10.00
Acquisition Date	7/2/2014 2:30:18 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482628-10	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

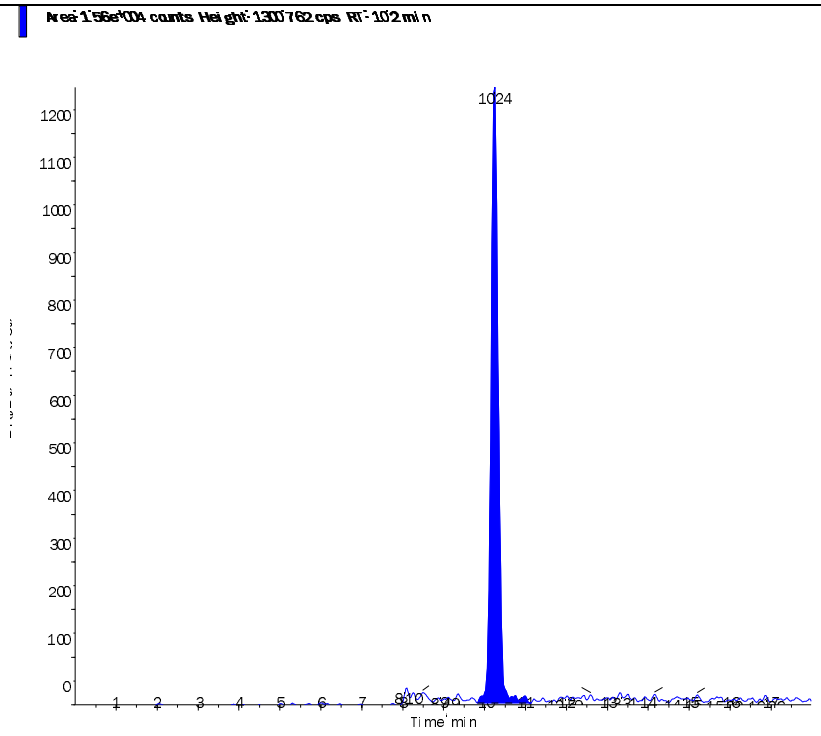
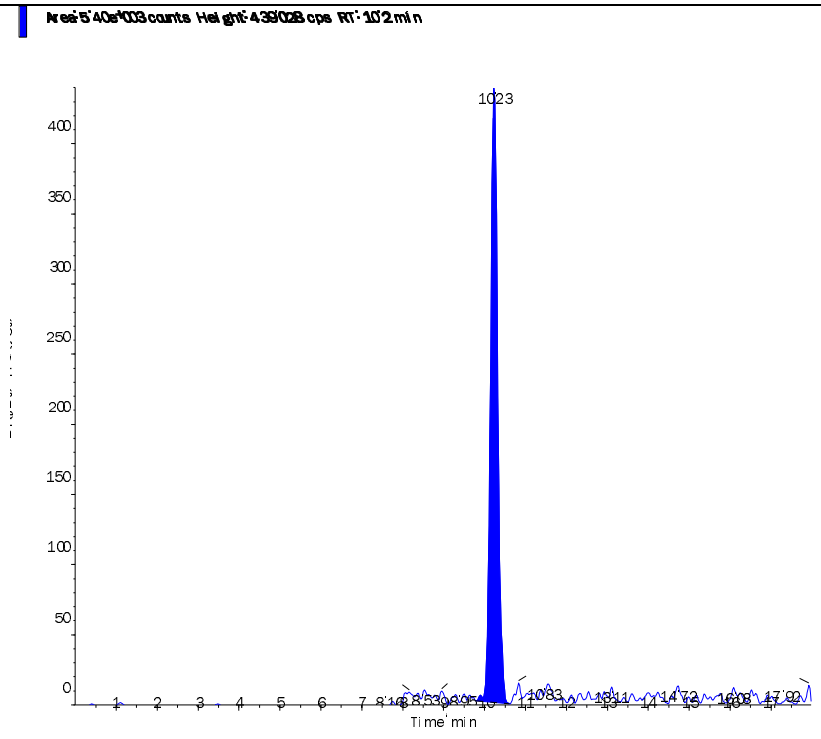
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.050e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.560e+04	10.20	N/A	0.204
Perchlorate conf	5.400e+03	10.20	N/A	0.207

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.204 ng/ml Area Ratio: 0.051 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.207 ng/ml Area Ratio: 0.018 Sample Type: (Unknown)	

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Data File	LM25903.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/1/2014 4:47:36 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

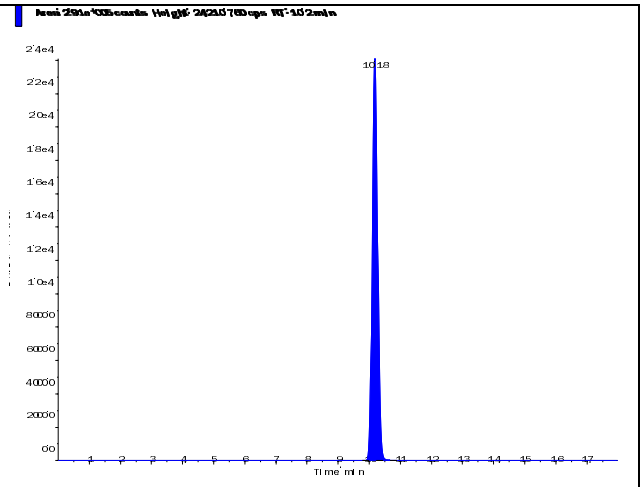
Sample Name	WG482635-01 CCB	**Injection Vial**	1.00
Data File	LM25903.wiff	**Injection Volume**	10.00
Acquisition Date	7/1/2014 4:47:36 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482635-01	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

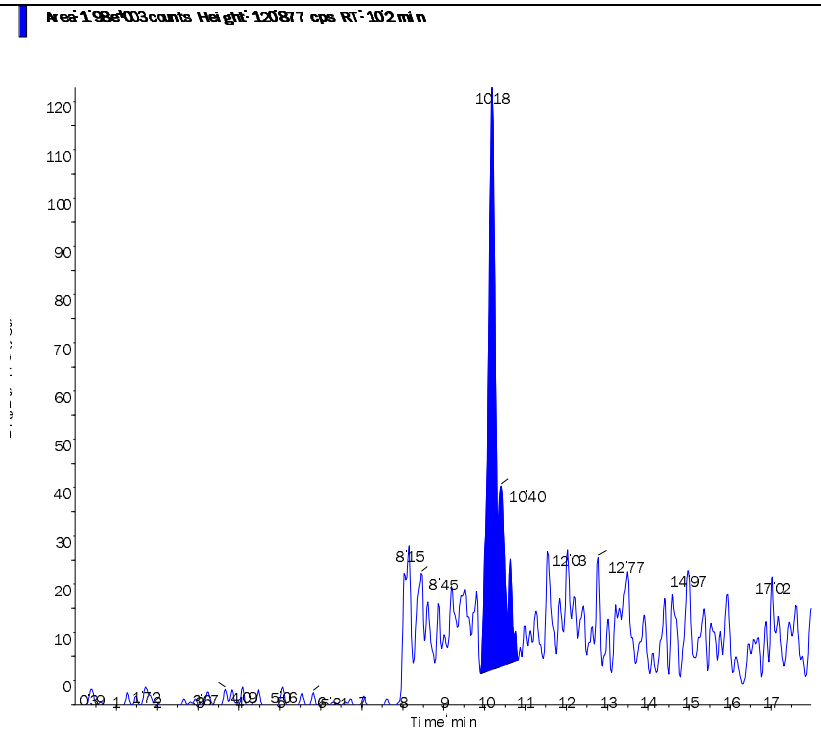
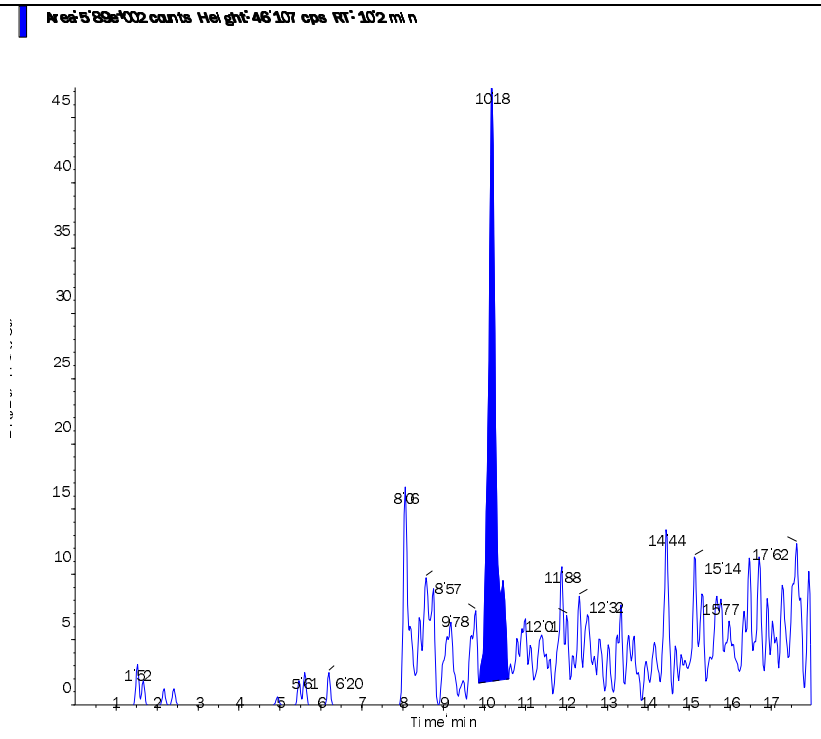
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.910e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.980e+03	10.20	N/A	0.0258
Perchlorate conf	5.890e+02	10.20	N/A	0.0229

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.0258 ng/ml Area Ratio: 0.007 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.0229 ng/ml Area Ratio: 0.002 Sample Type: (Unknown)	

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Data File	LM25918.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/1/2014 9:31:29 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

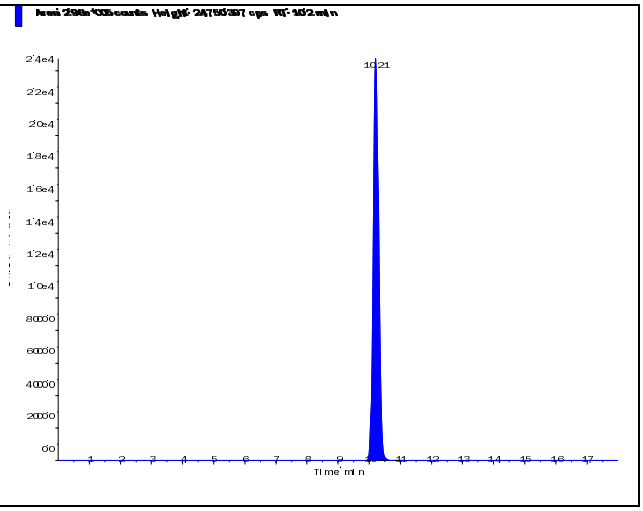
Sample Name	WG482635-04 CCB	**Injection Vial**	1.00
Data File	LM25918.wiff	**Injection Volume**	10.00
Acquisition Date	7/1/2014 9:31:29 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482635-04	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

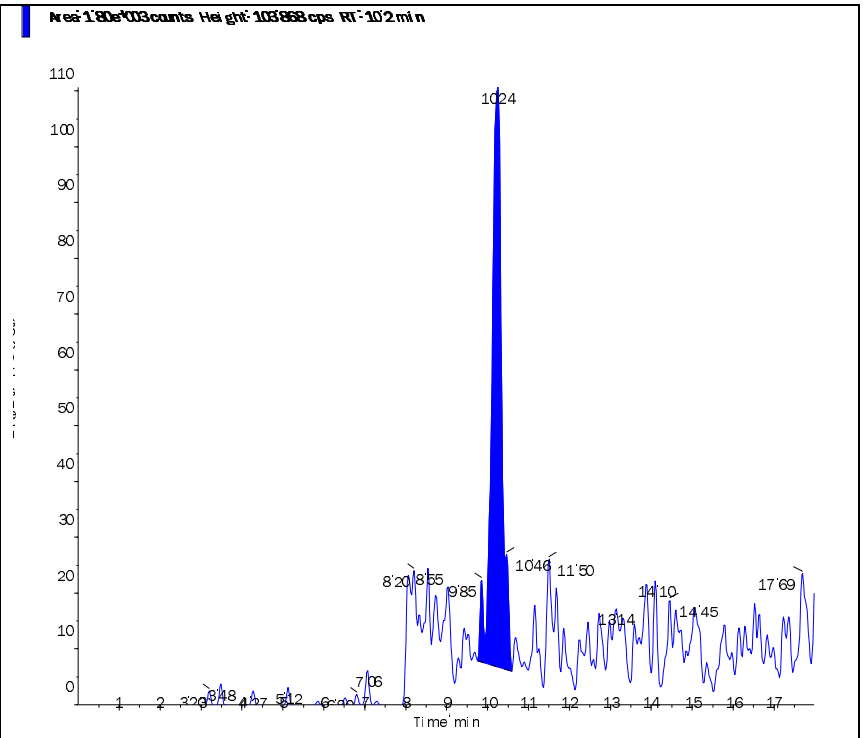
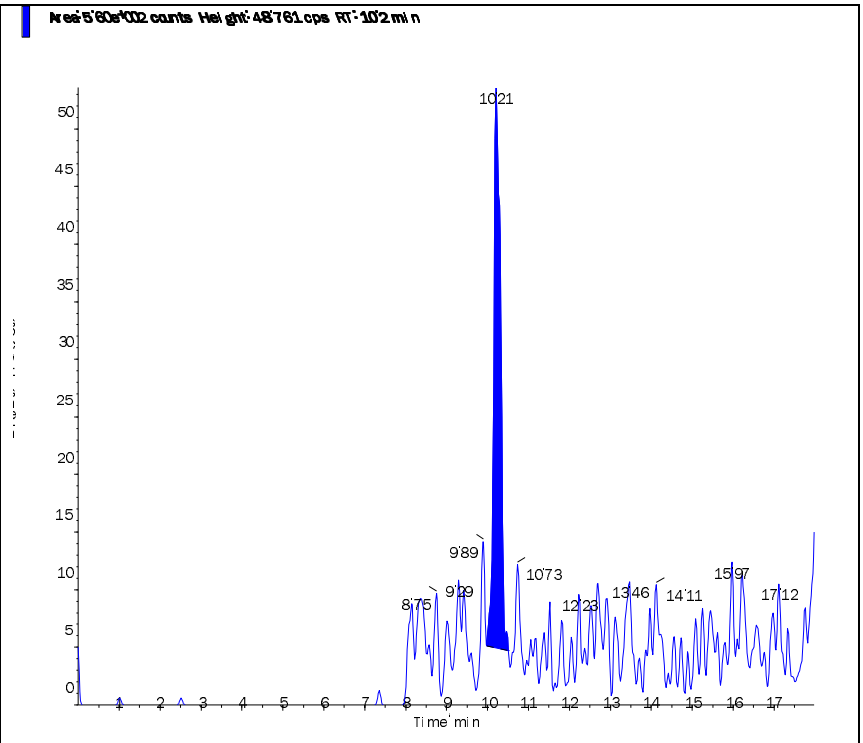
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.980e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.800e+03	10.20	N/A	0.0226
Perchlorate conf	5.600e+02	10.20	N/A	0.0212

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.0226 ng/ml Area Ratio: 0.006 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.0212 ng/ml Area Ratio: 0.002 Sample Type: (Unknown)	

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Data File	LM25931.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/2/2014 1:37:40 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

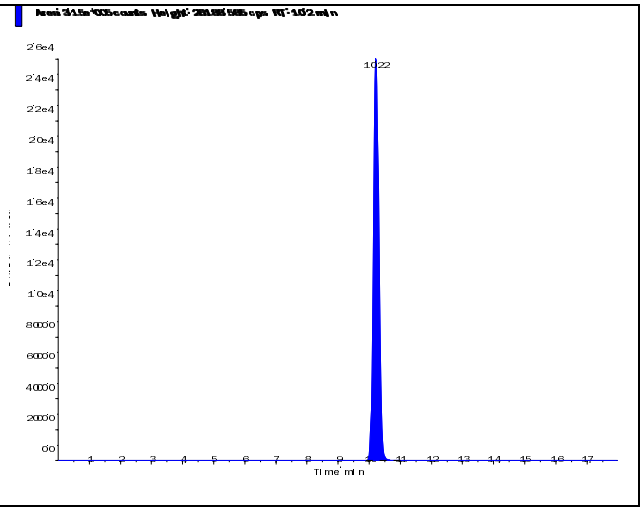
Sample Name	WG482635-06 CCB	**Injection Vial**	1.00
Data File	LM25931.wiff	**Injection Volume**	10.00
Acquisition Date	7/2/2014 1:37:40 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482635-06	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

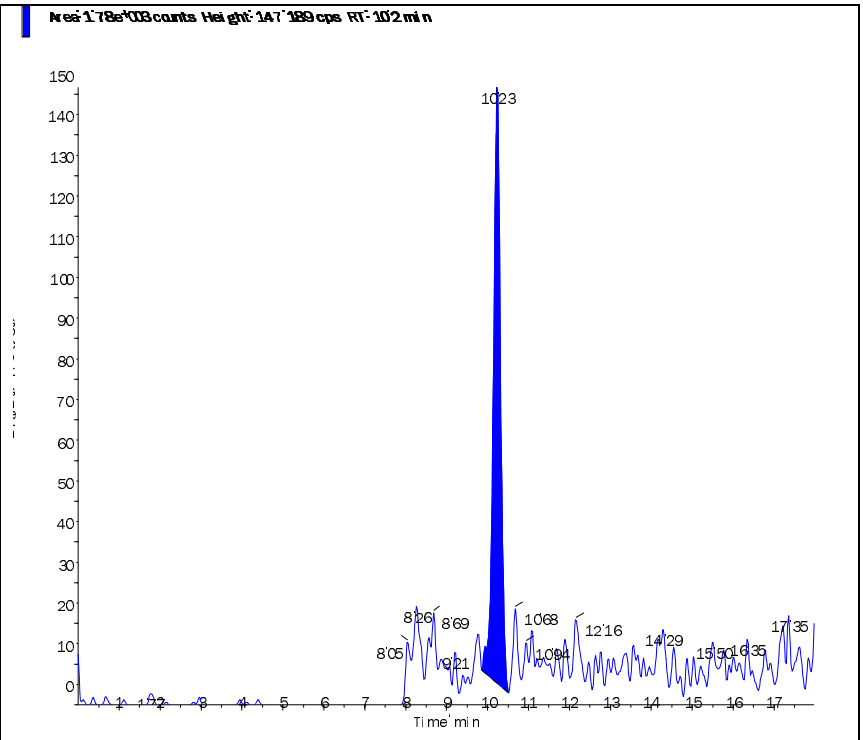
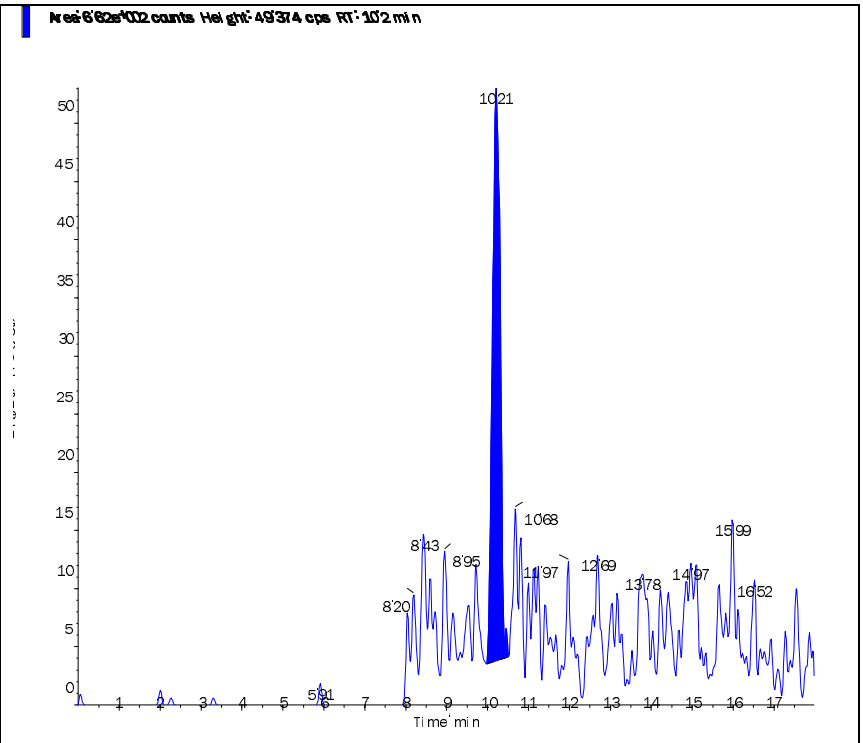
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.150e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.780e+03	10.20	N/A	0.0211
Perchlorate conf	6.620e+02	10.20	N/A	0.0238

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.0211 ng/ml Area Ratio: 0.006 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.0238 ng/ml Area Ratio: 0.002 Sample Type: (Unknown)	

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Data File	LM25938.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/2/2014 3:50:12 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

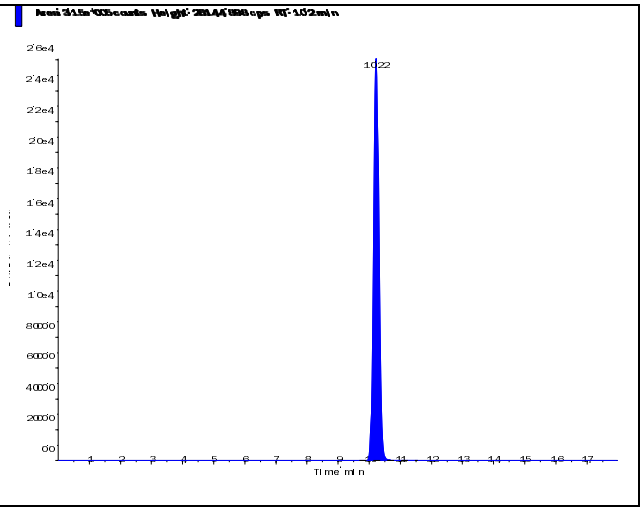
Sample Name	WG482635-08 CCB	**Injection Vial**	1.00
Data File	LM25938.wiff	**Injection Volume**	10.00
Acquisition Date	7/2/2014 3:50:12 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482635-08	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

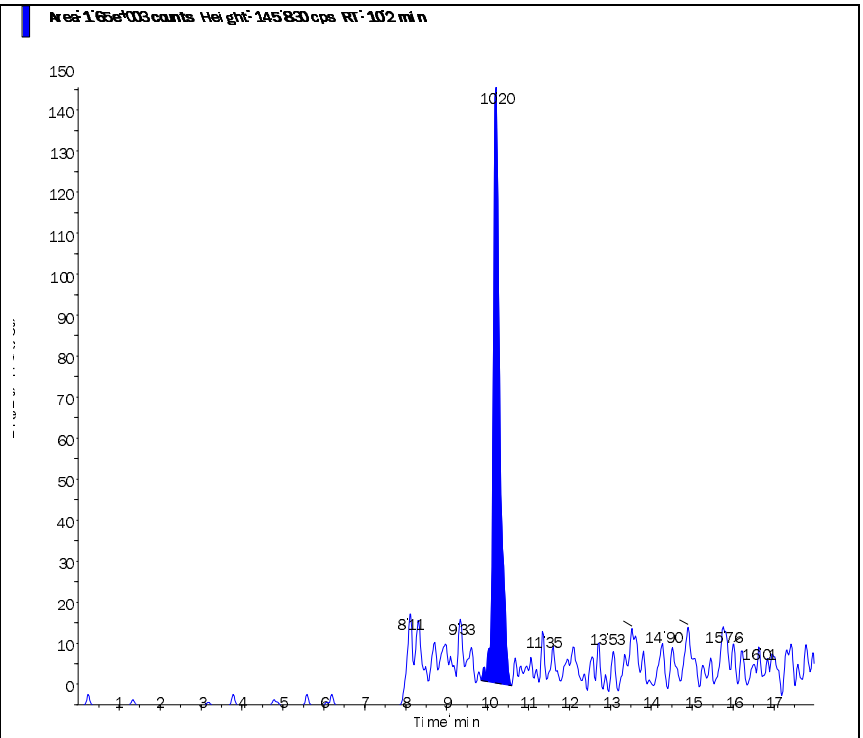
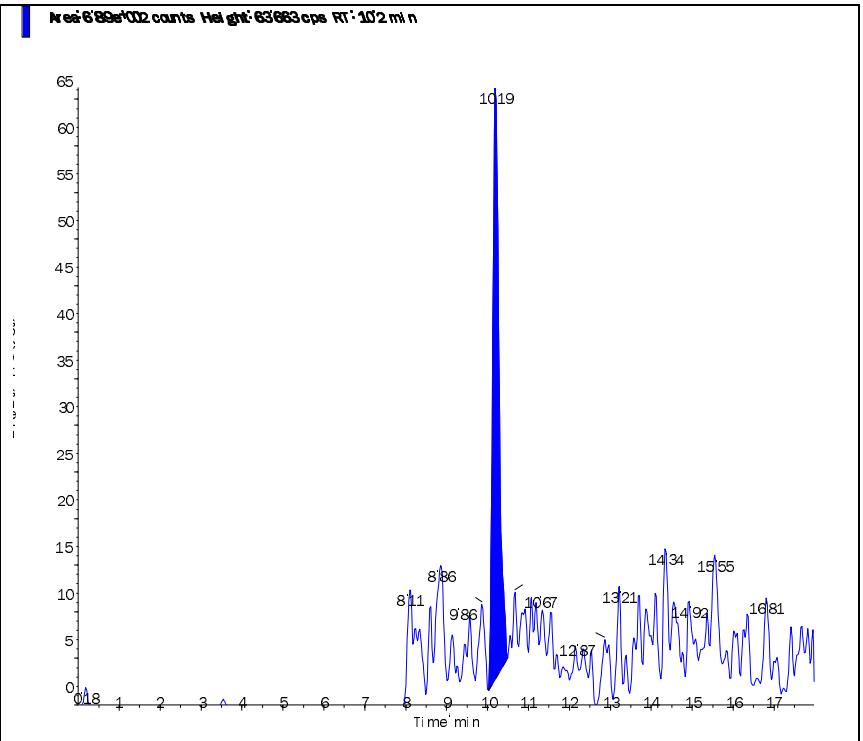
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.150e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.650e+03	10.20	N/A	0.0194
Perchlorate conf	6.890e+02	10.20	N/A	0.0248

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.0194 ng/ml Area Ratio: 0.005 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.0248 ng/ml Area Ratio: 0.002 Sample Type: (Unknown)	

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Data File	LM25941.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/2/2014 11:58:46 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

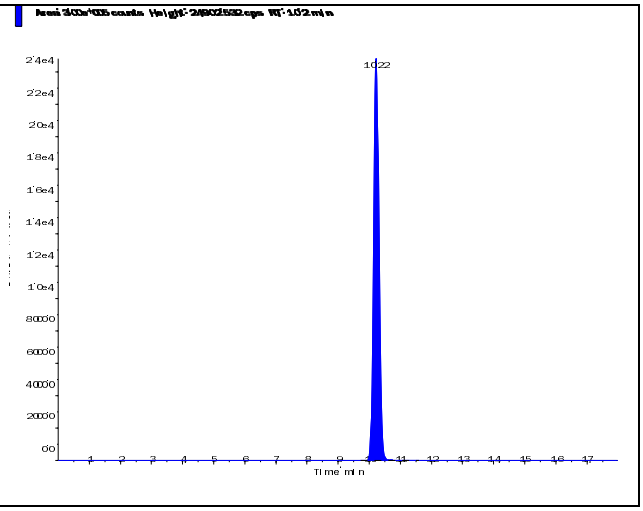
Sample Name	WG482635-10 CCB	**Injection Vial**	1.00
Data File	LM25941.wiff	**Injection Volume**	10.00
Acquisition Date	7/2/2014 11:58:46 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482635-10	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.000e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	0.000e+00	0.00	N/A	No Peak
Perchlorate conf	0.000e+00	0.00	N/A	No Peak

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



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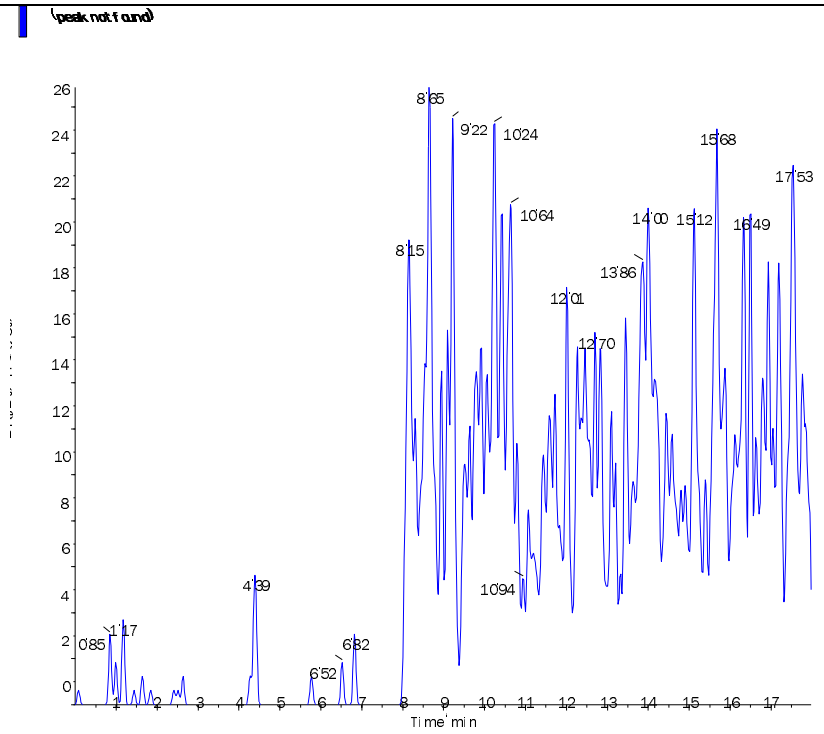
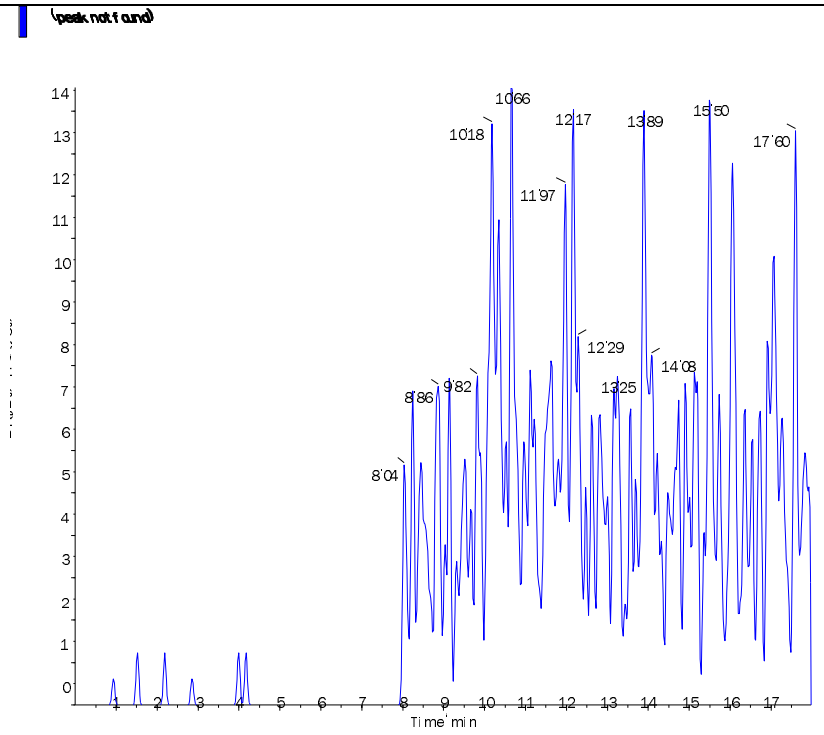
Printed: 7/2/2014 5:51 PM

Perchlorate (98.8/83.3 amu) RT (Exp. RT): 0.00 (10.10) min Calculated conc: No Peak ng/ml Area Ratio: 0.00 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 0.00 (10.10) min Calculated conc: No Peak ng/ml Area Ratio: 0.00 Sample Type: (Unknown)	

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Created with Analyst Reporter
Printed: 7/2/2014 5:54 PM

Data File	LM25950.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/2/2014 2:49:17 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

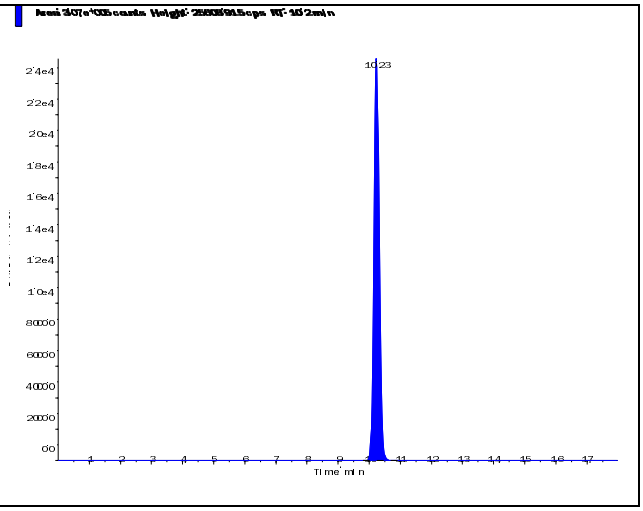
Sample Name	WG482635-12 CCB	**Injection Vial**	1.00
Data File	LM25950.wiff	**Injection Volume**	10.00
Acquisition Date	7/2/2014 2:49:17 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482635-12	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.070e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	0.000e+00	0.00	N/A	No Peak
Perchlorate conf	1.690e+02	10.10	N/A	0.0057

O18LP (Internal Standard)

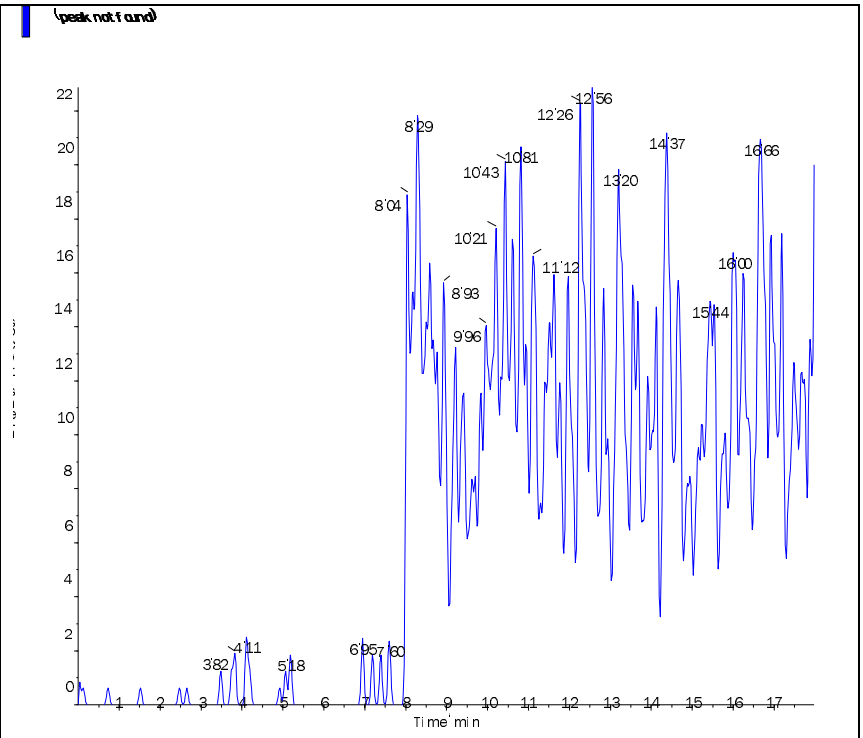
RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



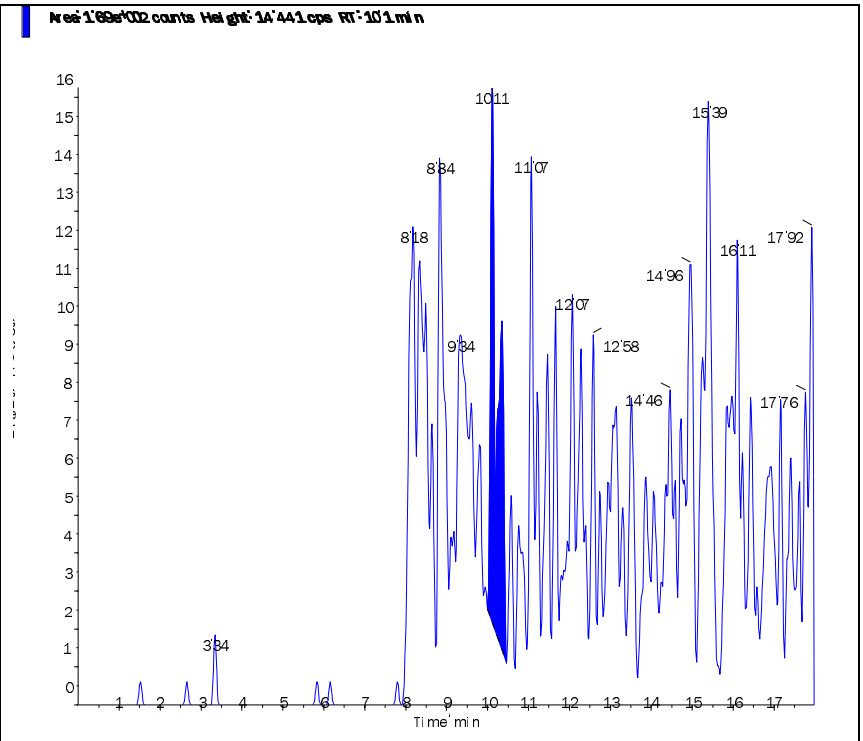
Applied Biosystems | MDS SCIEX

Created with Analyst Reporter
Printed: 7/2/2014 5:54 PM

Perchlorate (98.8/83.3 amu) RT (Exp. RT): Calculated conc: Area Ratio: Sample Type:	 0.00 (10.10) min No Peak ng/ml 0.00 (Unknown)



Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): Calculated conc: Area Ratio: Sample Type:	 10.10 (10.10) min 0.0057 ng/ml 0.001 (Unknown)



Applied Biosystems | MDS SCIEX

Created with Analyst Reporter
Printed: 7/2/2014 5:41 PM

Data File	LM25906.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/1/2014 5:44:18 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

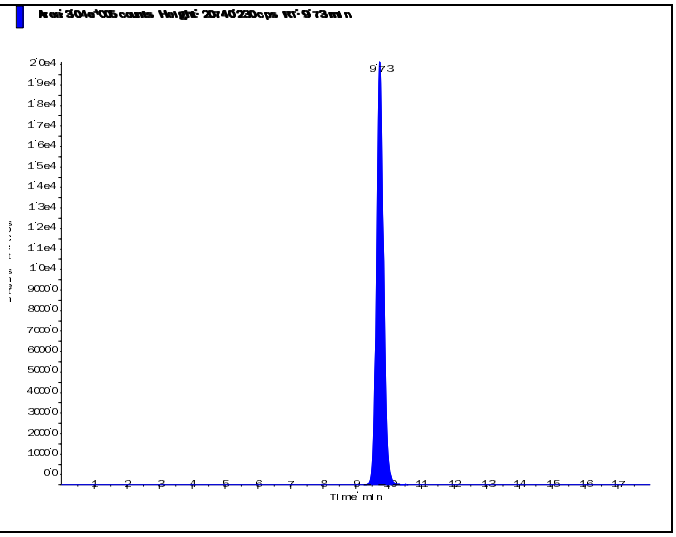
Sample Name	WG482628-01 MCT (0.2ug/L)	**Injection Vial**	4.00
Data File	LM25906.wiff	**Injection Volume**	10.00
Acquisition Date	7/1/2014 5:44:18 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482628-01	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

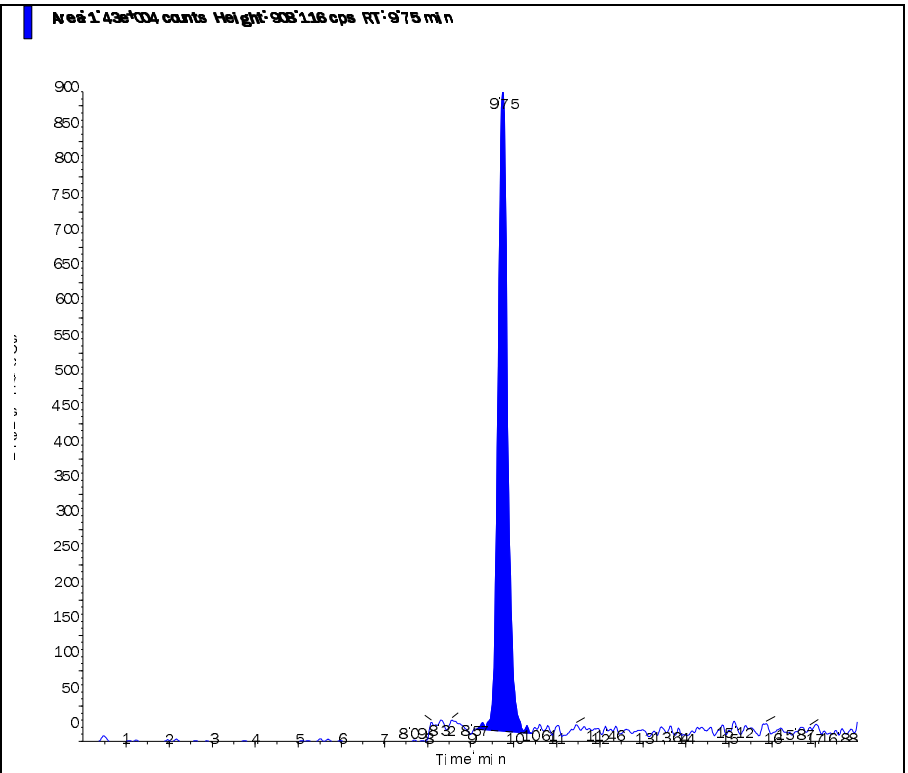
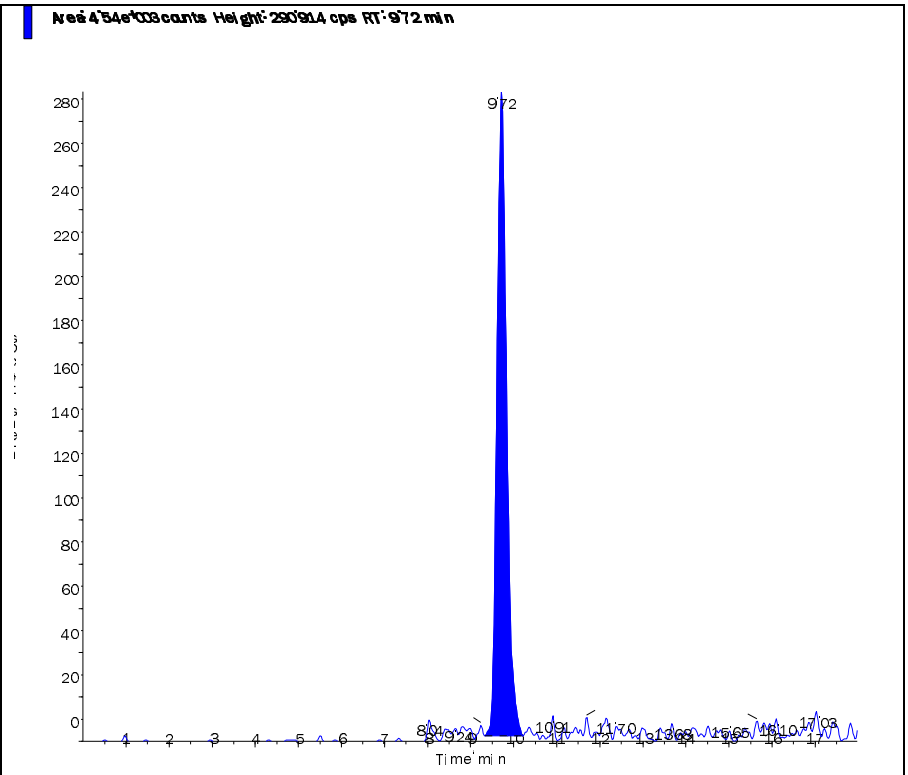
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.040e+05	9.73	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.430e+04	9.75	N/A	0.187
Perchlorate conf	4.540e+03	9.72	N/A	0.174

O18LP (Internal Standard)

RT (Exp. RT): 9.73(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 9.75 (10.10) min Calculated conc: 0.187 ng/ml Area Ratio: 0.047 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 9.72 (10.10) min Calculated conc: 0.174 ng/ml Area Ratio: 0.015 Sample Type: (Unknown)	

2.1.1.5 Raw QC Data

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Created with Analyst Reporter
Printed: 7/2/2014 5:41 PM

Data File	LM25907.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/1/2014 6:03:13 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

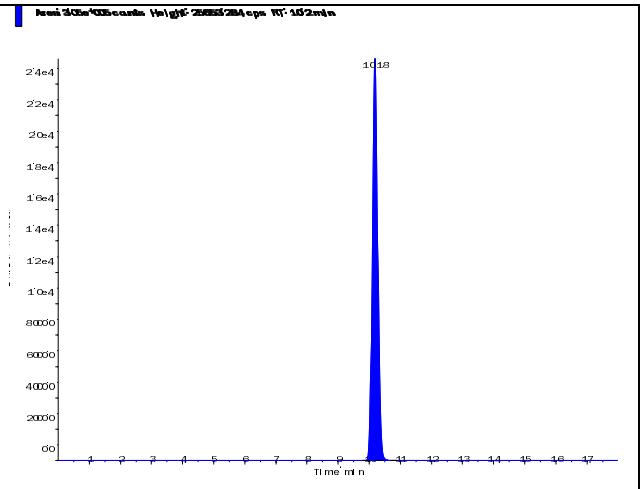
Sample Name	WG482628-02 BLANK	**Injection Vial**	5.00
Data File	LM25907.wiff	**Injection Volume**	10.00
Acquisition Date	7/1/2014 6:03:13 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482628-02	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

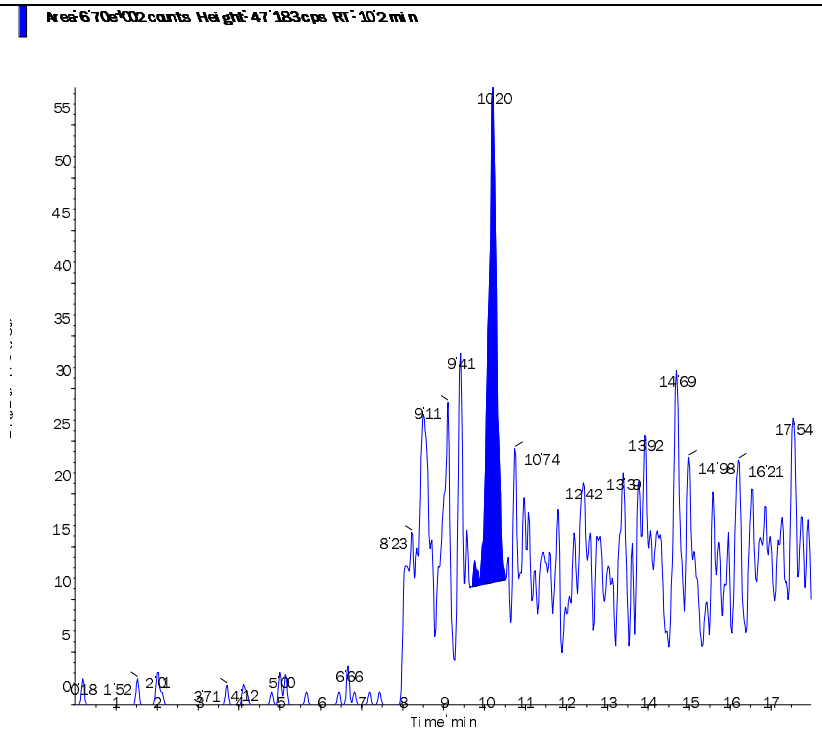
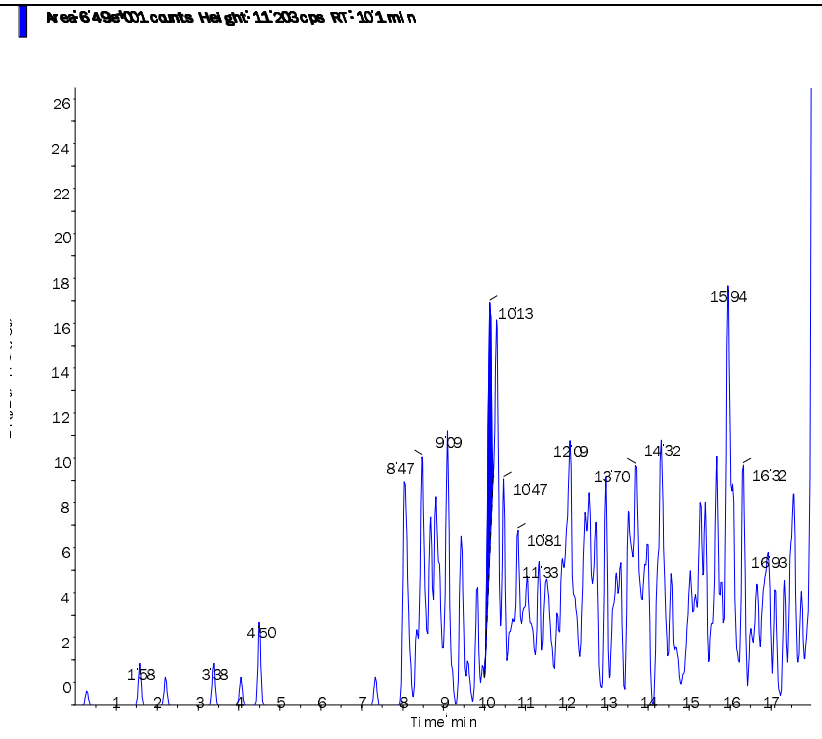
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.050e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	6.700e+02	10.20	N/A	0.0072
Perchlorate conf	6.490e+01	10.10	N/A	0.0017

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.0072 ng/ml Area Ratio: 0.002 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.10 (10.10) min Calculated conc: 0.0017 ng/ml Area Ratio: 0.00 Sample Type: (Unknown)	

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Created with Analyst Reporter
Printed: 7/2/2014 5:41 PM

Data File	LM25908.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/1/2014 6:22:09 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

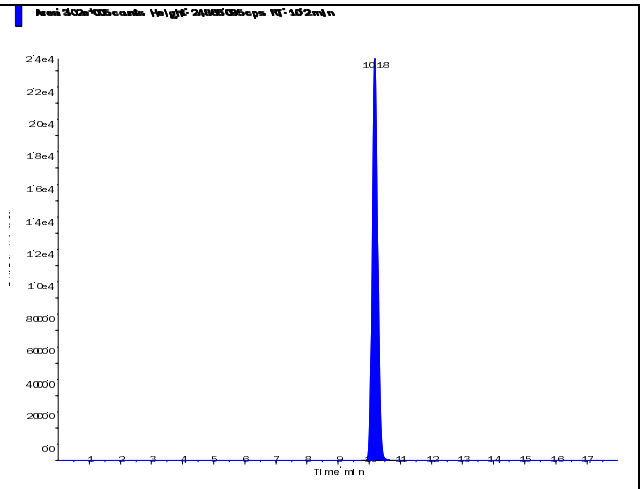
Sample Name	WG482628-03 LCS (0.2ug/L)	**Injection Vial**	6.00
Data File	LM25908.wiff	**Injection Volume**	10.00
Acquisition Date	7/1/2014 6:22:09 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482628-03	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

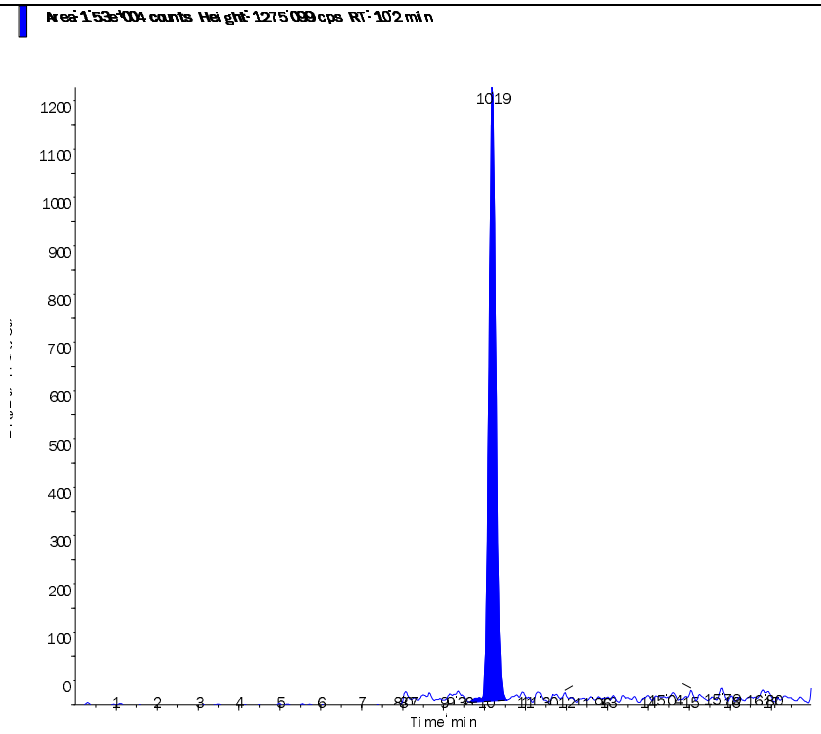
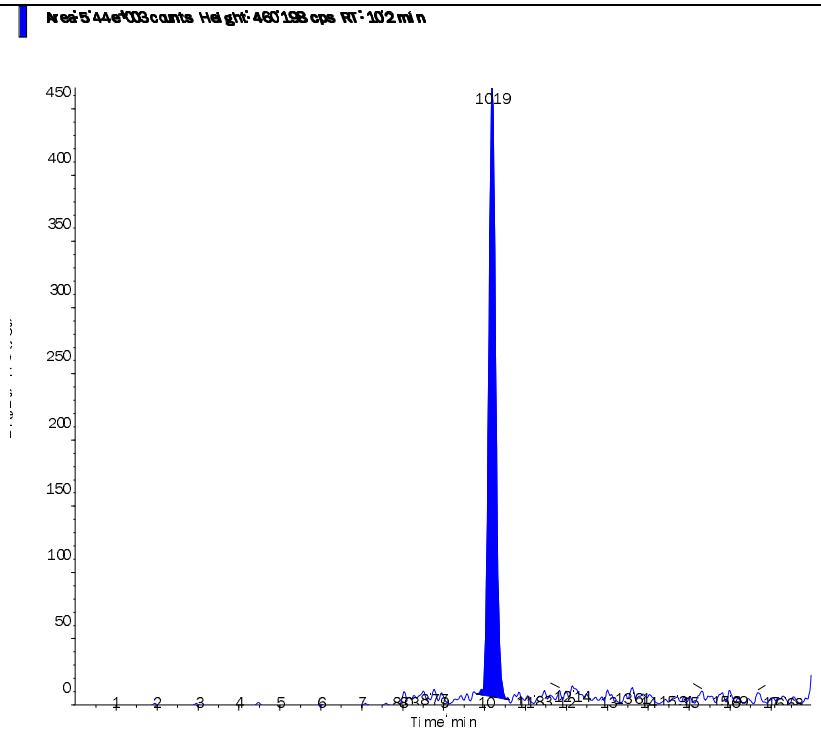
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.020e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.530e+04	10.20	N/A	0.202
Perchlorate conf	5.440e+03	10.20	N/A	0.21

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.202 ng/ml Area Ratio: 0.051 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.21 ng/ml Area Ratio: 0.018 Sample Type: (Unknown)	

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Created with Analyst Reporter
Printed: 7/2/2014 5:42 PM

Data File	LM25909.wiff	**Result Table**	070114_JWR.rdb
Acquisition Date	7/1/2014 6:41:04 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

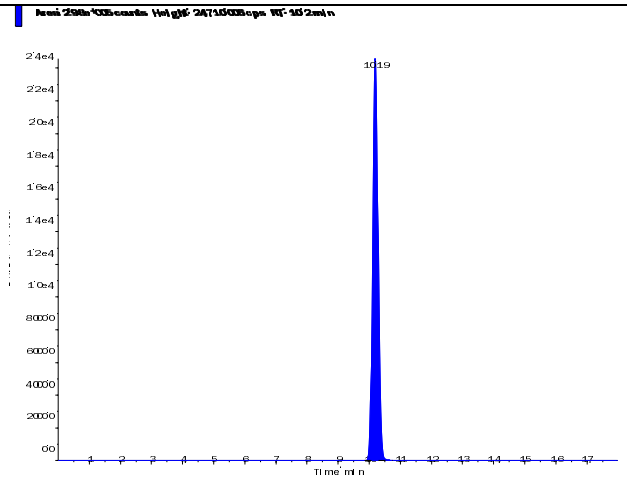
Sample Name	WG482628-04 LCS2 (0.2ug/L)	**Injection Vial**	7.00
Data File	LM25909.wiff	**Injection Volume**	10.00
Acquisition Date	7/1/2014 6:41:04 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	070114_JWR.rdb
Sample ID	WG482628-04	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

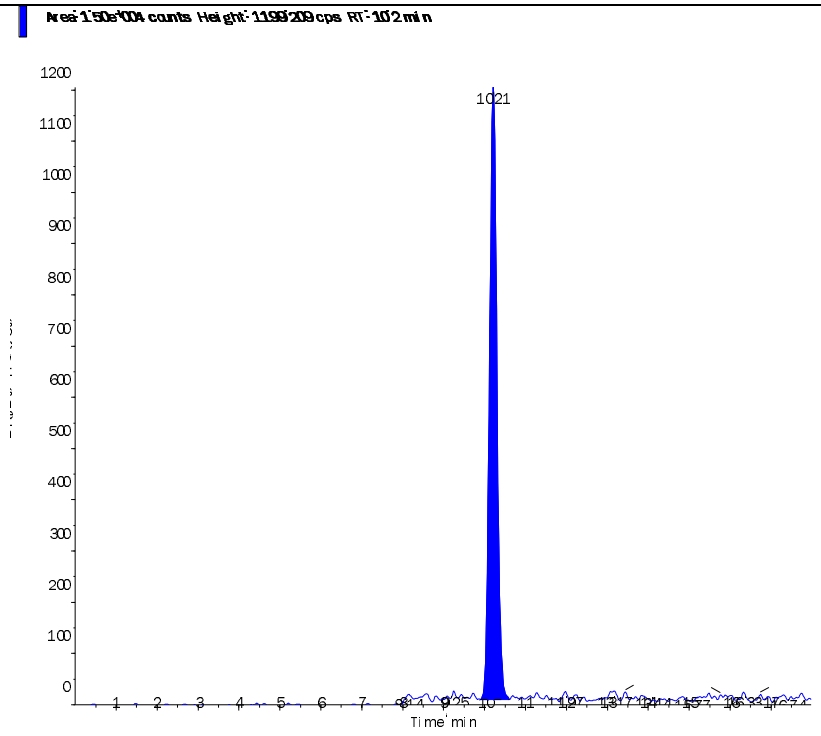
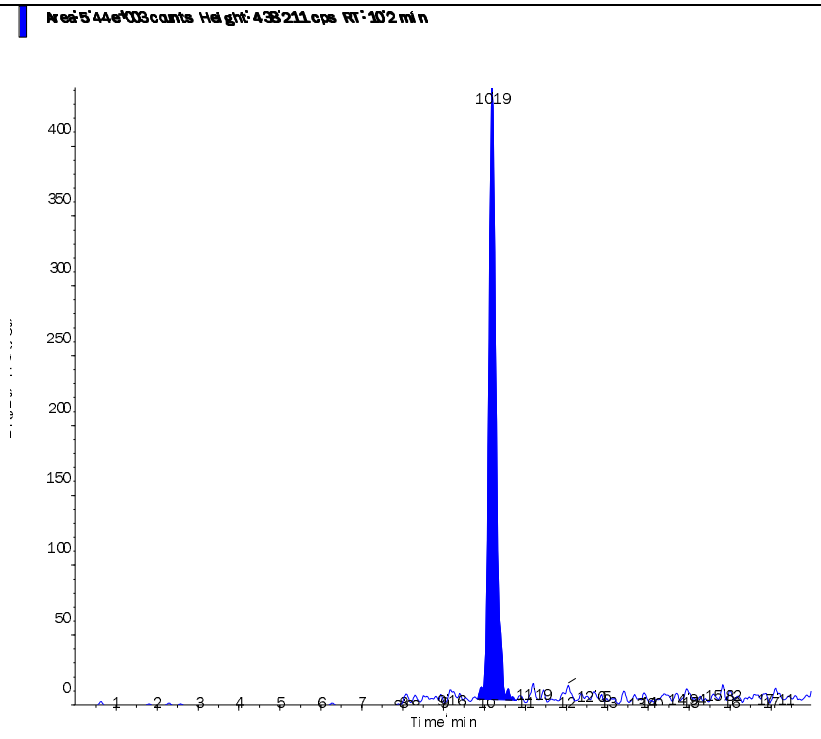
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.980e+05	10.20	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.500e+04	10.20	N/A	0.20
Perchlorate conf	5.440e+03	10.20	N/A	0.213

O18LP (Internal Standard)

RT (Exp. RT): 10.20(10.10) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.20 ng/ml Area Ratio: 0.05 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.20 (10.10) min Calculated conc: 0.213 ng/ml Area Ratio: 0.018 Sample Type: (Unknown)	

3.0 Attachments

Microbac Laboratories Inc.
Ohio Valley Division Analyst List
July 3, 2014

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001 – BIO-CHEM TESTING WVDEP 220	002 – REIC Consultants, Inc. WVDEP 060
003 – Sturm Environmental	004 – MICROBAC PITTSBURGH
005 – ES LABORATORIES	006 – ALCOSAN LABORATORIES
007 – ALS LABORATORIES	008 – BENCHMARK LABORATORIES
010 – MICROBAC CHICAGOLAND	ADC – ANTHONY D. CANTER
ADG – APRIL D. GREENE	ALS – ADRIANE L. STEED
AWE – ANDREW W. ESSIG	AZH – AFTER HOURS
BAF – BRICE A. FENTON	BJO – BRIAN J. OGDEN
BKT – BRENDAN TORRENCE	BLG – BRENDA L. GREENWALT
BRG – BRENDA R. GREGORY	CAA – CASSIE A. AUGENSTEIN
CAF – CHERYL A. FLOWERS	CEB – CHAD E. BARNES
CJR – COURTNEY J. REXROAD	CLC – CHRYS L. CRAWFORD
CLS – CARA L. STRICKLER	CLW – CHARISSA L. WINTERS
CPD – CHAD P. DAVIS	CSH – CHRIS S. HILL
DAK – DEAN A. K	DCM – DAVID C. MERCKLE
DEV – DAVID E. VANDENBERG	DIH – DEANNA I. HESSON
DLB – DAVID L. BUMGARNER	DLP – DOROTHY L. PAYNE
DSM – DAVID S. MOSSOR	ECL – ERIC C. LAWSON
ENY – EMILY N. YOAK	EPT – ETHAN P. TIDD
ERP – ERIN R. PORTER	FJB – FRANCES J. BOLDEN
JBK – JEREMY B. KINNEY	JDH – JUSTIN D. HESSON
JDS – JARED D. SMITH	JJS – JOHN J. ST MARIE
JLL – JOHN L. LENT	JMW – JEANA M. WHITE
JTP – JOSHUA T. PEMBERTON	JWR – JOHN W. RICHARDS
JWS – JACK W. SHEAVES	JYH – JI Y. HU
KAJ – KELLIE A. JOHNSON	KDW – KATHRYN D. WELCH
KEB – KATIE E. BARNES	KHR – KIM H. RHODES
KRA – KATHY R. ALBERTSON	KRB – KAELY R. BECKER
KRP – KATHY R. PARSONS	LEC – LAURA E. CARPENTER
LKN – LINDA K. NEDEFF	LLS – LARRY L. STEPHENS
LSB – LESLIE S. BUCINA	MBK – MORGAN B. KNOWLTON
MDA – MIKE D. ALBERTSON	MDC – MIKE D. COCHRAN
MES – MARY E. SCHILLING	MLB – MEGAN L. BACHE
MMB – MAREN M. BEERY	MRT – MICHELLE R. TAYLOR
MSW – MATT S. WILSON	PDM – PIERCE D. MORRIS
PIT – MICROBAC WARRENDALE	PSW – PEGGY S. WEBB
QX – QIN XU	RAH – ROY A. HALSTEAD
REK – BOB E. KYER	RLB – BOB BUCHANAN
RM – RAYMOND MALEKE	RNP – RICK N. PETTY
RS – ROSEMARY SCOTT	SAV – SARAH A. VANDENBERG
SDC – SHALYN D. CONLEY	SEP – SUZANNE J. PAUGH
SLM – STEPHANIE L. MOSSBURG	SLP – SHERI L. PFALZGRAF
TLC – TYLER L. CORDELL	TMB – TIFFANY M. BAILEY
TMM – TAMMY M. MORRIS	TPA – TYLER P. AMRINE
VC – VICKI COLLIER	WJB – WILL J. BEASLEY
WRR – WESLEY R. RICHARDS	WTD – WADE T. DELONG
XXX – UNAVAILABLE OR SUBCONTRACT	

Microbac Laboratories Inc.
List of Valid Qualifiers
July 03, 2014

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
H1	Sample analysis performed past holding time.
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value; the analyte concentration was less than the RL/LOQ.
J,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentativlely identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL).
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, H1	Not detected; Sample analysis performed past holding time.
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.
U	Analyte was not detected. The concentration is below the reported LOD.
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit

Microbac Laboratories Inc.
List of Valid Qualifiers
July 03, 2014

Qualkey: DOD

X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

AECOM

Chain of Custody Record

COC Number:

Laboratory: Microbac POC: Kathy Albertson	Project Manager: Dave Wacker	Mail to: Linda Raabe	
Address: 158 Starlite Drive	Phone/Fax Number: 210-296-2000	112 East Pecan STE. 400	
Marietta, OH 45750	Sampler (print): Scott Beesinger	San Antonio, TX 78205	
Phone: 1-800-373-4071		210-296-2000	
Client: AECOM	Signature: Scott Beesinger	Fed Ex Airbill No:	
Address: 112 East Pecan Ste. 400			
San Antonio, TX 78205	pH:	Program:	
Turn Around Time: STANDARD			
Project Name/Location: Longhorn			
Project Number: 60256135.0009AA			

Site Name	Sample ID/Location ID	SBD	SED	Date	Time	Comp	Grab	Matrix	Number of Containers	PERCHLORATE	ERPIMS REQUIRED FIELDS: SA CODE	Cooler ID	LOT CONTROL NUMBERS: ABLOT	EBLOT	TBLOT
PERIMETER WELLS	PW133-061714			6/17/14	0815		✓	W	1	✓					
	PW134-061714			6/17/14	0910		✓	W	1	✓					
	PW112-061714			6/17/14	1040		✓	W	1	✓					
	PW108-061714			6/17/14	1350		✓	W	1	✓					
	PW110-061714			6/17/14	1530		✓	W	1	✓					

Comments: **STANDARD TAT**

	Date	Time	
Relinquished by: (Signature) Scott Beesinger	6/17/14	1615	Received by: (Signature)
Relinquished by: (Signature)	Date	Time	Received for Laboratory by: (Signature)

Microbac OVD
Received: 06/18/2014 09:49
By: COURTNEY REXROAD
221000055916
Courtney Rexroad

•Homogenize all composite samples prior to analysis

Distribution: White to Laboratory, Canary to Project Manager, Pink QA/QC Manager

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L14061094
Account: 2551
Project: 2551.096
Samples: 5
Due Date: 27-JUN-2014

Samplenum	Container ID	Products
L14061094-01	389811	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	18-JUN-2014 15:45	CJR		
4	ANALYZ*	EXT	SEMI	22-FEB-2010 08:34	CAA	CEB	

Sample number changed: L0710772-01

****Sample extract/digestate/leachate***

Samplenum	Container ID	Products
L14061094-02	389812	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	18-JUN-2014 15:45	CJR		
2	ANALYZ	W1	SEM	01-JUL-2014 15:10	JWR	CLS	

Samplenum	Container ID	Products
L14061094-03	389813	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	18-JUN-2014 15:45	CJR		
2	ANALYZ	W1	SEM	01-JUL-2014 15:10	JWR	CLS	

Samplenum	Container ID	Products
L14061094-04	389814	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	18-JUN-2014 15:45	CJR		
2	ANALYZ	W1	SEM	01-JUL-2014 15:10	JWR	CLS	

Samplenum	Container ID	Products
L14061094-05	389815	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	18-JUN-2014 15:45	CJR		
2	ANALYZ	W1	SEM	01-JUL-2014 15:11	JWR	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

NELAP Addendum - May 22, 2014

Non-NELAP LIMS Product and Description

The following is a list of those tests that are not included in the Microbac – OVL NELAP Scope of Accreditation:

Heat of Combustion (BTU)
Total Halide by Bomb Combustion (TX)
Particle Sizing - 200 Mesh (PS200)
Specific Gravity/Density (SPGRAV)
Total Residual Chlorine (CL-TRL)
Total Volatile Solids (all forms) (TVS)
Total Coliform Bacteria (all methods)
Fecal Coliform Bacteria (all methods)
Sulfite (SO3)
Thiodiglycol (TDG-LCMS)
Acetate (HPLC-UV)
Formate (HPLC-UV)
Acetaldehyde (HPLC-UV)
Propionaldehyde (HPLC-UV)
Fluoroborate (ISE)

SOLID AND HAZARDOUS CHEMICALS
Nitrogen, Ammonia by Method 350.1
Chromium, Hexavalent, Leachable by SM3500 Cr-B 2009
Phenolics, Total by Method 420.1

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVL HPLC02/HPLC-UV

Nitroglycerin
Acetic acid
Butyric acid
Lactic acid
Propionic acid
Pyruvic acid

OVL MSS01/GC-MS

1,4-Phenylenediamine
1-Methylnaphthalene
1,4-Dioxane
Atrazine
Benzaldehyde
Biphenyl
Caprolactam

Hexamethylphosphoramide (HMPA)
Pentachlorobenzene
Pentachloroethane

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVL MSV0I/GC-MS

1, 1, 2-Trichloro-1,2,2-trifluoroethane
1,3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
T-amylmethylether (TAME)
Tetrahydrofuran (THF)

OVL RSKOI/GC-FID

Isobutane
n-Butane
Propane
Propylene
Propyne

OVL HPLC07/HPLC-MS-MS

Hexamethylphosphoramide (XMPA-LCMS)

SOLID AND HAZARDOUS CHEMICALS

OVL MSS0I/GC-MS

1-Methylnaphthalene
Benzaldehyde
Biphenyl
Caprolactam
Pentachloroethane

NELAP Accreditation by Laboratory SOP

SOLID AND HAZARDOUS CHEMICALS

OVL MSV0I/GC-MS

1.3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
n-Hexane
T-amylmethylether (TAME)

Microbac

Laboratory Report Number: L14081444

Kayla Teague
AECOM Technical Services, Inc.
16000 Dallas Parkway
Dallas, TX 75248

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Kathy Albertson – Team Chemist/Data Specialist
(740) 373-4071
Kathy.Albertson@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on September 04 2014

David L. Vandenberg

David Vandenberg – Managing Director

State of Origin: TX
Accrediting Authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: DOD Ver 4.1

Microbac

Lab Report #: L14081444
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
0019531	I	4.0		1Z4016632210105124	X
0019401	I	4.0		1Z4016632210145822	X
00110895	I	4.0		1Z4016632210145831	X
0018255	I	5.0		1Z4016632210145804	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	NA
12	Were VOA samples free of headspace (less than 6mm)?	Yes

Microbac

Lab Report #: L14081444
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
PW134-082414	L14081444-01	08/24/2014 14:55	08/26/2014 10:25
TRIP BLANK	L14081444-02	08/24/2014 00:01	08/26/2014 10:25

Microbac Laboratories ● Ohio Valley Division
158 Starlite Drive, Marietta, OH 45750 ● T: (740)373-4071 F: (740)373-4835
www.microbac.com

Microbac REPORT L14081444
PREPARED FOR AECOM Technical Services, Inc.
WORK ID:

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1.0 Summary Data

1.1 Narratives

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14081444
Project Name:		**Method:**	8260
Prep Batch Number(s):	490300	**Reviewer Name:**	Michael Albertson
LRC Date:	2014-09-02 00:00:00		

Laboratory Data Package Cover Page

X	R1	Field chain-of-custody documentation;
X	R2	Sample identification cross-reference;
X	R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a.if required for the project, tentatively identified compounds (TICs).
X	R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
X	R5	Test reports/summary forms for blank samples;
X	R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
X	R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
X	R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
X	R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
X	R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Michael Albertson		Volatiles Supervisor	2014-09-02 19:28:51

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14081444
Project Name:		**Method:**	8260
Prep Batch Number(s):	490300	**Reviewer Name:**	Michael Albertson
LRC Date:	2014-09-02 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification	X				
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports					
Were all samples prepared and analyzed within holding times?	X				
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?	X				
Were % moisture (or solids) reported for all soil and sediment samples?	X				
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?	X				
Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
Test reports/summary forms for blank samples	X				
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	X				

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14081444
Project Name:		**Method:**	8260
Prep Batch Number(s):	490300	**Reviewer Name:**	Michael Albertson
LRC Date:	2014-09-02 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		X			1
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?	X				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			X		
Were MS/MSD analyzed at the appropriate frequency?			X		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			X		
Were MS/MSD RPDs within laboratory QC limits?			X		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			X		
Were analytical duplicates analyzed at the appropriate frequency?			X		
Were RPDs or relative standard deviations within the laboratory QC limits?			X		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14081444
Project Name:		**Method:**	8260
Prep Batch Number(s):	490300	**Reviewer Name:**	Michael Albertson
LRC Date:	2014-09-02 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?	X				
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?		X			2
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?	X				
Were ion abundance data within the method-required QC limits?	X				
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?	X				
Raw data (NELAC Section 5.5.10)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?	X				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?			X		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
Method detection limit (MDL) studies					

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14081444
Project Name:		**Method:**	8260
Prep Batch Number(s):	490300	**Reviewer Name:**	Michael Albertson
LRC Date:	2014-09-02 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter “R” must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter “S” should be retained and made available upon request for the appropriate retention period;

2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

3. NA = Not applicable;

4. NR = Not reviewed;

5. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

The Exception Report for each “No” or “Not Reviewed (NR)” item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14081444
Project Name:		**Method:**	8260
Prep Batch Number(s):	490300	**Reviewer Name:**	Michael Albertson
LRC Date:	2014-09-02 00:00:00		

below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [ ] This laboratory meets an exception under 30 TAC §25.6 and was last inspection by [ ] TCEQ or [ ] _____ on **(enter date of last inspection**). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report

1) Dichlorodifluoromethane was outside the control limits in the LCS/LCSD analyzed 08-28-14 on HPMS8.

2) n-Butylbenzene, p-isopropyltoluene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene were outside the control limits in the CCV analyzed 08-28-14 on HPMS8.

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14081444
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG490445	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-09-04 00:00:00		

Laboratory Data Package Cover Page

	R1	Field chain-of-custody documentation;
	R2	Sample identification cross-reference;
	R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a.if required for the project, tentatively identified compounds (TICs).
	R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
	R5	Test reports/summary forms for blank samples;
	R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
	R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
	R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
	R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
	R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Mike Cochran		Semivolatiles Supervisor	2014-09-04 17:05:13

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14081444
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG490445	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-09-04 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification	X				
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports					
Were all samples prepared and analyzed within holding times?	X				
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?			X		
Were % moisture (or solids) reported for all soil and sediment samples?			X		
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?			X		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
Test reports/summary forms for blank samples	X				
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	X				

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14081444
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG490445	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-09-04 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?			X		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			X		
Were MS/MSD analyzed at the appropriate frequency?			X		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			X		
Were MS/MSD RPDs within laboratory QC limits?			X		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			X		
Were analytical duplicates analyzed at the appropriate frequency?			X		
Were RPDs or relative standard deviations within the laboratory QC limits?			X		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				

Microbac

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14081444
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG490445	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-09-04 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?	X				
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?	X				
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?	X				
Were ion abundance data within the method-required QC limits?	X				
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?	X				
Raw data (NELAC Section 5.5.10)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?	X				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?			X		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
Method detection limit (MDL) studies					

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14081444
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG490445	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-09-04 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter “R” must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter “S” should be retained and made available upon request for the appropriate retention period;

2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

3. NA = Not applicable;

4. NR = Not reviewed;

5. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

The Exception Report for each “No” or “Not Reviewed (NR)” item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with

Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	**Laboratory Log Number:**	L14081444
Project Name:		**Method:**	6850
Prep Batch Number(s):	WG490445	**Reviewer Name:**	Mike Cochran
LRC Date:	2014-09-04 00:00:00		

the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [ ] This laboratory meets an exception under 30 TAC §25.6 and was last inspection by [ ] TCEQ or [ ] _____ on **(enter date of last inspection**). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report

1.2 Certificate of Analysis

Microbac

Lab Report #: L14081444
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14081444-01	**PrePrep Method:**	N/A	**Instrument:**	HPMS8
Client ID:	PW134-082414	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	08/19/2014 13:37
Workgroup #:	WG490300	**Analyst:**	ADC	**Run Date:**	08/29/2014 03:38
Collect Date:	08/24/2014 14:55	**Dilution:**	1	**File ID:**	8M399642
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Acetone	67-64-1	5.00	U	10.0	5.00	2.50
Benzene	71-43-2	0.250	U	1.00	0.250	0.125
Bromobenzene	108-86-1	0.250	U	1.00	0.250	0.125
Bromochloromethane	74-97-5	0.400	U	1.00	0.400	0.200
Bromodichloromethane	75-27-4	0.500	U	1.00	0.500	0.250
Bromoform	75-25-2	1.00	U	2.00	1.00	0.500
Bromomethane	74-83-9	1.00	U	2.00	1.00	0.500
2-Butanone	78-93-3	5.00	U	10.0	5.00	2.50
n-Butylbenzene	104-51-8	0.500	Q	1.00	0.500	0.250
sec-Butylbenzene	135-98-8	0.500	U	1.00	0.500	0.250
tert-Butylbenzene	98-06-6	0.500	U	1.00	0.500	0.250
Carbon disulfide	75-15-0	1.00	U	2.00	1.00	0.500
Carbon tetrachloride	56-23-5	0.500	U	1.00	0.500	0.250
Chlorobenzene	108-90-7	0.250	U	1.00	0.250	0.125
Chlorodibromomethane	124-48-1	0.500	U	1.00	0.500	0.250
Chloroethane	75-00-3	1.00	U	2.00	1.00	0.500
Chloroform	67-66-3	0.250	U	1.00	0.250	0.125
Chloromethane	74-87-3	1.00	U	2.00	1.00	0.500
2-Chlorotoluene	95-49-8	0.250	U	1.00	0.250	0.125
4-Chlorotoluene	106-43-4	0.500	U	1.00	0.500	0.250
1,2-Dibromo-3-chloropropane	96-12-8	2.00	U	5.00	2.00	1.00
1,2-Dibromoethane	106-93-4	0.500	U	1.00	0.500	0.250
Dibromomethane	74-95-3	0.500	U	1.00	0.500	0.250
1,2-Dichlorobenzene	95-50-1	0.250	U	1.00	0.250	0.125
1,3-Dichlorobenzene	541-73-1	0.500	U	1.00	0.500	0.250
1,4-Dichlorobenzene	106-46-7	0.250	U	1.00	0.250	0.125
Dichlorodifluoromethane	75-71-8	0.500	U	1.00	0.500	0.250
1,1-Dichloroethane	75-34-3	0.250	U	1.00	0.250	0.125
1,2-Dichloroethane	107-06-2	0.500	U	1.00	0.500	0.250
1,1-Dichloroethene	75-35-4	1.00	U	2.00	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	0.500	U	1.00	0.500	0.250
trans-1,2-Dichloroethene	156-60-5	0.500	U	1.00	0.500	0.250

Microbac

Lab Report #: L14081444
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
1,2-Dichloropropane	78-87-5	0.400	U	1.00	0.400	0.200
1,3-Dichloropropane	142-28-9	0.400	U	1.00	0.400	0.200
2,2-Dichloropropane	594-20-7	0.500	U	1.00	0.500	0.250
cis-1,3-Dichloropropene	10061-01-5	0.500	U	1.00	0.500	0.250
trans-1,3-Dichloropropene	10061-02-6	1.00	U	2.00	1.00	0.500
1,1-Dichloropropene	563-58-6	0.500	U	1.00	0.500	0.250
Ethylbenzene	100-41-4	0.500	U	1.00	0.500	0.250
2-Hexanone	591-78-6	5.00	U	10.0	5.00	2.50
Hexachlorobutadiene	87-68-3	0.500	U	1.00	0.500	0.250
Isopropylbenzene	98-82-8	0.500	U	1.00	0.500	0.250
p-Isopropyltoluene	99-87-6	0.500	Q	1.00	0.500	0.250
4-Methyl-2-pentanone	108-10-1	5.00	U	10.0	5.00	2.50
Methylene chloride	75-09-2	0.500	U	1.00	0.500	0.250
Naphthalene	91-20-3	0.400	U	1.00	0.400	0.200
n-Propylbenzene	103-65-1	0.250	U	1.00	0.250	0.125
Styrene	100-42-5	0.250	U	1.00	0.250	0.125
1,1,1,2-Tetrachloroethane	630-20-6	0.500	U	1.00	0.500	0.250
1,1,2,2-Tetrachloroethane	79-34-5	0.400	U	1.00	0.400	0.200
Tetrachloroethene	127-18-4	0.500	U	1.00	0.500	0.250
Toluene	108-88-3	0.500	U	1.00	0.500	0.250
1,2,3-Trichlorobenzene	87-61-6	0.300	U	1.00	0.300	0.150
1,2,4-Trichlorobenzene	120-82-1	0.400	U	1.00	0.400	0.200
1,1,1-Trichloroethane	71-55-6	0.500	U	1.00	0.500	0.250
1,1,2-Trichloroethane	79-00-5	0.500	U	1.00	0.500	0.250
Trichloroethene	79-01-6	0.500	U	1.00	0.500	0.250
Trichlorofluoromethane	75-69-4	0.500	U	1.00	0.500	0.250
1,2,3-Trichloropropane	96-18-4	1.00	U	2.00	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6	0.500	Q	1.00	0.500	0.250
1,3,5-Trimethylbenzene	108-67-8	0.500	Q	1.00	0.500	0.250
Vinyl chloride	75-01-4	0.500	U	1.00	0.500	0.250
o-Xylene	95-47-6	0.500	U	1.00	0.500	0.250
m-,p-Xylene	179601-23-1	1.00	U	2.00	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
Dibromofluoromethane	93.1	85	115	
1,2-Dichloroethane-d4	92.6	70	120	
Toluene-d8	101	85	120	
4-Bromofluorobenzene	101	75	120	

Q	One or more quality control criteria failed. See narrative.
U	Analyte was not detected. The concentration is below the reported LOD.

Microbac

Lab Report #: L14081444
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14081444-01	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	PW134-082414	**Prep Method:**	6850	**Prep Date:**	08/29/2014 13:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	07/07/2014 17:24
Workgroup #:	WG490445	**Analyst:**	JWR	**Run Date:**	08/29/2014 23:01
Collect Date:	08/24/2014 14:55	**Dilution:**	1	**File ID:**	1LM.LM26650
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.845		0.400	0.200	0.100

Certificate of Analysis

Sample #:	L14081444-02	**PrePrep Method:**	N/A	**Instrument:**	HPMS8
Client ID:	TRIP BLANK	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	08/19/2014 13:37
Workgroup #:	WG490300	**Analyst:**	ADC	**Run Date:**	08/28/2014 20:21
Collect Date:	08/24/2014 00:01	**Dilution:**	1	**File ID:**	8M399627
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Acetone	67-64-1	5.00	U	10.0	5.00	2.50
Benzene	71-43-2	0.250	U	1.00	0.250	0.125
Bromobenzene	108-86-1	0.250	U	1.00	0.250	0.125
Bromochloromethane	74-97-5	0.400	U	1.00	0.400	0.200
Bromodichloromethane	75-27-4	0.500	U	1.00	0.500	0.250
Bromoform	75-25-2	1.00	U	2.00	1.00	0.500
Bromomethane	74-83-9	1.00	U	2.00	1.00	0.500
2-Butanone	78-93-3	5.00	U	10.0	5.00	2.50
n-Butylbenzene	104-51-8	0.500	Q	1.00	0.500	0.250
sec-Butylbenzene	135-98-8	0.500	U	1.00	0.500	0.250
tert-Butylbenzene	98-06-6	0.500	U	1.00	0.500	0.250
Carbon disulfide	75-15-0	1.00	U	2.00	1.00	0.500
Carbon tetrachloride	56-23-5	0.500	U	1.00	0.500	0.250
Chlorobenzene	108-90-7	0.250	U	1.00	0.250	0.125
Chlorodibromomethane	124-48-1	0.500	U	1.00	0.500	0.250
Chloroethane	75-00-3	1.00	U	2.00	1.00	0.500
Chloroform	67-66-3	0.250	U	1.00	0.250	0.125
Chloromethane	74-87-3	1.00	U	2.00	1.00	0.500
2-Chlorotoluene	95-49-8	0.250	U	1.00	0.250	0.125
4-Chlorotoluene	106-43-4	0.500	U	1.00	0.500	0.250

Microbac

Lab Report #: L14081444
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
1,2-Dibromo-3-chloropropane	96-12-8	2.00	U	5.00	2.00	1.00
1,2-Dibromoethane	106-93-4	0.500	U	1.00	0.500	0.250
Dibromomethane	74-95-3	0.500	U	1.00	0.500	0.250
1,2-Dichlorobenzene	95-50-1	0.250	U	1.00	0.250	0.125
1,3-Dichlorobenzene	541-73-1	0.500	U	1.00	0.500	0.250
1,4-Dichlorobenzene	106-46-7	0.250	U	1.00	0.250	0.125
Dichlorodifluoromethane	75-71-8	0.500	U	1.00	0.500	0.250
1,1-Dichloroethane	75-34-3	0.250	U	1.00	0.250	0.125
1,2-Dichloroethane	107-06-2	0.500	U	1.00	0.500	0.250
1,1-Dichloroethene	75-35-4	1.00	U	2.00	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	0.500	U	1.00	0.500	0.250
trans-1,2-Dichloroethene	156-60-5	0.500	U	1.00	0.500	0.250
1,2-Dichloropropane	78-87-5	0.400	U	1.00	0.400	0.200
1,3-Dichloropropane	142-28-9	0.400	U	1.00	0.400	0.200
2,2-Dichloropropane	594-20-7	0.500	U	1.00	0.500	0.250
cis-1,3-Dichloropropene	10061-01-5	0.500	U	1.00	0.500	0.250
trans-1,3-Dichloropropene	10061-02-6	1.00	U	2.00	1.00	0.500
1,1-Dichloropropene	563-58-6	0.500	U	1.00	0.500	0.250
Ethylbenzene	100-41-4	0.500	U	1.00	0.500	0.250
2-Hexanone	591-78-6	5.00	U	10.0	5.00	2.50
Hexachlorobutadiene	87-68-3	0.500	U	1.00	0.500	0.250
Isopropylbenzene	98-82-8	0.500	U	1.00	0.500	0.250
p-Isopropyltoluene	99-87-6	0.500	Q	1.00	0.500	0.250
4-Methyl-2-pentanone	108-10-1	5.00	U	10.0	5.00	2.50
Methylene chloride	75-09-2	0.500	U	1.00	0.500	0.250
Naphthalene	91-20-3	0.400	U	1.00	0.400	0.200
n-Propylbenzene	103-65-1	0.250	U	1.00	0.250	0.125
Styrene	100-42-5	0.250	U	1.00	0.250	0.125
1,1,1,2-Tetrachloroethane	630-20-6	0.500	U	1.00	0.500	0.250
1,1,2,2-Tetrachloroethane	79-34-5	0.400	U	1.00	0.400	0.200
Tetrachloroethene	127-18-4	0.500	U	1.00	0.500	0.250
Toluene	108-88-3	0.500	U	1.00	0.500	0.250
1,2,3-Trichlorobenzene	87-61-6	0.300	U	1.00	0.300	0.150
1,2,4-Trichlorobenzene	120-82-1	0.400	U	1.00	0.400	0.200
1,1,1-Trichloroethane	71-55-6	0.500	U	1.00	0.500	0.250
1,1,2-Trichloroethane	79-00-5	0.500	U	1.00	0.500	0.250
Trichloroethene	79-01-6	0.500	U	1.00	0.500	0.250
Trichlorofluoromethane	75-69-4	0.500	U	1.00	0.500	0.250
1,2,3-Trichloropropane	96-18-4	1.00	U	2.00	1.00	0.500

Microbac

Lab Report #: L14081444
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
1,2,4-Trimethylbenzene	95-63-6	0.500	Q	1.00	0.500	0.250
1,3,5-Trimethylbenzene	108-67-8	0.500	Q	1.00	0.500	0.250
Vinyl chloride	75-01-4	0.500	U	1.00	0.500	0.250
o-Xylene	95-47-6	0.500	U	1.00	0.500	0.250
m-,p-Xylene	179601-23-1	1.00	U	2.00	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
Dibromofluoromethane	93.2	85	115	
1,2-Dichloroethane-d4	89.0	70	120	
Toluene-d8	100	85	120	
4-Bromofluorobenzene	103	75	120	

Q	One or more quality control criteria failed. See narrative.
U	Analyte was not detected. The concentration is below the reported LOD.

Microbac

Lab Report #: L14081444
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

2.0 Full Sample Data Package

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

Microbac

Lab Report #: L14081444
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14081444-01	**PrePrep Method:**	N/A	**Instrument:**	HPMS8
Client ID:	PW134-082414	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	08/19/2014 13:37
Workgroup #:	WG490300	**Analyst:**	ADC	**Run Date:**	08/29/2014 03:38
Collect Date:	08/24/2014 14:55	**Dilution:**	1	**File ID:**	8M399642
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Acetone	67-64-1	5.00	U	10.0	5.00	2.50
Benzene	71-43-2	0.250	U	1.00	0.250	0.125
Bromobenzene	108-86-1	0.250	U	1.00	0.250	0.125
Bromochloromethane	74-97-5	0.400	U	1.00	0.400	0.200
Bromodichloromethane	75-27-4	0.500	U	1.00	0.500	0.250
Bromoform	75-25-2	1.00	U	2.00	1.00	0.500
Bromomethane	74-83-9	1.00	U	2.00	1.00	0.500
2-Butanone	78-93-3	5.00	U	10.0	5.00	2.50
n-Butylbenzene	104-51-8	0.500	Q	1.00	0.500	0.250
sec-Butylbenzene	135-98-8	0.500	U	1.00	0.500	0.250
tert-Butylbenzene	98-06-6	0.500	U	1.00	0.500	0.250
Carbon disulfide	75-15-0	1.00	U	2.00	1.00	0.500
Carbon tetrachloride	56-23-5	0.500	U	1.00	0.500	0.250
Chlorobenzene	108-90-7	0.250	U	1.00	0.250	0.125
Chlorodibromomethane	124-48-1	0.500	U	1.00	0.500	0.250
Chloroethane	75-00-3	1.00	U	2.00	1.00	0.500
Chloroform	67-66-3	0.250	U	1.00	0.250	0.125
Chloromethane	74-87-3	1.00	U	2.00	1.00	0.500
2-Chlorotoluene	95-49-8	0.250	U	1.00	0.250	0.125
4-Chlorotoluene	106-43-4	0.500	U	1.00	0.500	0.250
1,2-Dibromo-3-chloropropane	96-12-8	2.00	U	5.00	2.00	1.00
1,2-Dibromoethane	106-93-4	0.500	U	1.00	0.500	0.250
Dibromomethane	74-95-3	0.500	U	1.00	0.500	0.250
1,2-Dichlorobenzene	95-50-1	0.250	U	1.00	0.250	0.125
1,3-Dichlorobenzene	541-73-1	0.500	U	1.00	0.500	0.250
1,4-Dichlorobenzene	106-46-7	0.250	U	1.00	0.250	0.125
Dichlorodifluoromethane	75-71-8	0.500	U	1.00	0.500	0.250
1,1-Dichloroethane	75-34-3	0.250	U	1.00	0.250	0.125
1,2-Dichloroethane	107-06-2	0.500	U	1.00	0.500	0.250
1,1-Dichloroethene	75-35-4	1.00	U	2.00	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	0.500	U	1.00	0.500	0.250
trans-1,2-Dichloroethene	156-60-5	0.500	U	1.00	0.500	0.250

Microbac

Lab Report #: L14081444
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
1,2-Dichloropropane	78-87-5	0.400	U	1.00	0.400	0.200
1,3-Dichloropropane	142-28-9	0.400	U	1.00	0.400	0.200
2,2-Dichloropropane	594-20-7	0.500	U	1.00	0.500	0.250
cis-1,3-Dichloropropene	10061-01-5	0.500	U	1.00	0.500	0.250
trans-1,3-Dichloropropene	10061-02-6	1.00	U	2.00	1.00	0.500
1,1-Dichloropropene	563-58-6	0.500	U	1.00	0.500	0.250
Ethylbenzene	100-41-4	0.500	U	1.00	0.500	0.250
2-Hexanone	591-78-6	5.00	U	10.0	5.00	2.50
Hexachlorobutadiene	87-68-3	0.500	U	1.00	0.500	0.250
Isopropylbenzene	98-82-8	0.500	U	1.00	0.500	0.250
p-Isopropyltoluene	99-87-6	0.500	Q	1.00	0.500	0.250
4-Methyl-2-pentanone	108-10-1	5.00	U	10.0	5.00	2.50
Methylene chloride	75-09-2	0.500	U	1.00	0.500	0.250
Naphthalene	91-20-3	0.400	U	1.00	0.400	0.200
n-Propylbenzene	103-65-1	0.250	U	1.00	0.250	0.125
Styrene	100-42-5	0.250	U	1.00	0.250	0.125
1,1,1,2-Tetrachloroethane	630-20-6	0.500	U	1.00	0.500	0.250
1,1,2,2-Tetrachloroethane	79-34-5	0.400	U	1.00	0.400	0.200
Tetrachloroethene	127-18-4	0.500	U	1.00	0.500	0.250
Toluene	108-88-3	0.500	U	1.00	0.500	0.250
1,2,3-Trichlorobenzene	87-61-6	0.300	U	1.00	0.300	0.150
1,2,4-Trichlorobenzene	120-82-1	0.400	U	1.00	0.400	0.200
1,1,1-Trichloroethane	71-55-6	0.500	U	1.00	0.500	0.250
1,1,2-Trichloroethane	79-00-5	0.500	U	1.00	0.500	0.250
Trichloroethene	79-01-6	0.500	U	1.00	0.500	0.250
Trichlorofluoromethane	75-69-4	0.500	U	1.00	0.500	0.250
1,2,3-Trichloropropane	96-18-4	1.00	U	2.00	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6	0.500	Q	1.00	0.500	0.250
1,3,5-Trimethylbenzene	108-67-8	0.500	Q	1.00	0.500	0.250
Vinyl chloride	75-01-4	0.500	U	1.00	0.500	0.250
o-Xylene	95-47-6	0.500	U	1.00	0.500	0.250
m-,p-Xylene	179601-23-1	1.00	U	2.00	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
Dibromofluoromethane	93.1	85	115	
1,2-Dichloroethane-d4	92.6	70	120	
Toluene-d8	101	85	120	
4-Bromofluorobenzene	101	75	120	

Q	One or more quality control criteria failed. See narrative.
U	Analyte was not detected. The concentration is below the reported LOD.

Microbac

Lab Report #: L14081444
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14081444-02	**PrePrep Method:**	N/A	**Instrument:**	HPMS8
Client ID:	TRIP BLANK	**Prep Method:**	5030B/5030C/5035A	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	8260B	**Cal Date:**	08/19/2014 13:37
Workgroup #:	WG490300	**Analyst:**	ADC	**Run Date:**	08/28/2014 20:21
Collect Date:	08/24/2014 00:01	**Dilution:**	1	**File ID:**	8M399627
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Acetone	67-64-1	5.00	U	10.0	5.00	2.50
Benzene	71-43-2	0.250	U	1.00	0.250	0.125
Bromobenzene	108-86-1	0.250	U	1.00	0.250	0.125
Bromochloromethane	74-97-5	0.400	U	1.00	0.400	0.200
Bromodichloromethane	75-27-4	0.500	U	1.00	0.500	0.250
Bromoform	75-25-2	1.00	U	2.00	1.00	0.500
Bromomethane	74-83-9	1.00	U	2.00	1.00	0.500
2-Butanone	78-93-3	5.00	U	10.0	5.00	2.50
n-Butylbenzene	104-51-8	0.500	Q	1.00	0.500	0.250
sec-Butylbenzene	135-98-8	0.500	U	1.00	0.500	0.250
tert-Butylbenzene	98-06-6	0.500	U	1.00	0.500	0.250
Carbon disulfide	75-15-0	1.00	U	2.00	1.00	0.500
Carbon tetrachloride	56-23-5	0.500	U	1.00	0.500	0.250
Chlorobenzene	108-90-7	0.250	U	1.00	0.250	0.125
Chlorodibromomethane	124-48-1	0.500	U	1.00	0.500	0.250
Chloroethane	75-00-3	1.00	U	2.00	1.00	0.500
Chloroform	67-66-3	0.250	U	1.00	0.250	0.125
Chloromethane	74-87-3	1.00	U	2.00	1.00	0.500
2-Chlorotoluene	95-49-8	0.250	U	1.00	0.250	0.125
4-Chlorotoluene	106-43-4	0.500	U	1.00	0.500	0.250
1,2-Dibromo-3-chloropropane	96-12-8	2.00	U	5.00	2.00	1.00
1,2-Dibromoethane	106-93-4	0.500	U	1.00	0.500	0.250
Dibromomethane	74-95-3	0.500	U	1.00	0.500	0.250
1,2-Dichlorobenzene	95-50-1	0.250	U	1.00	0.250	0.125
1,3-Dichlorobenzene	541-73-1	0.500	U	1.00	0.500	0.250
1,4-Dichlorobenzene	106-46-7	0.250	U	1.00	0.250	0.125
Dichlorodifluoromethane	75-71-8	0.500	U	1.00	0.500	0.250
1,1-Dichloroethane	75-34-3	0.250	U	1.00	0.250	0.125
1,2-Dichloroethane	107-06-2	0.500	U	1.00	0.500	0.250
1,1-Dichloroethene	75-35-4	1.00	U	2.00	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	0.500	U	1.00	0.500	0.250

Microbac

Lab Report #: L14081444
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
trans-1,2-Dichloroethene	156-60-5	0.500	U	1.00	0.500	0.250
1,2-Dichloropropane	78-87-5	0.400	U	1.00	0.400	0.200
1,3-Dichloropropane	142-28-9	0.400	U	1.00	0.400	0.200
2,2-Dichloropropane	594-20-7	0.500	U	1.00	0.500	0.250
cis-1,3-Dichloropropene	10061-01-5	0.500	U	1.00	0.500	0.250
trans-1,3-Dichloropropene	10061-02-6	1.00	U	2.00	1.00	0.500
1,1-Dichloropropene	563-58-6	0.500	U	1.00	0.500	0.250
Ethylbenzene	100-41-4	0.500	U	1.00	0.500	0.250
2-Hexanone	591-78-6	5.00	U	10.0	5.00	2.50
Hexachlorobutadiene	87-68-3	0.500	U	1.00	0.500	0.250
Isopropylbenzene	98-82-8	0.500	U	1.00	0.500	0.250
p-Isopropyltoluene	99-87-6	0.500	Q	1.00	0.500	0.250
4-Methyl-2-pentanone	108-10-1	5.00	U	10.0	5.00	2.50
Methylene chloride	75-09-2	0.500	U	1.00	0.500	0.250
Naphthalene	91-20-3	0.400	U	1.00	0.400	0.200
n-Propylbenzene	103-65-1	0.250	U	1.00	0.250	0.125
Styrene	100-42-5	0.250	U	1.00	0.250	0.125
1,1,1,2-Tetrachloroethane	630-20-6	0.500	U	1.00	0.500	0.250
1,1,2,2-Tetrachloroethane	79-34-5	0.400	U	1.00	0.400	0.200
Tetrachloroethene	127-18-4	0.500	U	1.00	0.500	0.250
Toluene	108-88-3	0.500	U	1.00	0.500	0.250
1,2,3-Trichlorobenzene	87-61-6	0.300	U	1.00	0.300	0.150
1,2,4-Trichlorobenzene	120-82-1	0.400	U	1.00	0.400	0.200
1,1,1-Trichloroethane	71-55-6	0.500	U	1.00	0.500	0.250
1,1,2-Trichloroethane	79-00-5	0.500	U	1.00	0.500	0.250
Trichloroethene	79-01-6	0.500	U	1.00	0.500	0.250
Trichlorofluoromethane	75-69-4	0.500	U	1.00	0.500	0.250
1,2,3-Trichloropropane	96-18-4	1.00	U	2.00	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6	0.500	Q	1.00	0.500	0.250
1,3,5-Trimethylbenzene	108-67-8	0.500	Q	1.00	0.500	0.250
Vinyl chloride	75-01-4	0.500	U	1.00	0.500	0.250
o-Xylene	95-47-6	0.500	U	1.00	0.500	0.250
m-,p-Xylene	179601-23-1	1.00	U	2.00	1.00	0.500

Surrogate	Recovery	Lower Limit	Upper Limit	Q
Dibromofluoromethane	93.2	85	115	
1,2-Dichloroethane-d4	89.0	70	120	
Toluene-d8	100	85	120	
4-Bromofluorobenzene	103	75	120	

Q	One or more quality control criteria failed. See narrative.

U	Analyte was not detected. The concentration is below the reported LOD.

Microbac

Lab Report #: L14081444
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

Dry weight correction:

Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

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Instrument Run Log

Instrument: HPMS8 Dataset: 010614
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 19
Method: 624 SOP: MSV10 Rev: 12
Method: 5030B/5030C/5035A SOP: PAT01 Rev: 16
Maintenance Log ID: 48746

Internal Standard: STD61796 Surrogate Standard: STD62125
CCV: STD61847 LCS: STD62148 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG458457, WG458459

Comments: MDLs, LOD, and LOQ all need reanalyzed for cyclohexanone, isobutanol and 1-butanol.

File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
8M393767	RINSE	NA	1	1		01/06/14 08:30
8M393770	WG458457-01 50NG BFB STD 8260	NA	1	1	STD62146	01/06/14 09:59
8M393771	WG458457-02 5ug/L APPIX STD	NA	1	1	STD61847	01/06/14 10:22
8M393772	WG458457-03 20 ug/L APPIX STD	NA	1	1	STD61847	01/06/14 11:00
8M393773	WG458457-04 50 ug/L APPIX STD	NA	1	1	STD61847	01/06/14 11:29
8M393774	WG458457-05 100 ug/L APPIX STD	NA	1	1	STD61847	01/06/14 12:00
8M393775	WG458457-06 200 ug/L APPIX STD	NA	1	1	STD61847	01/06/14 12:27
8M393776	WG458457-07 300 ug/L APPIX STD	NA	1	1	STD61847	01/06/14 12:55
8M393777	WG458457-08 400 ug/L APPIX STD	NA	1	1	STD61847	01/06/14 13:23
8M393778	WG458457-09 500 ug/L APPIX STD	NA	1	1	STD61847	01/06/14 13:52
8M393779	RINSE	NA	1	1		01/06/14 14:20
8M393780	WG458457-10 100ug/L APPIX ALT SOURC	NA	1	1	STD62148	01/06/14 14:48
8M393781	WG458459-01 BLANK 01/06	NA	1	1		01/06/14 15:16
8M393782	L14010001-01 2.5ug/L APPIX MDL	NA	1	1	STD61847	01/06/14 15:44
8M393783	L14010006-02 2.5ug/L APPIX MDL	NA	1	1	STD61847	01/06/14 16:12
8M393784	L14010006-03 2.5ug/L APPIX MDL	NA	1	1	STD61847	01/06/14 16:40
8M393785	L14010006-04 2.5ug/L APPIX MDL	NA	1	1	STD61847	01/06/14 17:08
8M393786	L14010006-05 2.5ug/L APPIX MDL	NA	1	1	STD61847	01/06/14 17:36
8M393787	L14010006-06 2.5ug/L APPIX MDL	NA	1	1	STD61847	01/06/14 18:04
8M393788	L14010006-07 2.5ug/L APPIX MDL	NA	1	1	STD61847	01/06/14 18:32
8M393789	L14010003-01 5ug/L APPIX LOQ	NA	1	1	STD61847	01/06/14 19:00
8M393790	WG458459-02 100ug/L APPIX P/A	NA	1	1	STD62148	01/06/14 19:28
8M393791	WG458459-03 100ug/L APPIX P/A	NA	1	1	STD62148	01/06/14 19:56
8M393792	WG458459-04 100ug/L APPIX P/A	NA	1	1	STD62148	01/06/14 20:24
8M393793	WG458459-05 100ug/L APPIX P/A	NA	1	1	STD62148	01/06/14 20:52

Comments

Seq.	Rerun	Dil.	Reason	Analytes
26				
File ID: 8M393782				
			Reported as both the first MDL and the LOD check.	

Approved: January 08, 2014

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Instrument Run Log

Instrument: HPMS8 Dataset: 081914

Analyst1: TMB Analyst2: NA

Method: 8260B/OVAP SOP: MSV01 Rev: 19/0

Method: 624 SOP: MSV10 Rev: 12

Method: 5030B/5030C/5035A/OVAP SOP: PAT01 Rev: 16/0

Maintenance Log ID: 51384

Internal Standard: STD65631 Surrogate Standard: STD65631

CCV: STD66052 LCS: STD66007 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA

Workgroups: WG488700; WG488701

Comments:

File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
8M399405	WG488700-01 50ng BFB STD 8260	NA	1	1	STD65934	08/19/14 08:24
8M399406	RINSE	NA	1	1		08/19/14 08:47
8M399407	WG488700-02 0.3ug/L STD 8260	NA	1	1	STD66052	08/19/14 09:19
8M399408	WG488700-03 0.4ug/L STD 8260	NA	1	1	STD66052	08/19/14 09:47
8M399409	WG488700-04 1ug/L STD 8260	NA	1	1	STD66052	08/19/14 10:16
8M399410	WG488700-05 2ug/L STD 8260	NA	1	1	STD66052	08/19/14 10:45
8M399411	WG488700-06 5ug/L STD 8260	NA	1	1	STD66052	08/19/14 11:14
8M399412	WG488700-07 20ug/L STD 8260	NA	1	1	STD66052	08/19/14 11:42
8M399413	WG488700-08 50ug/L STD 8260	NA	1	1	STD66052	08/19/14 12:11
8M399414	WG488700-09 100ug/L STD 8260	NA	1	1	STD66052	08/19/14 12:40
8M399415	WG488700-10 200ug/L STD 8260	NA	1	1	STD66052	08/19/14 13:08
8M399416	WG488700-11 300ug/L STD 8260	NA	1	1	STD66052	08/19/14 13:37
8M399417	RINSE	NA	1	1		08/19/14 14:07
8M399418	RINSE	NA	1	1		08/19/14 14:40
8M399419	WG488700-12 50ug/L ALT SRC STD 8260	NA	1	1	STD66007	08/19/14 15:09
8M399420	WG488988-01 50ng BFB STD 8260	NA	1	1	STD65934	08/19/14 15:35
8M399421	WG488988-01 50ng BFB STD 8260	NA	1	1	STD65934	08/19/14 15:49
8M399422	WG488988-02 50ug/L CCV STD 8260	NA	1	1	STD66052	08/19/14 16:13
8M399423	WG000000-01 100ug/L A9 CCV STD 8260	NA	1	1	STD65924	08/19/14 16:43
8M399424	WG488701-01 VBLK0819 BLANK STD 826	NA	1	1		08/19/14 17:11
8M399425	WG488701-02 20ug/L LCS STD 8260	NA	1	1	STD66007	08/19/14 17:41
8M399426	WG488701-03 20ug/L LCSDUP STD 8260	NA	1	1	STD66007	08/19/14 18:09
8M399427	L14080740-03 A 826-SPE TB	<2	1	1		08/19/14 18:38
8M399428	L14080649-03 A 826-LOW TB	<2	1	1		08/19/14 19:07
8M399429	L14080656-02 A 826-SPE TB	<2	1	1		08/19/14 19:36
8M399430	L14080761-04 A 826-LOW TB	<2	1	1		08/19/14 20:05
8M399431	L14080769-03 A 826-A9 TB	<2	1	1		08/19/14 20:34
8M399432	L14080940-01 A 826-SPE TB	<2	1	1		08/19/14 21:04
8M399433	L14080790-02 A 826-LOW TB	<2	1	1		08/19/14 21:33
8M399434	L14080900-03 A 826-LOW TB	<2	1	1		08/19/14 22:02
8M399435	L14080649-01 A 826-LOW	<2	1	1		08/19/14 22:31
8M399436	L14080769-01 A 826-A9	<2	1	1		08/19/14 23:01
8M399437	L14080769-02 A 826-A9	<2	1	1		08/19/14 23:29
8M399438	L14080900-02 A 826-LOW	<2	1	1		08/19/14 23:58

Approved: August 20, 2014

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Instrument Run Log

Instrument: HPMS8 Dataset: 081914

Analyst1: TMB Analyst2: NA

Method: 8260B/OVAP SOP: MSV01 Rev: 19/0

Method: 624 SOP: MSV10 Rev: 12

Method: 5030B/5030C/5035A/OVAP SOP: PAT01 Rev: 16/0

Maintenance Log ID: 51384

Internal Standard: STD65631 Surrogate Standard: STD65631

CCV: STD66052 LCS: STD66007 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA

Workgroups: WG488700; WG488701

Comments:

File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
8M399439	L14080656-01 A 10X 826-SPE	<2	1	10		08/20/14 00:27
8M399440	L14080940-02 A 200X 826-SPE	<2	1	200		08/20/14 00:56
8M399441	L14080940-03 A 200X 826-SPE	<2	1	200		08/20/14 01:26
8M399442	L14080740-01 A 2X 826-SPE	<2	1	2		08/20/14 01:54
8M399443	L14080740-02 A 826-SPE	<2	1	1		08/20/14 02:24
8M399444	L14080790-01 A 200X 826-LOW	5	1	200		08/20/14 02:53
8M399445	L14080890-01 A 826-BETX	5	1	1		08/20/14 03:21
8M399446	CCV	NA	1	1		08/20/14 03:50
8M399447	RINSE	NA	1	1		08/20/14 04:20
8M399448	RINSE	NA	1	1		08/20/14 04:49

Comments

Seq.	Rerun	Dil.	Reason	Analytes
16	X			
File ID: 8M399420				
	Tune failed, DNR.			
19				
File ID: 8M399423				
	Not needed, DNR.			
36	X	2000	Over Calibration Range	BENZENE, SS
File ID: 8M399440				
37	X	1	Analyzed too dilute	
File ID: 8M399441				
	DNR.			
40	X	200	Carry-over contamination	
File ID: 8M399444				
	Possible TCE carry over.			

Approved: August 20, 2014

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS8 Dataset: 082814

Analyst1: ADC Analyst2: FJB

Method: 8260B SOP: MSV01 Rev: 19

Method: 5030B/5030C/5035A SOP: PAT01 Rev: 16

Maintenance Log ID: 51511

Internal Standard: STD66144 Surrogate Standard: STD66144

CCV: STD66052 LCS: STD66007 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA

Workgroups: WG490300

Comments:

File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
8M399614	WG490299-01 50ng BFB STD 8260	NA	1	1	STD65934	08/28/14 13:31
8M399615	WG490299-01 50ng BFB STD 8260	NA	1	1	STD65934	08/28/14 13:46
8M399616	WG490299-01 50ng BFB STD 8260	NA	1	1	STD65934	08/28/14 14:14
8M399617	WG490299-01 50ng BFB STD 8260	NA	1	1	STD65934	08/28/14 14:39
8M399618	WG490299-01 50ng BFB STD 8260	NA	1	1	STD65934	08/28/14 15:55
8M399619	WG490299-02 50ug/L CCV STD 8260	NA	1	1	STD66052	08/28/14 16:18
8M399620	WGXXXXXX-01 100ug/L A9FOO CCV	NA	1	1	STDXXXXX	08/28/14 17:00
8M399621	WG490300-01 BLK08/27 8260	NA	1	1		08/28/14 17:29
8M399622	WG490300-02 20ug/L LCS STD 8260	NA	1	1	STD66007	08/28/14 17:57
8M399623	WG490300-03 20ug/L LCS DUP STD 8260	NA	1	1	STD66007	08/28/14 18:25
8M399624	L14081325-02 1000X 8260 M1	NA	7	500		08/28/14 18:54
8M399625	L14081443-01 100000X B 826-LOW D1	<2	1	100000		08/28/14 19:23
8M399626	L14081443-02 100000X B 826-LOW D1	<2	1	100000		08/28/14 19:51
8M399627	L14081444-02 TB A 826-LOW	<2	1	1		08/28/14 20:21
8M399628	L14081544-16 TB A 826-LOW	<2	1	1		08/28/14 20:50
8M399629	L14081443-06 TB B 826-LOW	<2	1	1		08/28/14 21:20
8M399630	L14081427-02 B 826-SPE	<2	1	1		08/28/14 21:49
8M399631	L14081427-03 B 826-SPE	<2	1	1		08/28/14 22:19
8M399632	L14081427-04 B 826-SPE	<2	1	1		08/28/14 22:47
8M399633	L14081443-03 B 826-LOW	<2	1	1		08/28/14 23:16
8M399634	L14081443-04 B 826-LOW	<2	1	1		08/28/14 23:46
8M399635	L14081443-05 B 826-LOW	<2	1	1		08/29/14 00:15
8M399636	L14081537-01 A 826-LOW	<2	1	1		08/29/14 00:44
8M399637	L14081537-03 A 826-LOW	<2	1	1		08/29/14 01:13
8M399638	L14081537-05 A 826-LOW	<2	1	1		08/29/14 01:42
8M399639	L14081537-07 A 826-LOW	<2	1	1		08/29/14 02:11
8M399640	L14081537-09 A 826-LOW	<2	1	1		08/29/14 02:40
8M399641	L14081442-01 A 826-SPE	<2	1	1		08/29/14 03:09
8M399642	L14081444-01 A 826-LOW	<2	1	1		08/29/14 03:38
8M399643	CCV	NA	1	1		08/29/14 04:07
8M399644	RINSE	NA	1	1		08/29/14 04:36
8M399645	RINSE	NA	1	1		08/29/14 05:06

Approved: September 02, 2014

Page: 1

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS8 Dataset: 082814

Analyst1: ADC Analyst2: FJB

Method: 8260B SOP: MSV01 Rev: 19

Method: 5030B/5030C/5035A SOP: PAT01 Rev: 16

Maintenance Log ID: 51511

Internal Standard: STD66144 Surrogate Standard: STD66144

CCV: STD66052 LCS: STD66007 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA

Workgroups: WG490300

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
2				
File ID: 8M399615				
	dnt rr - change septum			
4				
File ID: 8M399617				
	changed liner, o-ring, gold seal			
12	X	20000	Analyzed too dilute	
File ID: 8M399625				
	Use 100000X as D1.			
13	X	20000	Analyzed too dilute	
File ID: 8M399626				
	Use 100000 as D1.			

Approved: September 02, 2014

Microbac Laboratories Inc.

Data Checklist

Date: 06-JAN-2014
Analyst: MES
Analyst: NA
Method: 8260/624
Instrument: HPMS8
Curve Workgroup: NA
Runlog ID: 58151
Analytical Workgroups: WG458457, WG458459

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	NA
Second Source standard % Difference	X
Continuing Calibration /Check Standards	NA
Project/Client Specific Requirements	NA
Special Standards	X
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	NA
TCL Hits	NA
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	X
Manual Integrations	X
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	MES
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer: 07-JAN-2014

Secondary Reviewer: 08-JAN-2014

CHECKLIST1 - Modified 03/05/2008
Generated: JAN-08-2014 08:47:38

Microbac Laboratories Inc.

Data Checklist

Date: 19-AUG-2014
Analyst: TMB
Analyst: NA
Method: 8260B/624/OVAP
Instrument: HPMS8
Curve Workgroup: NA
Runlog ID: 62943
Analytical Workgroups: WG488700; WG488701

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	X
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	TMB
Surrogates	X
Internal Standards Criteria	X
Library Searches	X
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	NA
Manual Integrations	X
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
20-AUG-2014
Tiffany Bailey

Secondary Reviewer:
20-AUG-2014

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-21-2014 08:54:21

Microbac Laboratories Inc.

Data Checklist

Date: 28-AUG-2014
Analyst: ADC
Analyst: FJB
Method: 8260B
Instrument: HPMS8
Curve Workgroup: NA
Runlog ID: 63177
Analytical Workgroups: WG490300

System Performance Check	X
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	FJB
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	FJB
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer: 02-SEP-2014

Secondary Reviewer: 02-SEP-2014

CHECKLIST1 - Modified 03/05/2008
Generated: SEP-02-2014 12:16:14

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 8260B **AAB#:** WG490300

Login Number: L14081444

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
PW134-082414	01	08/24/14					08/29/2014	4.5	14		08/29/14	4.5	14	
TRIP BLANK	02	08/24/14					08/28/2014	4.8	14		08/28/14	4.8	14	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 3736183
Report generated 09/02/2014 15:17

Microbac Laboratories Inc.
SURROGATE STANDARDS

Login Number: L14081444 **Method:** 8260
Instrument Id: HPMS8 **CAL ID:** HPMS8-19-AUG-14
Workgroup (AAB#): WG490300 **Matrix:** Water

Sample Number	Dilution	Tag	1	2	3	4
L14081444-01	1.00	01	92.6	93.1	101	101
L14081444-02	1.00	01	89.0	93.2	103	100
WG490300-01	1.00	01	90.3	93.0	102	99.3
WG490300-02	1.00	01	89.2	94.2	98.5	100
WG490300-03	1.00	01	89.3	93.7	99.6	99.7

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	70	-	120
2 - Dibromofluoromethane	85	-	115
3 - 4-Bromofluorobenzene	75	-	120
4 - Toluene-d8	85	-	120

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 3736192
Report generated: 09/02/2014 15:17

METHOD BLANK SUMMARY

Login Number: L14081444
Blank File ID: 8M399621
Prep Date: 08/28/14 17:29
Analyzed Date: 08/28/14 17:29
Analyst: ADC

Work Group: WG490300
Blank Sample ID: WG490300-01
Instrument ID: HPMS8
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG490300-02	8M399622	08/28/14 17:57	01
LCS2	WG490300-03	8M399623	08/28/14 18:25	01
TRIP BLANK	L14081444-02	8M399627	08/28/14 20:21	01
PW134-082414	L14081444-01	8M399642	08/29/14 03:38	01

Report Name: BLANK_SUMMARY
PDF File ID: 3736184
Report generated 09/02/2014 15:17

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L14081444 Prep Date: 08/28/14 17:29 Sample ID: WG490300-01
Instrument ID: HPMS8 Run Date: 08/28/14 17:29 Prep Method: 5030B/5030C/503
File ID: 8M399621 Analyst: ADC Method: 8260B
Workgroup (AAB#): WG490300 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS8-19-AUG-14

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	2.00	0.500	1	U
Bromomethane	0.500	2.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	2.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	2.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	2.00	0.500	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	2.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	2.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.271	1	J
Isopropylbenzene	0.250	1.00	0.250	1	U

Report Name:BLANK
PDF ID: 3736185
02-SEP-2014 15:17

Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L14081444 Prep Date: 08/28/14 17:29 Sample ID: WG490300-01
Instrument ID: HPMS8 Run Date: 08/28/14 17:29 Prep Method: 5030B/5030C/503
File ID: 8M399621 Analyst: ADC Method: 8260B
Workgroup (AAB#): WG490300 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS8-19-AUG-14

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	1.00	0.250	1	U
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	2.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	2.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	93.0	85 - 115	PASS
1,2-Dichloroethane-d4	90.3	70 - 120	PASS
Toluene-d8	99.3	85 - 120	PASS
4-Bromofluorobenzene	102	75 - 120	PASS

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 3736185
02-SEP-2014 15:17

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L14081444 Analyst: ADC Prep Method: 5030B/5030C/503
Instrument ID: HPMS8 Matrix: Water Method: 8260B
Workgroup (AAB#): WG490300 Units: ug/L
QC Key: DOD4 Lot #: STD66007

Sample ID: WG490300-02 LCS File ID: 8M399622 Run Date: 08/28/2014 17:57
Sample ID: WG490300-03 LCS2 File ID: 8M399623 Run Date: 08/28/2014 18:25

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
1,1,1,2-Tetrachloroethane	20.0	19.7	98.3	20.0	20.5	103	4.28	80 - 130	30	
1,1,1-Trichloroethane	20.0	19.8	99.0	20.0	21.0	105	5.80	65 - 130	30	
1,1,2,2-Tetrachloroethane	20.0	19.9	99.3	20.0	21.1	105	5.84	65 - 130	30	
1,1,2-Trichloroethane	20.0	20.8	104	20.0	20.8	104	0.0890	75 - 125	30	
1,1-Dichloroethane	20.0	19.4	97.2	20.0	20.5	102	5.26	70 - 135	30	
1,1-Dichloroethene	20.0	18.6	93.0	20.0	19.7	98.7	6.00	70 - 130	30	
1,1-Dichloropropene	20.0	19.7	98.5	20.0	21.1	106	6.92	75 - 130	30	
1,2,3-Trichlorobenzene	20.0	19.1	95.7	20.0	20.9	105	8.90	55 - 140	30	
1,2,3-Trichloropropane	20.0	20.7	103	20.0	20.9	105	1.26	75 - 125	30	
1,2,4-Trichlorobenzene	20.0	20.5	102	20.0	21.3	106	3.88	65 - 135	30	
1,2,4-Trimethylbenzene	20.0	23.4	117	20.0	24.8	124	5.65	75 - 130	30	
1,2-Dibromo-3-chloropropane	20.0	18.9	94.7	20.0	19.7	98.7	4.18	50 - 130	30	
1,2-Dibromoethane	20.0	20.5	103	20.0	20.7	104	0.853	80 - 120	30	
1,2-Dichlorobenzene	20.0	19.7	98.4	20.0	20.6	103	4.36	70 - 120	30	
1,2-Dichloroethane	20.0	19.5	97.5	20.0	19.8	99.1	1.56	70 - 130	30	
1,2-Dichloropropane	20.0	19.3	96.6	20.0	19.9	99.4	2.81	75 - 125	30	
1,3,5-Trimethylbenzene	20.0	22.8	114	20.0	24.3	121	6.28	75 - 130	30	
1,3-Dichlorobenzene	20.0	19.8	98.9	20.0	20.9	105	5.59	75 - 125	30	
1,3-Dichloropropane	20.0	20.7	104	20.0	21.0	105	1.52	75 - 125	30	
1,4-Dichlorobenzene	20.0	21.0	105	20.0	22.2	111	5.61	75 - 125	30	
2,2-Dichloropropane	20.0	18.1	90.3	20.0	20.0	100	10.2	70 - 135	30	
2-Butanone	20.0	20.7	103	20.0	20.8	104	0.650	30 - 150	30	
2-Chlorotoluene	20.0	20.6	103	20.0	21.7	108	5.11	75 - 125	30	
2-Hexanone	20.0	19.4	96.8	20.0	19.9	99.5	2.76	55 - 130	30	
4-Chlorotoluene	20.0	19.5	97.5	20.0	20.5	103	5.26	75 - 130	30	
4-Methyl-2-pentanone	20.0	19.5	97.4	20.0	19.7	98.7	1.25	60 - 135	30	
Acetone	20.0	19.7	98.6	20.0	20.7	103	4.68	40 - 140	30	
Benzene	20.0	20.8	104	20.0	21.8	109	4.46	80 - 120	30	
Bromobenzene	20.0	20.5	103	20.0	21.3	107	3.73	75 - 125	30	
Bromochloromethane	20.0	19.5	97.6	20.0	20.3	101	3.84	65 - 130	30	
Bromodichloromethane	20.0	20.0	100	20.0	20.9	104	3.97	75 - 120	30	
Bromoform	20.0	20.7	104	20.0	20.7	104	0.0734	70 - 130	30	
Bromomethane	20.0	16.7	83.3	20.0	17.2	86.2	3.40	30 - 145	30	
Carbon disulfide	20.0	17.7	88.7	20.0	19.2	95.8	7.64	35 - 160	30	
Carbon tetrachloride	20.0	20.9	105	20.0	22.1	110	5.27	65 - 140	30	
Chlorobenzene	20.0	19.6	98.2	20.0	20.5	102	4.09	80 - 120	30	
Chloroethane	20.0	20.2	101	20.0	21.4	107	5.56	60 - 135	30	
Chloroform	20.0	20.0	99.9	20.0	21.0	105	5.00	65 - 135	30	
Chloromethane	20.0	20.2	101	20.0	21.8	109	7.67	40 - 125	30	
cis-1,2-Dichloroethene	20.0	20.2	101	20.0	20.8	104	3.32	70 - 125	30	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 3736187
Report generated: 09/02/2014 15:17

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L14081444 Analyst: ADC Prep Method: 5030B/5030C/503
Instrument ID: HPMS8 Matrix: Water Method: 8260B
Workgroup (AAB#): WG490300 Units: ug/L
QC Key: DOD4 Lot #: STD66007

Sample ID: WG490300-02 LCS File ID: 8M399622 Run Date: 08/28/2014 17:57
Sample ID: WG490300-03 LCS2 File ID: 8M399623 Run Date: 08/28/2014 18:25

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
cis-1,3-Dichloropropene	20.0	21.1	106	20.0	21.8	109	3.09	70 - 130	30	
Chlorodibromomethane	20.0	23.1	116	20.0	23.2	116	0.181	60 - 135	30	
Dibromomethane	20.0	20.1	100	20.0	20.4	102	1.39	75 - 125	30	
Dichlorodifluoromethane	20.0	29.6	148	20.0	31.7	158	6.78	30 - 155	30	*
Ethylbenzene	20.0	19.3	96.5	20.0	20.3	102	5.26	75 - 125	30	
Hexachlorobutadiene	20.0	17.6	88.2	20.0	19.5	97.3	9.87	50 - 140	30	
Isopropylbenzene	20.0	20.2	101	20.0	21.3	107	5.45	75 - 125	30	
m-,p-Xylene	40.0	41.2	103	40.0	43.2	108	4.70	75 - 130	30	
Methylene chloride	20.0	19.0	95.1	20.0	19.3	96.6	1.56	55 - 140	30	
n-Butylbenzene	20.0	22.2	111	20.0	23.9	120	7.62	70 - 135	30	
n-Propylbenzene	20.0	19.6	97.9	20.0	21.0	105	7.28	70 - 130	30	
Naphthalene	20.0	20.9	105	20.0	22.0	110	4.92	55 - 140	30	
o-Xylene	20.0	19.0	94.9	20.0	19.6	98.2	3.43	80 - 120	30	
p-Isopropyltoluene	20.0	20.6	103	20.0	22.1	110	7.02	75 - 130	30	
sec-Butylbenzene	20.0	19.6	98.0	20.0	21.0	105	7.12	70 - 125	30	
Styrene	20.0	21.8	109	20.0	22.5	113	3.09	65 - 135	30	
tert-Butylbenzene	20.0	18.1	90.7	20.0	19.3	96.3	6.01	70 - 130	30	
Tetrachloroethene	20.0	19.1	95.3	20.0	20.5	102	7.06	45 - 150	30	
Toluene	20.0	21.5	108	20.0	22.5	112	4.16	75 - 120	30	
trans-1,2-Dichloroethene	20.0	20.1	101	20.0	21.2	106	5.30	60 - 140	30	
trans-1,3-Dichloropropene	20.0	19.3	96.5	20.0	19.8	99.2	2.76	55 - 140	30	
Trichloroethene	20.0	20.6	103	20.0	21.3	107	3.36	70 - 125	30	
Trichlorofluoromethane	20.0	21.7	109	20.0	23.2	116	6.65	60 - 145	30	
Vinyl chloride	20.0	17.8	89.2	20.0	18.8	94.0	5.24	50 - 145	30	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	89.2	89.3	70 - 120	PASS
Dibromofluoromethane	94.2	93.7	85 - 115	PASS
4-Bromofluorobenzene	98.5	99.6	75 - 120	PASS
Toluene-d8	100	99.7	85 - 120	PASS

* EXCEEDS %REC LIMIT

\# EXCEEDS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 3736187
Report generated: 09/02/2014 15:17

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L14081444
Instrument: HPMS8
Analyst: MES
Workgroup: WG458457

Tune ID: WG458457-01
Run Date: 01/06/2014
Run Time: 09:59
File ID: 8M393770
Cal ID: HPMS8-06-JAN-14

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	21.3	8179	PASS
75.0	95.0	30.0	60.0	47.4	18190	PASS
95.0	95.0	100	100	100	38400	PASS
96.0	95.0	5.00	9.00	7.43	2855	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	84.6	32501	PASS
175	174	5.00	9.00	7.32	2380	PASS
176	174	95.0	101	96.2	31274	PASS
177	176	5.00	9.00	6.70	2096	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG458457-02	STD	01	01/06/2014 10:22	
WG458457-03	STD	01	01/06/2014 11:00	
WG458457-04	STD	01	01/06/2014 11:29	
WG458457-05	STD-CCV	01	01/06/2014 12:00	
WG458457-06	STD	01	01/06/2014 12:27	
WG458457-07	STD	01	01/06/2014 12:55	
WG458457-08	STD	01	01/06/2014 13:23	
WG458457-09	STD	01	01/06/2014 13:52	
WG458457-10	SSCV	01	01/06/2014 14:48	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 3736189
Report generated 09/02/2014 15:17

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L14081444
Instrument: HPMS8
Analyst: TMB
Workgroup: WG488700

Tune ID: WG488700-01
Run Date: 08/19/2014
Run Time: 08:24
File ID: 8M399405
Cal ID: HPMS8-19-AUG-14

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	25.2	10279	PASS
75.0	95.0	30.0	60.0	56.1	22874	PASS
95.0	95.0	100	100	100	40794	PASS
96.0	95.0	5.00	9.00	6.70	2733	PASS
173	174	0	2.00	0.821	224	PASS
174	95.0	50.0	100	66.9	27293	PASS
175	174	5.00	9.00	7.54	2059	PASS
176	174	95.0	101	95.3	26014	PASS
177	176	5.00	9.00	6.70	1744	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG488700-02	STD	01	08/19/2014 09:19	
WG488700-03	STD	01	08/19/2014 09:47	
WG488700-04	STD	01	08/19/2014 10:16	
WG488700-05	STD	01	08/19/2014 10:45	
WG488700-06	STD	01	08/19/2014 11:14	
WG488700-07	STD	01	08/19/2014 11:42	
WG488700-08	STD-CCV	01	08/19/2014 12:11	
WG488700-09	STD	01	08/19/2014 12:40	
WG488700-10	STD	01	08/19/2014 13:08	
WG488700-11	STD	01	08/19/2014 13:37	
WG488700-12	SSCV	01	08/19/2014 15:09	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 3736189
Report generated 09/02/2014 15:17

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L14081444
Instrument: HPMS8
Analyst: ADC
Workgroup: WG490299

Tune ID: WG490299-01
Run Date: 08/28/2014
Run Time: 15:55
File ID: 8M399618
Cal ID: HPMS8-19-AUG-14

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	22.9	6489	PASS
75.0	95.0	30.0	60.0	53.6	15204	PASS
95.0	95.0	100	100	100	28349	PASS
96.0	95.0	5.00	9.00	6.84	1940	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	66.1	18739	PASS
175	174	5.00	9.00	7.25	1359	PASS
176	174	95.0	101	100	18801	PASS
177	176	5.00	9.00	6.46	1214	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG490299-02	CCV	01	08/28/2014 16:18	
WG490300-01	BLANK	01	08/28/2014 17:29	
WG490300-02	LCS	01	08/28/2014 17:57	
WG490300-03	LCS2	01	08/28/2014 18:25	
L14081444-02	TRIP BLANK	01	08/28/2014 20:21	
L14081444-01	PW134-082414	01	08/29/2014 03:38	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 3736189
Report generated 09/02/2014 15:17

Calibration Table Report
Method: A9FOOWTR.M
Title: A9-FOO Water SOP:MSV01 01-06-14 HPMS8
Last Calibration: Tue Jan 07 08:20:19 2014
Curve:WG458457
Calibration Files

Compound	5 8M393771.D	20 8M393772.D	50 8M393773.D	100 8M393774.D	200 8M393775.D	300 8M393776.D	400 8M393777.D	500 8M393778.D	Avg	%RSD
Fluorobenzene	ISTD									
Acetonitrile	0.018	0.023	0.019	0.020	0.020	0.020	0.020	0.021	0.020	7.199
3-Chloro-1-propene	0.507	0.581	0.536	0.541	0.526	0.505	0.490	0.654	0.543	9.768
2-Chloro-1,3-butadiene	0.495	0.574	0.536	0.542	0.530	0.516	0.499	0.658	0.544	9.656
Ethyl Acetate	0.119	0.165	0.146	0.153	0.153	0.144	0.146	0.153	0.147	8.914
Methacrylonitrile	0.047	0.068	0.059	0.063	0.063	0.060	0.061	0.065	0.061	10.430
Isobutyl Alcohol		0.006	0.005	0.005	0.005	0.005	0.005	0.006	0.006	8.012
1-Butanol			0.003	0.003	0.003	0.003	0.003		0.003	10.353
Methyl methacrylate	0.134	0.189	0.160	0.168	0.168	0.158	0.159	0.170	0.163	9.483
2-Nitropropane	0.038	0.053	0.043	0.048	0.049	0.048	0.049	0.053	0.048	10.512
Chlorobenzene-d5	ISTD									
1,4-Dichlorobenzene-d4	ISTD									
Cyclohexanone			0.009	0.009	0.008	0.008	0.007	0.008	0.008	11.139

Wed Jan 08 09:06:48 2014

Calibration Table Report
Method: 8260WTR.M
Title: Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Calibration: Tue Aug 19 14:45:59 2014
Curve: WG488700
Calibration Files

	Compound	0.3 8M399407.D	0.4 8M399408.D	1 8M399409.D	2 8M399410.D	5 8M399411.D	20 8M399412.D	50 8M399413.D	100 8M399414.D	200 8M399415.D	300 8M399416.D	Avg	%RSD	Linear	Quad
I	Fluorobenzene	ISTD													
T	Dichlorodifluoromethane			0.215	0.202	0.193	0.229	0.228	0.220	0.225	0.208	0.215	6.124		
P	Chloromethane			0.643	0.574	0.552	0.603	0.557	0.501	0.427		0.551	12.728		
C	Vinyl Chloride		0.607	0.575	0.549	0.472	0.496	0.439	0.378	0.326		0.480	20.236		1.001
T	1,3-Butadiene			0.485	0.484	0.418	0.438	0.297	0.167	0.141		0.347	42.126		0.990
T	Bromomethane			0.208	0.187	0.165	0.175	0.169	0.170	0.186	0.186	0.181	7.866		
T	Chloroethane			0.171	0.181	0.167	0.192	0.190	0.188	0.200	0.194	0.185	6.285		
T	Trichlorofluoromethane		0.340	0.345	0.349	0.325	0.350	0.350	0.343	0.356	0.346	0.345	2.560		
T	Diethyl ether			0.138	0.141	0.135	0.150	0.152	0.154		0.166	0.148	7.410		
T	Isoprene					0.288	0.331	0.362	0.375	0.386	0.375	0.353	10.433		
T	Acrolein				0.001	0.001	0.002	0.002	0.002			0.002	32.330	0.998	
T	1,1,2-Trichloro-1,2,2-Trifluoroethane			0.195	0.190	0.175	0.205	0.214	0.212	0.228	0.223	0.205	8.748		
T	Acetone					0.025	0.029	0.030	0.032	0.031	0.032	0.030	8.695		
C	1,1-Dichloroethene		0.383	0.379	0.369	0.352	0.397	0.392	0.383	0.393	0.364	0.379	3.926		
T	Tert-Butyl Alcohol				0.010	0.009	0.010	0.009	0.009		0.010	0.009	4.999		
T	Dimethyl Sulfide				0.231	0.214	0.254	0.257	0.256	0.271	0.263	0.249	8.000		
T	Iodomethane			0.100	0.101	0.124	0.186	0.210	0.225	0.241	0.229	0.177	33.570		0.999
T	Methyl acetate				0.104	0.102	0.111	0.110	0.107	0.115	0.116	0.109	4.754		
T	Methylene Chloride			0.295	0.248	0.224	0.246	0.245	0.243	0.260	0.249	0.251	8.059		
T	Carbon Disulfide			0.818	0.745	0.714	0.796	0.796	0.747	0.665	0.558	0.730	11.719		
T	Acrylonitrile			0.037	0.045	0.042	0.049	0.052	0.052			0.046	12.888		
T	Methyl Tert Butyl Ether			0.418	0.421	0.395	0.476	0.478	0.458	0.479	0.439	0.445	7.238		
T	trans-1,2-Dichloroethene		0.376	0.356	0.358	0.341	0.396	0.400	0.390	0.395	0.349	0.373	6.075		
T	n-Hexane					0.346	0.368	0.379	0.370	0.382	0.359	0.367	3.598		
T	Diisopropyl ether			0.811	0.842	0.807	0.824	0.791	0.711		0.620	0.772	10.226		
T	Vinyl Acetate					0.214	0.241	0.246	0.239	0.236	0.223	0.233	5.160		
P	1,1-Dichloroethane		0.480	0.494	0.482	0.457	0.514	0.506	0.497	0.484	0.428	0.483	5.436		
T	Ethyl-Tert-Butyl ether			0.704	0.738	0.706	0.739	0.712	0.648		0.580	0.690	8.234		
T	2-Butanone					0.043	0.049	0.052	0.049	0.052	0.052	0.049	7.428		
T	Propionitrile				0.017	0.016	0.017	0.017	0.016		0.018	0.017	4.107		
T	2,2-Dichloropropane		0.405	0.429	0.396	0.370	0.434	0.433	0.427	0.435	0.404	0.415	5.391		
T	cis-1,2-Dichloroethene		0.270	0.258	0.253	0.244	0.278	0.275	0.273	0.287	0.272	0.268	4.973		
C	Chloroform	0.455	0.427	0.491	0.458	0.445	0.489	0.477	0.463	0.449	0.390	0.454	6.624		
T	1-Bromopropane			0.037	0.045	0.040	0.048	0.048	0.049	0.054	0.055	0.047	12.956		
T	Bromochloromethane		0.125	0.119	0.116	0.112	0.129	0.127	0.127	0.138	0.135	0.125	6.742		
T	Tetrahydrofuran			0.030	0.033	0.030	0.034	0.033	0.032		0.035	0.032	5.435		
S	Dibromofluoromethane			0.223	0.227	0.214	0.238	0.233	0.231	0.241	0.240	0.231	3.978		
T	1,1,1-Trichloroethane		0.394	0.393	0.369	0.365	0.412	0.417	0.425	0.447	0.413	0.404	6.542		
T	Cyclohexane			0.456	0.460	0.426	0.462	0.471	0.470	0.484	0.444	0.459	3.911		
T	1,1-Dichloropropene			0.365	0.348	0.331	0.374	0.372	0.364	0.371	0.335	0.358	4.807		
T	Tert-Amyl-Methyl ether			0.526	0.564	0.537	0.567	0.542	0.506		0.480	0.532	5.851		
T	Carbon Tetrachloride		0.228	0.289	0.291	0.277	0.314	0.324	0.339	0.352	0.35	0.3071	13.0659		
S	1,2-Dichloroethane-d4			0.267	0.256	0.234	0.263	0.257	0.25	0.259	0.252	0.2547	3.89659		
T	Heptane											0	0		
T	1,2-Dichloroethane		0.335	0.302	0.306	0.3	0.339	0.329	0.318	0.334	0.306	0.3187	4.96586		
T	Benzene		1.13	1.049	0.994	0.965	1.059	1.003	0.905	0.727		0.979	12.4532		
T	Trichloroethene		0.216	0.227	0.222	0.212	0.233	0.232	0.236	0.258	0.249	0.2317	6.41893		
T	Methylcyclohexane					0.379	0.4	0.399	0.399	0.412	0.387	0.3959	2.96241		
C	1,2-Dichloropropane		0.289	0.283	0.273	0.26	0.292	0.283	0.283	0.295	0.274	0.2813	3.83496		
T	Bromodichloromethane		0.325	0.318	0.303	0.297	0.342	0.342	0.338	0.348	0.313	0.3251	5.68953		
T	1,4-Dioxane				0.001	0.001	0.001	0.001	0.001		0.001	0.0011	13.0359		
T	Dibromomethane		0.099	0.126	0.119	0.113	0.13	0.127	0.126	0.14	0.136	0.124	9.98891		
T	2-Chloroethyl Vinyl Ether				0.095	0.093	0.11	0.114	0.111	0.121	0.119	0.1091	10.2081		
T	4-Methyl-2-Pentanone					0.041	0.05	0.051	0.049	0.054	0.053	0.0496	9.52341		
T	cis-1,3-Dichloropropene		0.364	0.369	0.347	0.35	0.404	0.4	0.392	0.387	0.334	0.372	6.79376		

T	Dimethyl Disulfide				0.14	0.142	0.218	0.274	0.314	0.362	0.337	0.2551	35.6293		0.996
I	Chlorobenzene-d5	ISTD													
S	Toluene-d8			1.304	1.278	1.206	1.332	1.264	1.264	1.167	1.016	1.2289	8.17246		
C	Toluene		1.556	1.599	1.55	1.504	1.639	1.527	1.36	0.998		1.4667	14.0668		
T	Ethyl Methacrylate			0.255	0.267	0.271	0.341	0.342	0.329	0.343	0.316	0.308	12.2004		
T	Paraldehyde											0	0		
T	trans-1,3-Dichloropropene			0.429	0.43	0.429	0.511	0.5	0.495	0.484	0.423	0.4627	8.26478		
T	1,1,2-Trichloroethane		0.203	0.207	0.218	0.212	0.248	0.234	0.232	0.246	0.239	0.2265	7.5066		
T	2-Hexanone					0.052	0.068	0.07	0.067	0.07	0.067	0.0658	10.2184		
T	1,3-Dichloropropane		0.389	0.408	0.416	0.404	0.455	0.438	0.429	0.423	0.383	0.416	5.54199		
T	Tetrachloroethene		0.27	0.26	0.251	0.246	0.266	0.263	0.275	0.305	0.304	0.271	7.69592		
T	Dibromochloromethane		0.206	0.205	0.201	0.203	0.253	0.26	0.268			0.228	13.4028		
T	1,2-Dibromoethane		0.224	0.191	0.189	0.191	0.228	0.222	0.221	0.23	0.222	0.2132	8.09699		
T	1-Chlorohexane		0.465	0.485	0.472	0.484	0.523	0.516	0.525	0.512	0.455	0.493	5.38574		
P	Chlorobenzene		1.025	0.916	0.877	0.871	0.977	0.964	0.976	0.836	0.661	0.9005	12.0582		
T	1,1,1,2-Tetrachloroethane		0.258	0.274	0.258	0.268	0.329	0.347	0.394	0.467		0.3244	23.4036		1.000
C	Ethylbenzene		0.517	0.498	0.493	0.491	0.557	0.574	0.632	0.646	0.552	0.5509	10.5774		
T	m-,p-Xylene		0.631	0.61	0.595	0.59	0.666	0.662	0.626	0.475		0.6069	9.92466		
T	o-Xylene			0.581	0.57	0.56	0.641	0.642	0.668	0.656	0.566	0.6105	7.38569		
T	Styrene		0.945	0.952	0.904	0.934	1.092	1.083	1.043	0.86	0.691	0.9448	13.1641		
P	Bromoform			0.089	0.088	0.098	0.129	0.14	0.148	0.17	0.171	0.1292	26.4241		1.000
T	Isopropylbenzene		1.51	1.565	1.488	1.47	1.632	1.555	1.381	1.012		1.4517	13.2613		
I	1,4-Dichlorobenzene-d4	ISTD													
P	1,1,2,2-Tetrachloroethane		0.455	0.457	0.458	0.455	0.573	0.526	0.484	0.507	0.464	0.4866	8.51304		
S	p-Bromofluorobenzene			1.055	0.943	0.923	1.023	0.968	0.963	0.995	0.951	0.9775	4.50508		
T	1,2,3-Trichloropropane			0.115	0.121	0.113	0.144	0.136	0.126	0.136	0.131	0.1278	8.43629		
T	trans-1,4-Dichloro-2-Butene			0.082	0.105	0.111	0.146	0.159	0.174	0.174	0.165	0.1395	25.2972	0.998	
T	n-Propylbenzene		4.168	4.216	4.228	4.062	4.394	3.906	3.094			4.0096	10.7447		
T	Bromobenzene	0.7	0.789	0.719	0.705	0.694	0.761	0.743	0.735	0.779	0.712	0.7337	4.5635		
T	1,3,5-Trimethylbenzene	2.486	2.526	2.584	2.56	2.476	2.771	2.669	2.393	1.827		2.477	10.8139		
T	2-Chlorotoluene		2.644	2.676	2.62	2.489	2.919	2.598	2.404	1.719		2.5087	14.0472		
T	4-Chlorotoluene		2.554	2.602	2.436	2.408	2.519	2.508	2.055			2.4403	7.46474		
T	a-Methylstyrene				1.223	1.221	1.495	1.514	1.486	1.359	1.128	1.3465	11.6746		
T	tert-Butylbenzene			0.49	0.49	0.475	0.539	0.545	0.564	0.632	0.627	0.5454	11.1069		
T	1,2,4-Trimethylbenzene		2.37	2.351	2.341	2.313	2.718	2.654	2.391	1.831		2.3713	11.2353		
T	sec-Butylbenzene		3.351	3.353	3.243	3.14	3.482	3.255	2.769			3.2276	7.09255		
T	p-Isopropyltoluene		2.434	2.45	2.406	2.325	2.685	2.58	2.344	1.787		2.3763	11.2168		
T	1,3-Dichlorobenzene		1.471	1.33	1.372	1.286	1.446	1.405	1.364	1.243	1.011	1.3252	10.421		
T	1,4-Dichlorobenzene	1.414	1.489	1.334	1.367	1.287	1.459	1.392	1.348	1.219	0.988	1.3298	10.8008		
T	n-Butylbenzene		2.401	2.428	2.34	2.245	2.631	2.524	2.276	1.715		2.3201	11.8643		
T	1,2-Dichlorobenzene	1.23	1.136	1.178	1.148	1.079	1.272	1.213	1.176	1.115	0.927	1.1473	8.33994		
T	1,2-Dibromo-3-Chloropropane				0.054	0.058	0.081	0.078	0.073	0.08	0.074	0.0714	15.2547	0.998	
T	1,2,4-Trichlorobenzene		0.42	0.431	0.433	0.417	0.56	0.566	0.597	0.66		0.5104	18.8188		
T	Hexachlorobutadiene		0.388	0.386	0.373	0.352	0.393	0.388	0.399	0.434	0.429	0.3936	6.49169		
T	Naphthalene		0.359	0.412	0.409	0.41	0.597	0.6	0.616	0.685		0.511	24.4973		1.000
T	1,2,3-Trichlorobenzene	0.274	0.187	0.252	0.258	0.259	0.351	0.355	0.366	0.394		0.2997	22.9699		1.000

Wed Aug 20 13:57:55 2014

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L14081444 Run Date: 08/19/2014 Sample ID: WG488700-12
Instrument ID: HPMS8 Run Time: 15:09 Method: 8260B
File ID: 8M399419 Analyst: TMB QC Key: DOD4
ICal Workgroup: WG488700 Cal ID: HPMS8 - 19-AUG-14

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	50.0	51.6	ug/L	0.469	3.20	20	
1,1-Dichloroethene	CCC	50.0	46.6	ug/L	0.353	6.80	20	
1,2-Dichloropropane	CCC	50.0	50.2	ug/L	0.283	0.400	20	
Ethylbenzene	CCC	50.0	52.3	ug/L	0.576	4.60	20	
Toluene	CCC	50.0	51.1	ug/L	1.50	2.20	20	
Vinyl Chloride	CCC	50.0	42.4	ug/L	0.373	15.2	20	
Bromoform	SPCC	50.0	47.7	ug/L	0.136	4.60	20	
Chlorobenzene	SPCC	50.0	50.6	ug/L	0.911	1.10	20	
Chloromethane	SPCC	50.0	45.9	ug/L	0.506	8.20	20	
1,1-Dichloroethane	SPCC	50.0	50.1	ug/L	0.483	0.100	20	
1,1,2,2-Tetrachloroethane	SPCC	50.0	50.3	ug/L	0.490	0.600	20	
Acetone		50.0	53.8	ug/L	0.0320	7.60	20	
Benzene		50.0	50.9	ug/L	0.997	1.90	20	
Bromobenzene		50.0	50.8	ug/L	0.745	1.60	20	
Bromochloromethane		50.0	47.9	ug/L	0.120	4.10	20	
Bromodichloromethane		50.0	52.8	ug/L	0.344	5.70	20	
Bromomethane		50.0	48.1	ug/L	0.174	3.90	20	
2-Butanone		50.0	53.6	ug/L	0.0530	7.20	20	
n-Butylbenzene		50.0	56.9	ug/L	2.64	13.8	20	
sec-Butylbenzene		50.0	49.3	ug/L	3.18	1.40	20	
tert-Butylbenzene		50.0	48.4	ug/L	0.528	3.30	20	
Carbon Disulfide		50.0	52.6	ug/L	0.767	5.10	20	
Carbon Tetrachloride		50.0	52.5	ug/L	0.323	5.10	20	
Dibromochloromethane		50.0	56.7	ug/L	0.259	13.4	20	
Chloroethane		50.0	49.4	ug/L	0.183	1.10	20	
2-Chlorotoluene		50.0	49.5	ug/L	2.48	1.00	20	
4-Chlorotoluene		50.0	49.8	ug/L	2.43	0.400	20	
1,2-Dibromo-3-Chloropropane		50.0	46.5	ug/L	0.0704	7.00	20	
1,2-Dibromoethane		50.0	49.4	ug/L	0.211	1.30	20	
Dibromomethane		50.0	50.0	ug/L	0.124	0.100	20	
1,2-Dichlorobenzene		50.0	49.4	ug/L	1.13	1.20	20	
1,3-Dichlorobenzene		50.0	50.0	ug/L	1.32	0.100	20	
1,4-Dichlorobenzene		50.0	53.1	ug/L	1.41	6.30	20	
Dichlorodifluoromethane		50.0	51.1	ug/L	0.220	2.30	20	
1,2-Dichloroethane		50.0	49.8	ug/L	0.318	0.400	20	
cis-1,2-Dichloroethene		50.0	49.8	ug/L	0.267	0.500	20	
trans-1,2-Dichloroethene		50.0	52.2	ug/L	0.390	4.30	20	
1,3-Dichloropropane		50.0	50.5	ug/L	0.420	0.900	20	
2,2-Dichloropropane		50.0	50.5	ug/L	0.419	0.900	20	
cis-1,3-Dichloropropene		50.0	55.3	ug/L	0.411	10.5	20	
trans-1,3-Dichloropropene		50.0	49.4	ug/L	0.457	1.20	20	
1,1-Dichloropropene		50.0	50.7	ug/L	0.362	1.40	20	

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 3736188
Report generated 09/02/2014 15:17

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L14081444 Run Date: 08/19/2014 Sample ID: WG488700-12
Instrument ID: HPMS8 Run Time: 15:09 Method: 8260B
File ID: 8M399419 Analyst: TMB QC Key: DOD4
ICal Workgroup: WG488700 Cal ID: HPMS8 - 19-AUG-14

Analyte		Expected	Found	Units	RF	%D	UCL	Q
2-Hexanone		50.0	50.6	ug/L	0.0666	1.20	20	
Hexachlorobutadiene		50.0	51.6	ug/L	0.406	3.10	20	
Isopropylbenzene		50.0	50.7	ug/L	1.47	1.30	20	
p-Isopropyltoluene		50.0	52.6	ug/L	2.50	5.20	20	
4-Methyl-2-Pentanone		50.0	51.7	ug/L	0.0513	3.40	20	
Methylene Chloride		50.0	46.6	ug/L	0.234	6.80	20	
Naphthalene		50.0	47.3	ug/L	0.555	5.50	20	
n-Propylbenzene		50.0	46.7	ug/L	3.74	6.60	20	
Styrene		50.0	56.5	ug/L	1.07	13.1	20	
1,1,1,2-Tetrachloroethane		50.0	48.9	ug/L	0.341	2.20	20	
Tetrachloroethene		50.0	47.2	ug/L	0.256	5.60	20	
1,2,3-Trichlorobenzene		50.0	47.4	ug/L	0.331	5.10	20	
1,2,4-Trichlorobenzene		50.0	49.0	ug/L	0.551	2.00	20	
1,1,1-Trichloroethane		50.0	51.4	ug/L	0.415	2.80	20	
1,1,2-Trichloroethane		50.0	50.0	ug/L	0.227	0.100	20	
Trichloroethene		50.0	50.0	ug/L	0.232	0	20	
Trichlorofluoromethane		50.0	51.9	ug/L	0.358	3.90	20	
1,2,3-Trichloropropane		50.0	49.7	ug/L	0.127	0.500	20	
1,2,4-Trimethylbenzene		50.0	57.9	ug/L	2.75	15.8	20	
1,3,5-Trimethylbenzene		50.0	56.7	ug/L	2.81	13.5	20	
o-Xylene		50.0	48.8	ug/L	0.596	2.40	20	
m-,p-Xylene		100	106	ug/L	0.645	6.30	20	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 3736188
Report generated 09/02/2014 15:17

Login Number: L14081444 Run Date: 08/28/2014 Sample ID: WG490299-02
Instrument ID: HPMS8 Run Time: 16:18 Method: 8260B
File ID: 8M399619 Analyst: ADC QC Key: DOD4
Workgroup (AAB#): WG490300 Cal ID: HPMS8 - 19-AUG-14
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	52.2	ug/L	0.474	4.40	20	
1,1-Dichloroethene	CCC	50.0	51.6	ug/L	0.392	3.25	20	
1,2-Dichloropropane	CCC	50.0	49.5	ug/L	0.279	0.936	20	
Ethylbenzene	CCC	50.0	55.0	ug/L	0.606	9.93	20	
Toluene	CCC	50.0	55.0	ug/L	1.61	10.0	20	
Vinyl Chloride	CCC	50.0	42.2	ug/L	0.371	15.6	20	
Bromoform	SPCC	50.0	50.5	ug/L	0.145	1.08	20	
Chlorobenzene	SPCC	50.0	56.1	ug/L	1.01	12.1	20	
Chloromethane	SPCC	50.0	41.9	ug/L	0.462	16.1	20	
1,1-Dichloroethane	SPCC	50.0	52.2	ug/L	0.503	4.32	20	
1,1,2,2-Tetrachloroethane	SPCC	50.0	50.3	ug/L	0.490	0.692	20	
Xylenes		150	170	ug/L	0.687	13.5	20	
Acetone		50.0	52.6	ug/L	0.0313	5.17	20	
Benzene		50.0	52.3	ug/L	1.02	4.56	20	
Bromobenzene		50.0	54.3	ug/L	0.797	8.57	20	
Bromochloromethane		50.0	50.6	ug/L	0.127	1.26	20	
Bromodichloromethane		50.0	51.8	ug/L	0.337	3.56	20	
Bromomethane		50.0	40.0	ug/L	0.145	19.9	20	
2-Butanone		50.0	48.4	ug/L	0.0479	3.20	20	
n-Butylbenzene		50.0	61.5	ug/L	2.85	23.0	20	*
sec-Butylbenzene		50.0	55.7	ug/L	3.60	11.4	20	
tert-Butylbenzene		50.0	55.1	ug/L	0.601	10.2	20	
Carbon Disulfide		50.0	56.0	ug/L	0.817	12.0	20	
Carbon Tetrachloride		50.0	57.1	ug/L	0.351	14.1	20	
Dibromochloromethane		50.0	58.5	ug/L	0.267	17.0	20	
Chloroethane		50.0	50.3	ug/L	0.187	0.676	20	
2-Chlorotoluene		50.0	58.3	ug/L	2.92	16.5	20	
4-Chlorotoluene		50.0	53.3	ug/L	2.60	6.55	20	
1,2-Dibromo-3-Chloropropane		50.0	46.5	ug/L	0.0704	7.03	20	
1,2-Dibromoethane		50.0	51.3	ug/L	0.219	2.61	20	
Dibromomethane		50.0	48.6	ug/L	0.121	2.79	20	
1,2-Dichlorobenzene		50.0	54.8	ug/L	1.26	9.66	20	
1,3-Dichlorobenzene		50.0	56.8	ug/L	1.50	13.5	20	
1,4-Dichlorobenzene		50.0	55.8	ug/L	1.48	11.5	20	
Dichlorodifluoromethane		50.0	48.3	ug/L	0.208	3.42	20	
1,2-Dichloroethane		50.0	47.6	ug/L	0.303	4.83	20	
cis-1,2-Dichloroethene		50.0	52.6	ug/L	0.282	5.11	20	
trans-1,2-Dichloroethene		50.0	53.1	ug/L	0.397	6.28	20	
1,3-Dichloropropane		50.0	50.2	ug/L	0.418	0.388	20	
2,2-Dichloropropane		50.0	51.4	ug/L	0.427	2.84	20	
cis-1,3-Dichloropropene		50.0	52.2	ug/L	0.388	4.41	20	
trans-1,3-Dichloropropene		50.0	51.6	ug/L	0.477	3.17	20	

CCV - Modified 03/05/2008
PDF File ID: 3736190
Report generated 09/02/2014 15:17

Login Number: L14081444 Run Date: 08/28/2014 Sample ID: WG490299-02
Instrument ID: HPMS8 Run Time: 16:18 Method: 8260B
File ID: 8M399619 Analyst: ADC QC Key: DOD4
Workgroup (AAB#): WG490300 Cal ID: HPMS8 - 19-AUG-14
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	52.2	ug/L	0.373	4.37	20	
2-Hexanone		50.0	46.7	ug/L	0.0615	6.52	20	
Hexachlorobutadiene		50.0	50.3	ug/L	0.396	0.633	20	
Isopropylbenzene		50.0	56.9	ug/L	1.65	13.7	20	
p-Isopropyltoluene		50.0	60.9	ug/L	2.89	21.8	20	*
4-Methyl-2-Pentanone		50.0	45.9	ug/L	0.0456	8.14	20	
Methylene Chloride		50.0	48.4	ug/L	0.243	3.18	20	
Naphthalene		50.0	54.1	ug/L	0.641	8.30	20	
n-Propylbenzene		50.0	53.9	ug/L	4.32	7.79	20	
Styrene		50.0	58.9	ug/L	1.11	17.8	20	
1,1,1,2-Tetrachloroethane		50.0	51.3	ug/L	0.360	2.65	20	
Tetrachloroethene		50.0	53.6	ug/L	0.291	7.22	20	
1,2,3-Trichlorobenzene		50.0	52.4	ug/L	0.368	4.80	20	
1,2,4-Trichlorobenzene		50.0	54.4	ug/L	0.616	8.87	20	
1,1,1-Trichloroethane		50.0	53.9	ug/L	0.435	7.73	20	
1,1,2-Trichloroethane		50.0	50.5	ug/L	0.229	0.950	20	
Trichloroethene		50.0	53.6	ug/L	0.248	7.10	20	
Trichlorofluoromethane		50.0	52.1	ug/L	0.359	4.23	20	
1,2,3-Trichloropropane		50.0	50.4	ug/L	0.129	0.776	20	
1,2,4-Trimethylbenzene		50.0	63.0	ug/L	2.99	26.0	20	*
1,3,5-Trimethylbenzene		50.0	60.2	ug/L	2.98	20.4	20	*
o-Xylene		50.0	55.5	ug/L	0.677	11.0	20	
m-,p-Xylene		100	115	ug/L	0.696	14.7	20	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 3736190
Report generated 09/02/2014 15:17

Microbac Laboratories Inc.
INTERNAL STANDARD AREA SUMMARY
(COMPARED TO MIDPOINT OF ICAL)

Login Number: L14081444
Instrument ID: HPMS8
Workgroup (AAB#): WG490300

ICAL CCV Number: WG488700-08
CAL ID: HPMS8-19-AUG-14
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG488700-08	NA	NA	327810	657389	958223
Upper Limit	NA	NA	655620	1314778	1916446
Lower Limit	NA	NA	163905	328695	479112
L14081444-01	1.00	01	178575	392934	590203
L14081444-02	1.00	01	236407	519067	765341
WG490300-01	1.00	01	258996	562748	823659
WG490300-02	1.00	01	276742	573990	849139
WG490300-03	1.00	01	272713	579031	852427

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_ICAL - Modified 03/06/2008
PDF File ID: 3736191
Report generated 09/02/2014 15:17

Microbac Laboratories Inc.
INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO MIDPOINT OF ICAL)

Login Number: L14081444
Instrument ID: HPMS8
Workgroup (AAB#): WG490300

ICAL CCV Number: WG488700-08
CAL ID: HPMS8-19-AUG-14
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG488700-08	NA	NA	17.79	14.77	10.9
Upper Limit	NA	NA	18.29	15.27	11.4
Lower Limit	NA	NA	17.29	14.27	10.4
L14081444-01	1.00	01	17.79	14.77	10.9
L14081444-02	1.00	01	17.79	14.77	10.9
WG490300-01	1.00	01	17.79	14.77	10.9
WG490300-02	1.00	01	17.79	14.77	10.9
WG490300-03	1.00	01	17.79	14.77	10.9

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT_ICAL - Modified 03/06/2008
PDF File ID: 3736193
Report generated: 09/02/2014 15:17

2.1.1.3 Sample Data

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\082814\8M399642.D Vial: 25
Acq On : 29 Aug 2014 3:38 Operator: ADC
Sample : L14081444-01 A 826-LOW Inst : HPMS8
Misc : 1,1 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 02 09:34:28 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

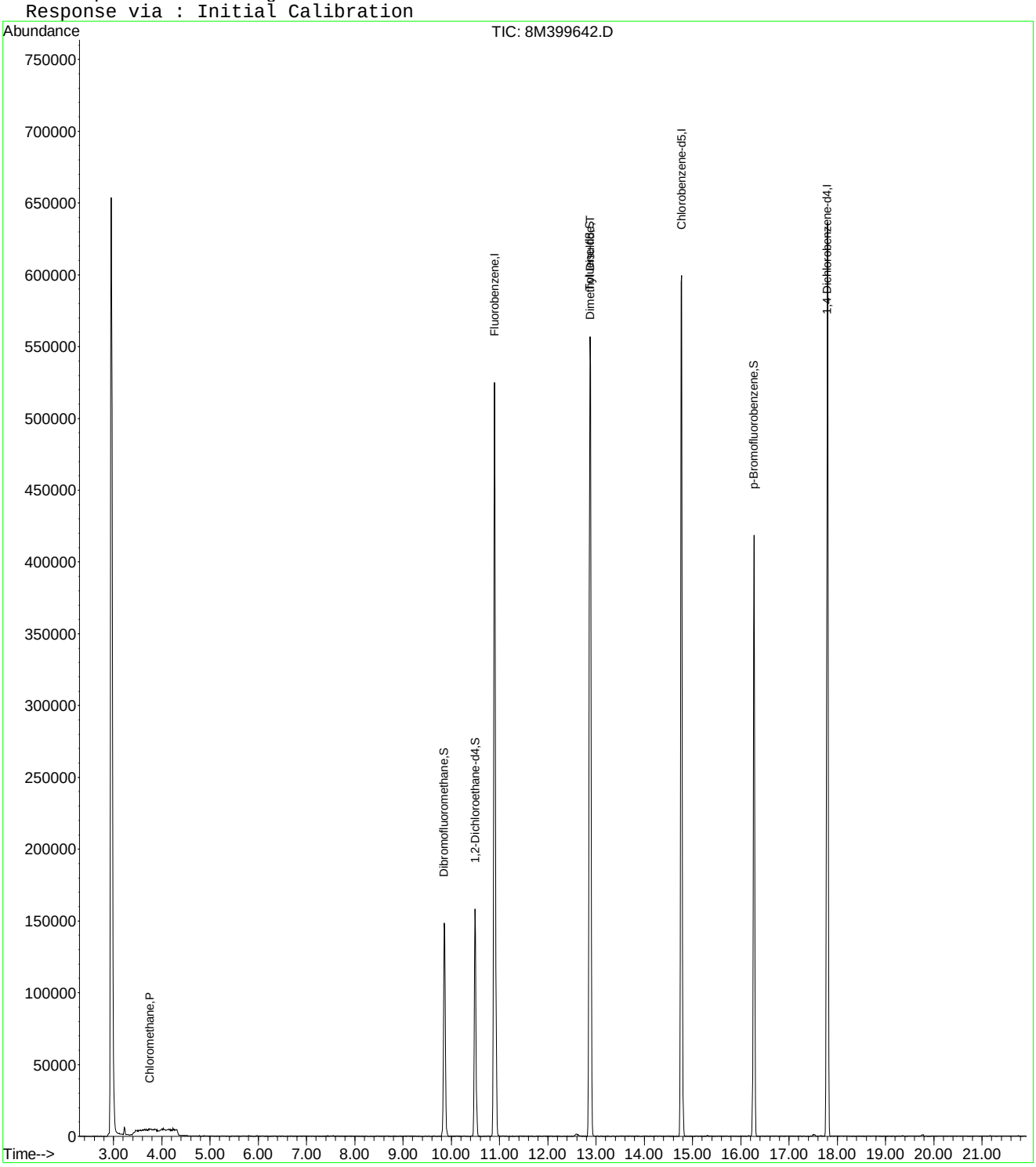
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.90	96	590203	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.77	117	392934	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.79	152	178575	25.00	ug/L	0.00
System Monitoring Compounds						
37) Dibromofluoromethane	9.85	111	126852	23.2782	ug/L	0.00
Spiked Amount 25.000	Range 86 - 118		Recovery = 93.12%			
43) 1,2-Dichloroethane-d4	10.49	65	139263	23.1561	ug/L	0.00
Spiked Amount 25.000	Range 80 - 120		Recovery = 92.64%			
58) Toluene-d8	12.87	98	489174	25.3265	ug/L	0.00
Spiked Amount 25.000	Range 88 - 110		Recovery = 101.32%			
80) p-Bromofluorobenzene	16.27	95	176952	25.3428	ug/L	0.00
Spiked Amount 25.000	Range 86 - 115		Recovery = 101.36%			
Target Compounds						Qvalue
3) Chloromethane	3.75	50	1778	0.1367	ug/L #	62
56) Dimethyl Disulfide	12.88	94	13911	3.7807	ug/L #	26

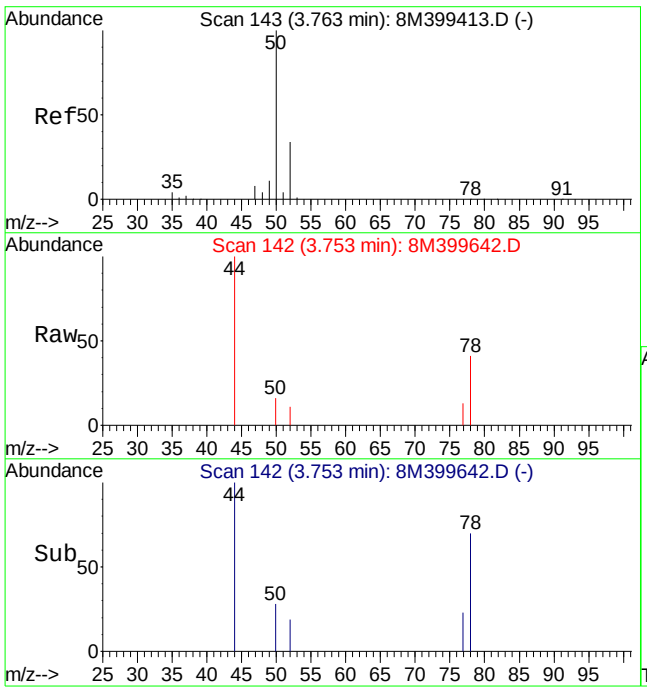
(#) = qualifier out of range (m) = manual integration
8M399642.D 8260WTR.M Tue Sep 02 09:34:28 2014 Page 1

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\082814\8M399642.D Vial: 25
Acq On : 29 Aug 2014 3:38 Operator: ADC
Sample : L14081444-01 A 826-LOW Inst : HPMS8
Misc : 1,1 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 2 9:34 2014 Quant Results File: 8260WTR.RES

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration

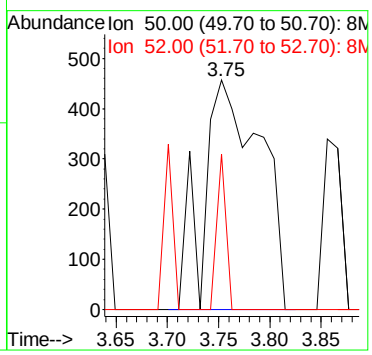


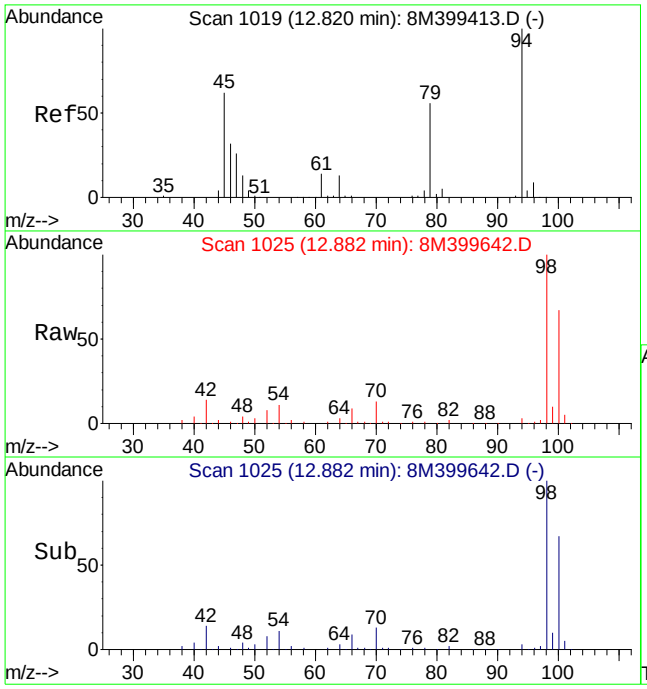


#3
Chloromethane
Concen: 0.14 ug/L
RT: 3.75 min Scan# 142
Delta R.T. -0.01 min
Lab File: 8M399642.D
Acq: 29 Aug 2014 3:38

Tgt Ion: 50 Resp: 1778

Ion	Ratio	Lower	Upper
50	100		
52	11.5	20.0	46.6#

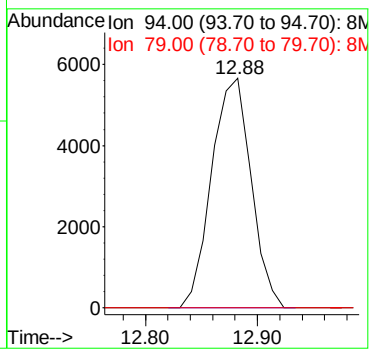




#56
Dimethyl Disulfide
Concen: 3.78 ug/L
RT: 12.88 min Scan# 1025
Delta R.T. 0.06 min
Lab File: 8M399642.D
Acq: 29 Aug 2014 3:38

Tgt Ion: 94 Resp: 13911

Ion	Ratio	Lower	Upper
94	100		
79	0.0	31.3	72.9#



Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\082814\8M399627.D Vial: 10
Acq On : 28 Aug 2014 20:21 Operator: ADC
Sample : L14081444-02 TB A 826-LOW Inst : HPMS8
Misc : 1,1 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 02 09:34:06 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

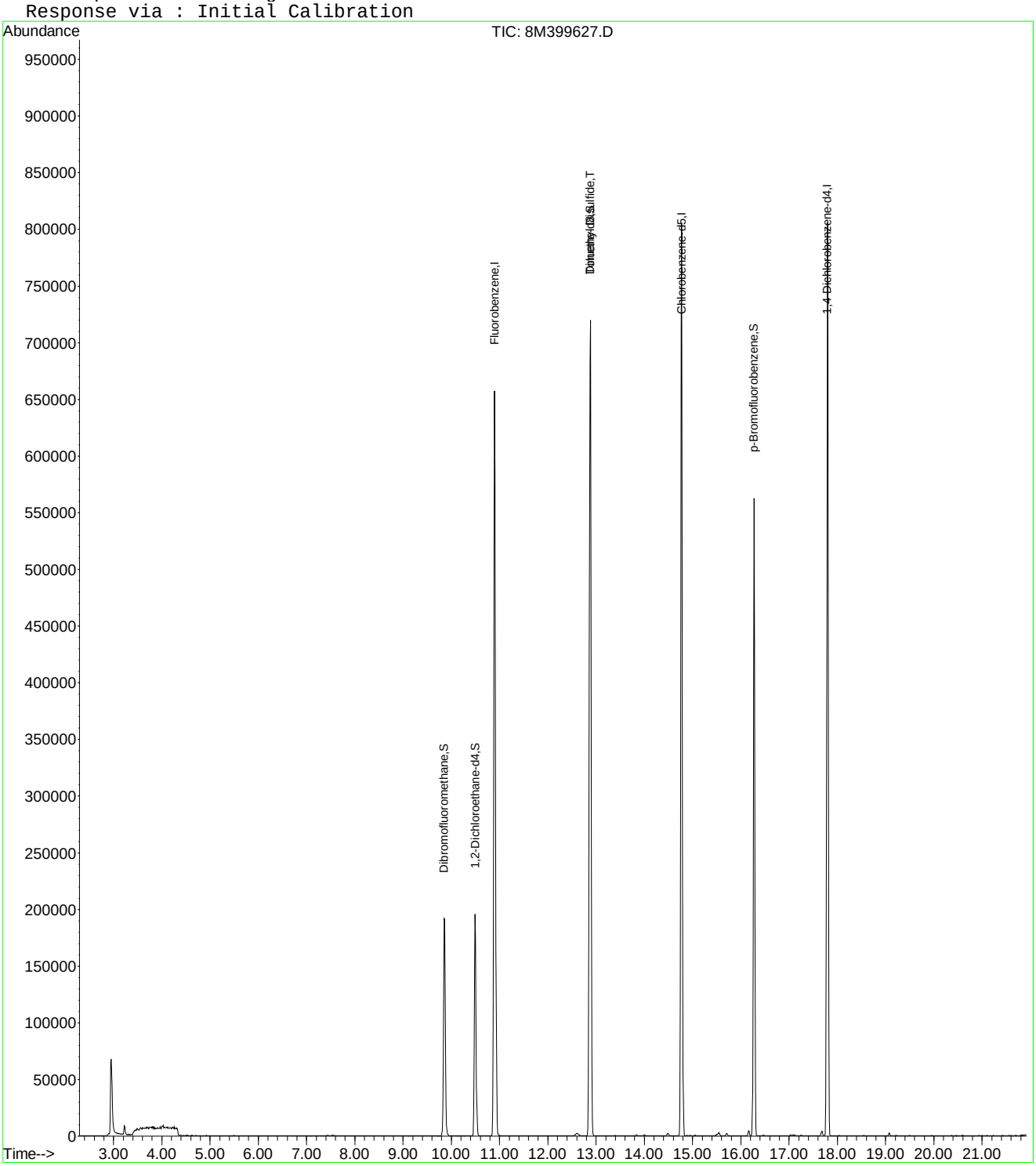
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.90	96	765341	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.77	117	519067	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.79	152	236407	25.00	ug/L	0.00
System Monitoring Compounds						
37) Dibromofluoromethane	9.85	111	164662	23.3020	ug/L	0.00
Spiked Amount 25.000	Range 86 - 118		Recovery = 93.20%			
43) 1,2-Dichloroethane-d4	10.49	65	173546	22.2531	ug/L	0.00
Spiked Amount 25.000	Range 80 - 120		Recovery = 89.00%			
58) Toluene-d8	12.88	98	639032	25.0455	ug/L	0.00
Spiked Amount 25.000	Range 88 - 110		Recovery = 100.20%			
80) p-Bromofluorobenzene	16.27	95	238149	25.7637	ug/L	0.00
Spiked Amount 25.000	Range 86 - 115		Recovery = 103.04%			
Target Compounds						Qvalue
56) Dimethyl Disulfide	12.88	94	18815	3.8647	ug/L #	26

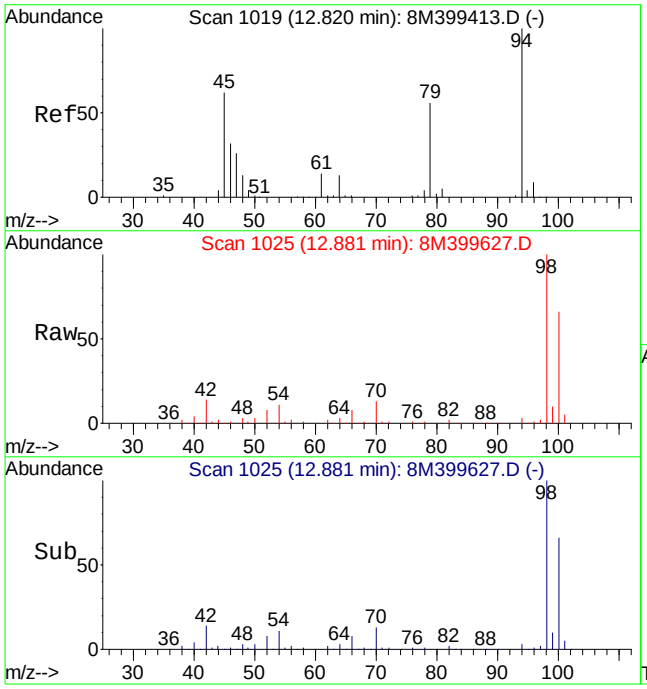
(#) = qualifier out of range (m) = manual integration
8M399627.D 8260WTR.M Tue Sep 02 09:34:07 2014 Page 1

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\082814\8M399627.D Vial: 10
Acq On : 28 Aug 2014 20:21 Operator: ADC
Sample : L14081444-02 TB A 826-LOW Inst : HPMS8
Misc : 1,1 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 2 9:34 2014 Quant Results File: 8260WTR.RES

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration

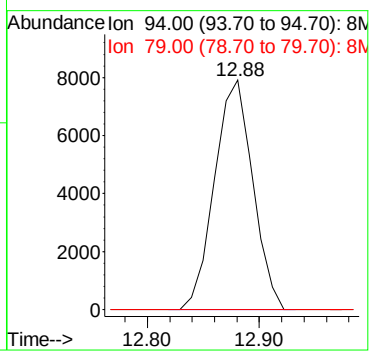




#56
Dimethyl Disulfide
Concen: 3.86 ug/L
RT: 12.88 min Scan# 1025
Delta R.T. 0.06 min
Lab File: 8M399627.D
Acq: 28 Aug 2014 20:21

Tgt Ion: 94 Resp: 18815

Ion	Ratio	Lower	Upper
94	100		
79	0.0	31.3	72.9#



2.1.1.4 Standards Data

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\010614\8M393771.D Vial: 2
Acq On : 6 Jan 2014 10:22 Operator: MES
Sample : WG458457-02 5ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 06 11:27:59 2014 Quant Results File: A9FOOWTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 11:27:49 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

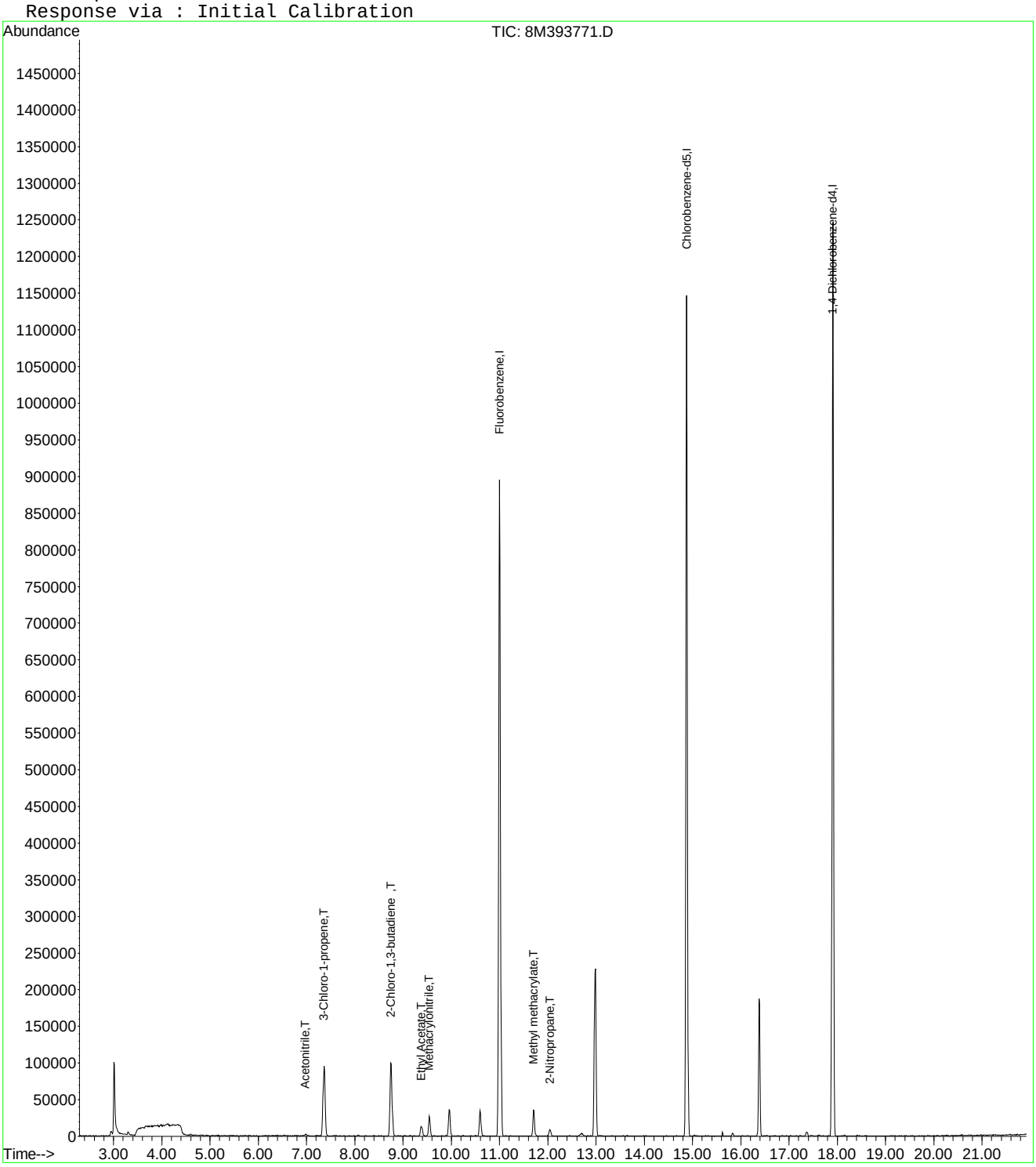
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	11.00	96	1053772	25.00	ug/L	-0.05
11) Chlorobenzene-d5	14.88	117	799421	25.00	ug/L	-0.05
12) 1,4-Dichlorobenzene-d4	17.91	152	421409	25.00	ug/L	-0.04
Target Compounds						Qvalue
2) Acetonitrile	6.98	41	3745	3.9007	ug/L	# 1
3) 3-Chloro-1-propene	7.36	41	106748	5.4601	ug/L	94
4) 2-Chloro-1,3-butadiene	8.75	53	104305	5.5400	ug/L	88
5) Ethyl Acetate	9.38	43	25141	3.5552	ug/L	92
6) Methacrylonitrile	9.54	67	9871	3.3941	ug/L	93
9) Methyl methacrylate	11.70	41	28166	3.8349	ug/L	92
10) 2-Nitropropane	12.04	43	8024	3.5876	ug/L	98

(#) = qualifier out of range (m) = manual integration
8M393771.D A9FOOWTR.M Mon Jan 06 11:29:44 2014 Page 1

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\010614\8M393771.D Vial: 2
Acq On : 6 Jan 2014 10:22 Operator: MES
Sample : WG458457-02 5ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 6 11:29 2014 Quant Results File: A9FOOWTR.RES

Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 11:29:06 2014
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\010614\8M393772.D Vial: 3
Acq On : 6 Jan 2014 11:00 Operator: MES
Sample : WG458457-03 20 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 06 11:28:04 2014 Quant Results File: A9FOOWTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 11:27:49 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

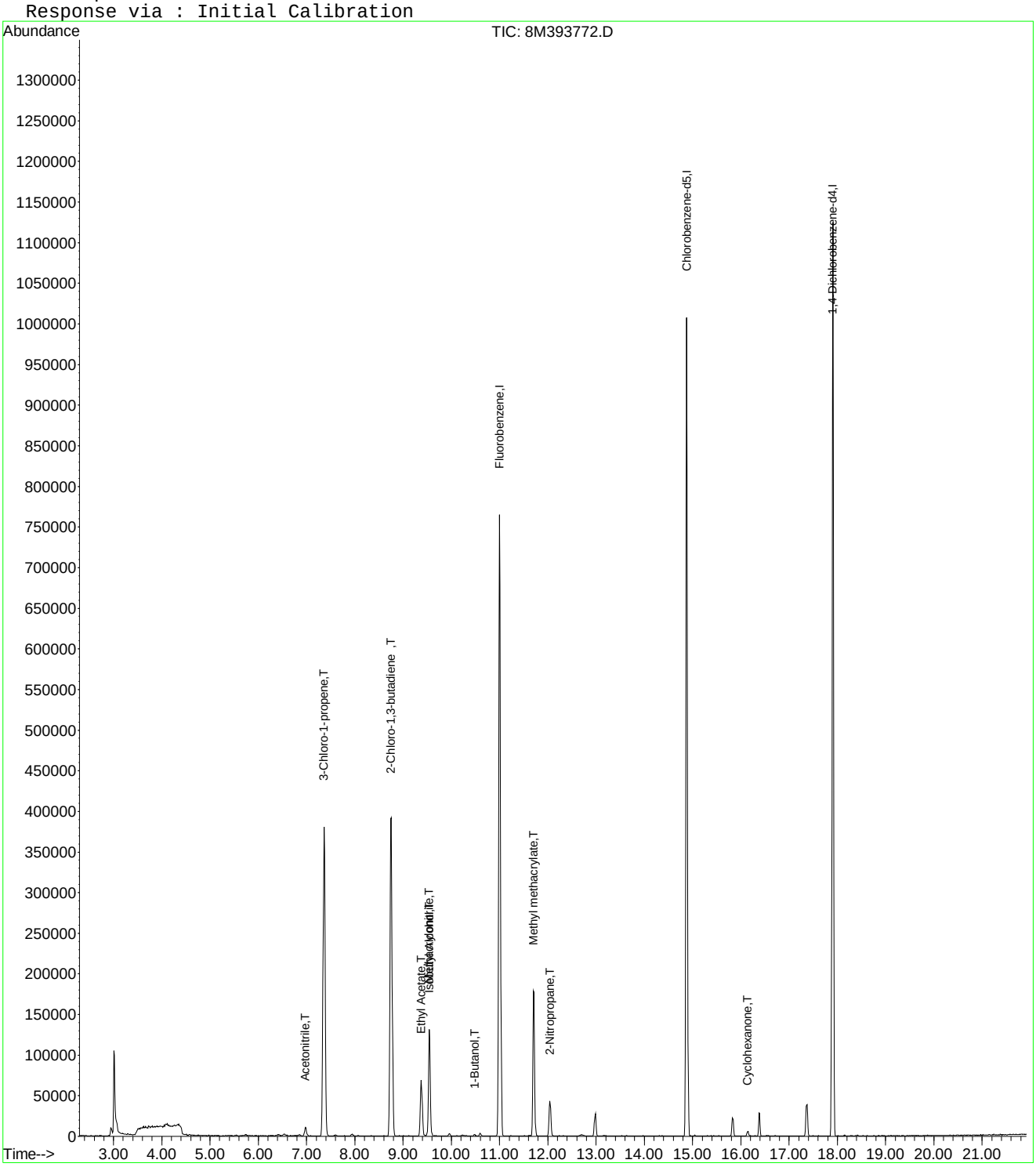
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	11.00	96	902967	25.00	ug/L		-0.05
11) Chlorobenzene-d5	14.88	117	697320	25.00	ug/L		-0.05
12) 1,4-Dichlorobenzene-d4	17.91	152	378412	25.00	ug/L		-0.04
Target Compounds							Qvalue
2) Acetonitrile	6.98	41	16292	19.8035	ug/L		93
3) 3-Chloro-1-propene	7.36	41	419870	25.0629	ug/L		96
4) 2-Chloro-1,3-butadiene	8.75	53	414533	25.6942	ug/L		89
5) Ethyl Acetate	9.38	43	119111	19.6567	ug/L		96
6) Methacrylonitrile	9.54	67	49450	19.8427	ug/L		91
7) Isobutyl Alcohol	9.55	43	8860	43.1070	ug/L	#	87
8) 1-Butanol	10.48	56	1516	17.4625	ug/L		86
9) Methyl methacrylate	11.70	41	136230	21.6459	ug/L		92
10) 2-Nitropropane	12.04	43	38516	20.0967	ug/L		94
13) Cyclohexanone	16.14	55	4249	17.0859	ug/L		80

(#) = qualifier out of range (m) = manual integration
8M393772.D A9FOOWTR.M Mon Jan 06 11:28:05 2014 Page 1

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\010614\8M393772.D Vial: 3
Acq On : 6 Jan 2014 11:00 Operator: MES
Sample : WG458457-03 20 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 6 11:28 2014 Quant Results File: A9FOOWTR.RES

Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 11:27:49 2014
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\010614\8M393773.D Vial: 4
Acq On : 6 Jan 2014 11:29 Operator: MES
Sample : WG458457-04 50 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 06 11:51:30 2014 Quant Results File: A9FOOWTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 11:29:48 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

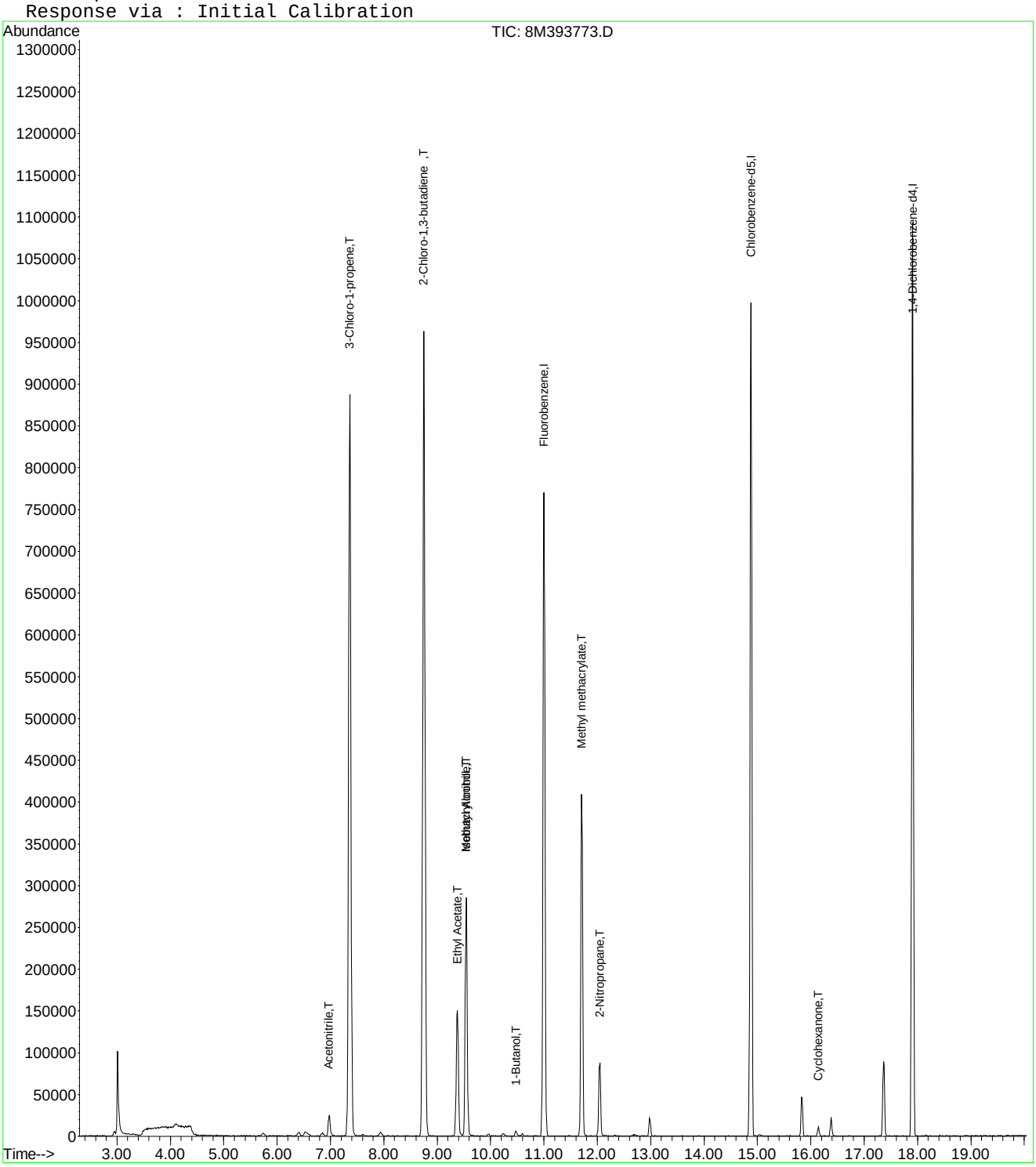
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	11.00	96	914220	25.00	ug/L		-0.05
11) Chlorobenzene-d5	14.88	117	704846	25.00	ug/L		-0.05
12) 1,4-Dichlorobenzene-d4	17.91	152	383428	25.00	ug/L		-0.04
Target Compounds							Qvalue
2) Acetonitrile	6.97	41	35060	42.9427	ug/L		94
3) 3-Chloro-1-propene	7.36	41	980745	54.7405	ug/L		96
4) 2-Chloro-1,3-butadiene	8.75	53	980463	56.2246	ug/L		89
5) Ethyl Acetate	9.38	43	267369	44.6416	ug/L		95
6) Methacrylonitrile	9.54	67	108778	44.0937	ug/L		87
7) Isobutyl Alcohol	9.54	43	18910	89.0438	ug/L	#	99
8) 1-Butanol	10.48	56	4641	52.8006	ug/L		89
9) Methyl methacrylate	11.71	41	291737	45.2024	ug/L		91
10) 2-Nitropropane	12.05	43	78860	40.0767	ug/L		91
13) Cyclohexanone	16.14	55	7118	28.2482	ug/L		84

(#) = qualifier out of range (m) = manual integration
8M393773.D A9FOOWTR.M Mon Jan 06 11:51:30 2014 Page 1

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\010614\8M393773.D Vial: 4
Acq On : 6 Jan 2014 11:29 Operator: MES
Sample : WG458457-04 50 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 6 11:51 2014 Quant Results File: A9FOOWTR.RES

Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 11:29:48 2014
Response via : Initial Calibration



8M393773.D A9FOOWTR.M Mon Jan 06 11:51:30 2014 Page 2

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\010614\Snapshot\8M393774.D Vial: 5
Acq On : 6 Jan 2014 12:00 Operator: MES
Sample : WG458457-05 100 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 06 12:22:02 2014 Quant Results File: A9FOOWTR.RES

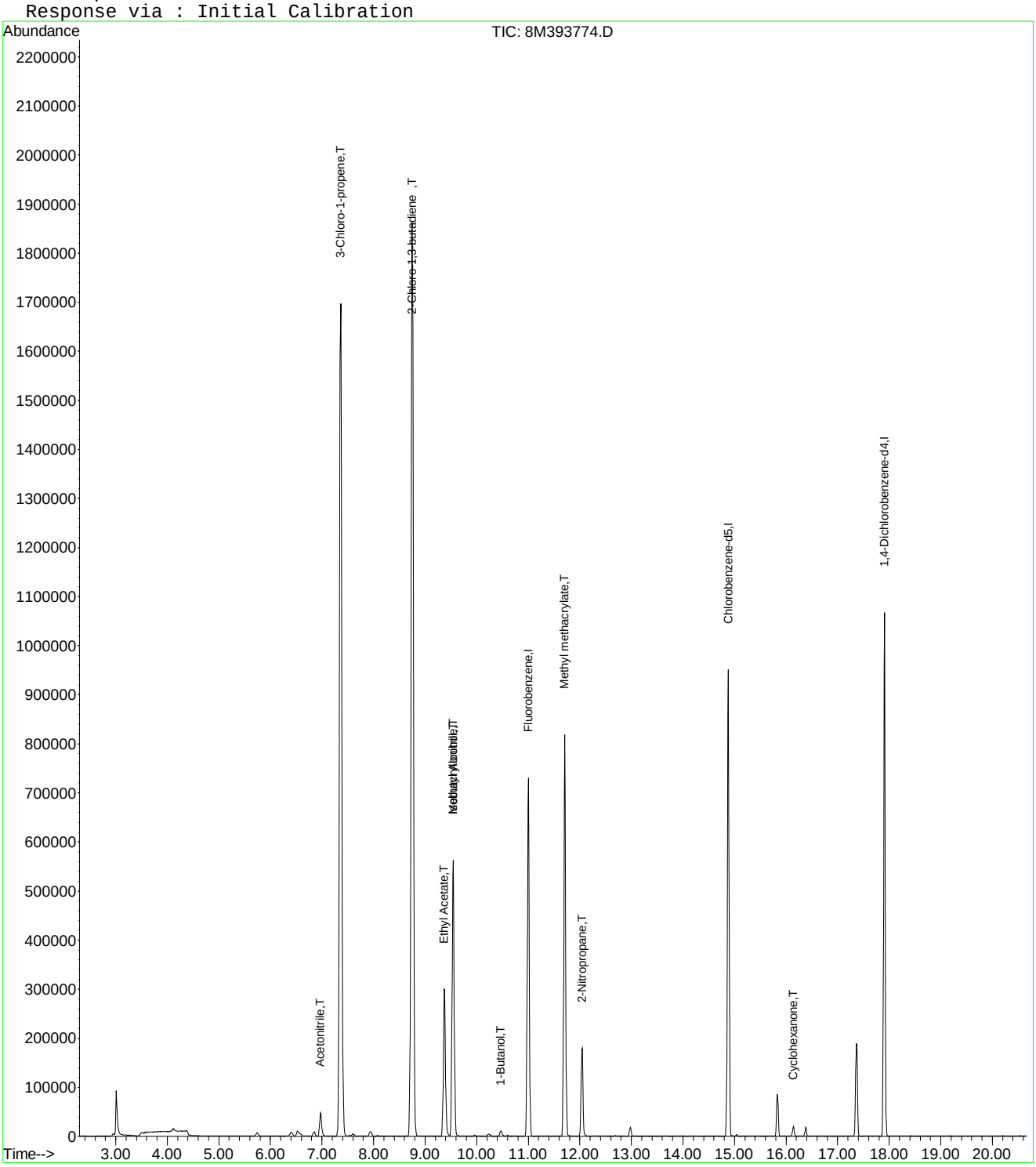
Quant Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 11:52:17 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	11.00	96	871494	25.00	ug/L		-0.05
11) Chlorobenzene-d5	14.88	117	674646	25.00	ug/L		-0.05
12) 1,4-Dichlorobenzene-d4	17.91	152	364801	25.00	ug/L		-0.04
Target Compounds							Qvalue
2) Acetonitrile	6.97	41	68154	89.6474	ug/L		93
3) 3-Chloro-1-propene	7.36	41	1886172	108.7563	ug/L		96
4) 2-Chloro-1,3-butadiene	8.75	53	1889366	111.2885	ug/L		88
5) Ethyl Acetate	9.37	43	533735	95.3198	ug/L		96
6) Methacrylonitrile	9.54	67	218527	95.3345	ug/L		88
7) Isobutyl Alcohol	9.54	43	37053	185.7087	ug/L	#	92
8) 1-Butanol	10.47	56	9100	102.9292	ug/L		97
9) Methyl methacrylate	11.71	41	587146	96.6971	ug/L		91
10) 2-Nitropropane	12.05	43	167428	90.8451	ug/L		93
13) Cyclohexanone	16.14	55	13163	54.9055	ug/L		82

(#) = qualifier out of range (m) = manual integration
8M393774.D A9FOOWTR.M Mon Jan 06 12:22:02 2014 Page 1

Data File : C:\MSDCHEM\2\DATA\010614\Snapshot\8M393774.D Vial: 5
Acq On : 6 Jan 2014 12:00 Operator: MES
Sample : WG458457-05 100 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 6 12:22 2014 Quant Results File: A9FOOWTR.RES

Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 11:52:17 2014
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\010614\8M393775.D Vial: 6
Acq On : 6 Jan 2014 12:27 Operator: MES
Sample : WG458457-06 200 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 06 13:31:29 2014 Quant Results File: A9FOOWTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 11:52:17 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

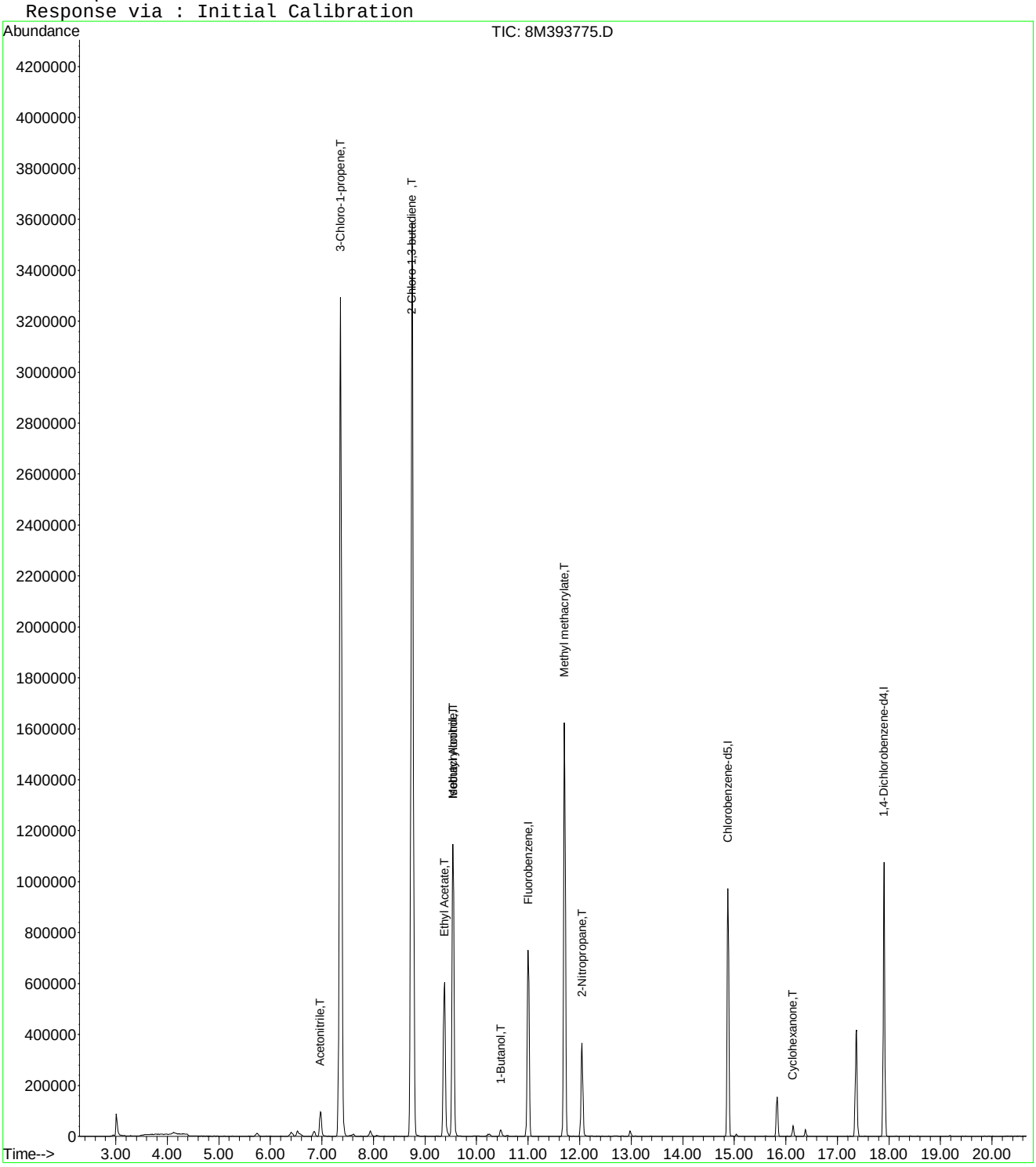
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	11.00	96	861606	25.00	ug/L	-0.05
11) Chlorobenzene-d5	14.88	117	674719	25.00	ug/L	-0.05
12) 1,4-Dichlorobenzene-d4	17.91	152	360502	25.00	ug/L	-0.04
Target Compounds						Qvalue
2) Acetonitrile	6.97	41	139115	185.0871	ug/L	98
3) 3-Chloro-1-propene	7.36	41	3622437	211.2660	ug/L	95
4) 2-Chloro-1,3-butadiene	8.75	53	3655751	217.8043	ug/L	87
5) Ethyl Acetate	9.38	43	1054142	190.4199	ug/L	97
6) Methacrylonitrile	9.54	67	433841	191.4394	ug/L	87
7) Isobutyl Alcohol	9.54	43	74465m	377.4999	ug/L	
8) 1-Butanol	10.47	56	19969	228.4595	ug/L	90
9) Methyl methacrylate	11.70	41	1161000	193.3994	ug/L	90
10) 2-Nitropropane	12.05	43	340918	187.1022	ug/L	95
13) Cyclohexanone	16.14	55	23764	100.3064	ug/L	88

(#) = qualifier out of range (m) = manual integration
8M393775.D A9FOOWTR.M Mon Jan 06 13:40:15 2014 Page 1

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\010614\8M393775.D Vial: 6
Acq On : 6 Jan 2014 12:27 Operator: MES
Sample : WG458457-06 200 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 6 13:39 2014 Quant Results File: A9FOOWTR.RES

Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 13:31:56 2014
Response via : Initial Calibration

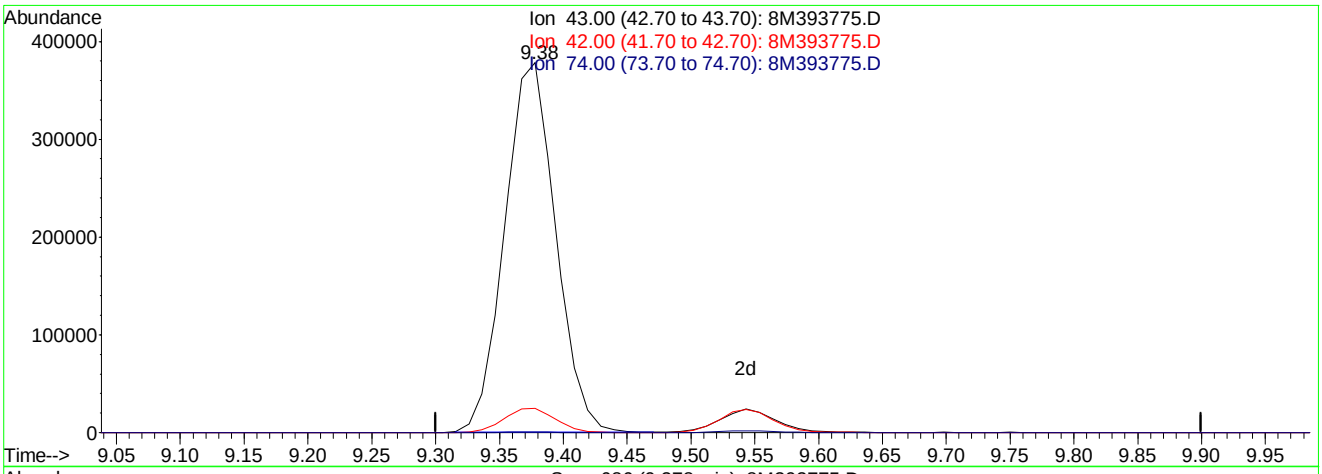


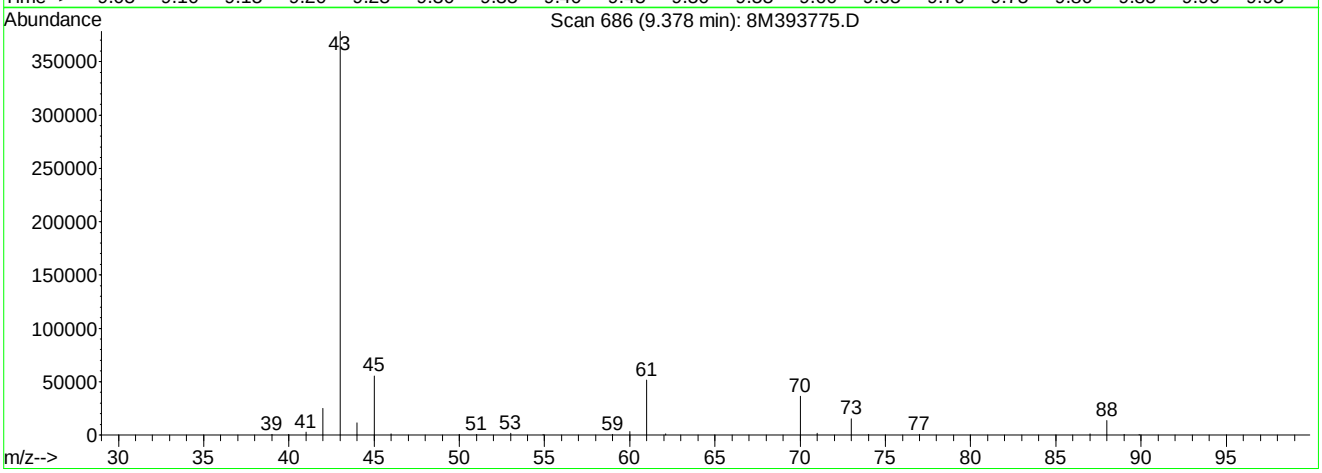
8M393775.D A9FOOWTR.M Mon Jan 06 13:40:15 2014 Page 2

Quantitation Report (Qedit)

Data File : C:\MSDCHEM\2\DATA\010614\8M393775.D Vial: 6
Acq On : 6 Jan 2014 12:27 Operator: MES
Sample : WG458457-06 200 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 6 13:31 2014 Quant Results File: temp.res

Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 13:31:56 2014
Response via : Multiple Level Calibration





TIC: 8M393775.D

(7) Isobutyl Alcohol (T)

9.38min 5317.73ug/L

response 1048967

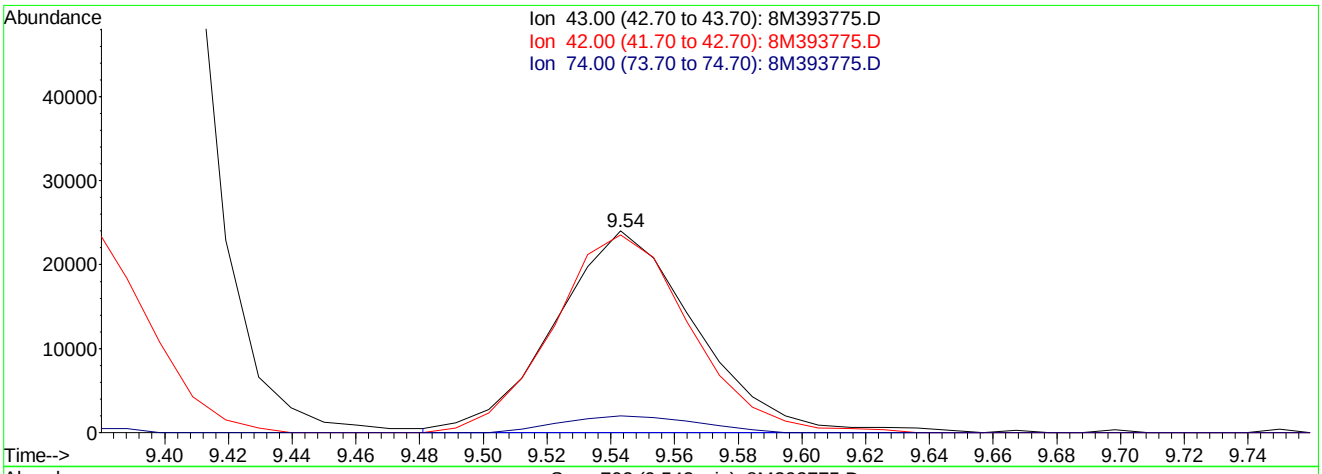
Ion	Exp%	Act%
43.00	100	100
42.00	0.00	6.71
74.00	4.20	0.12
0.00	0.00	0.00

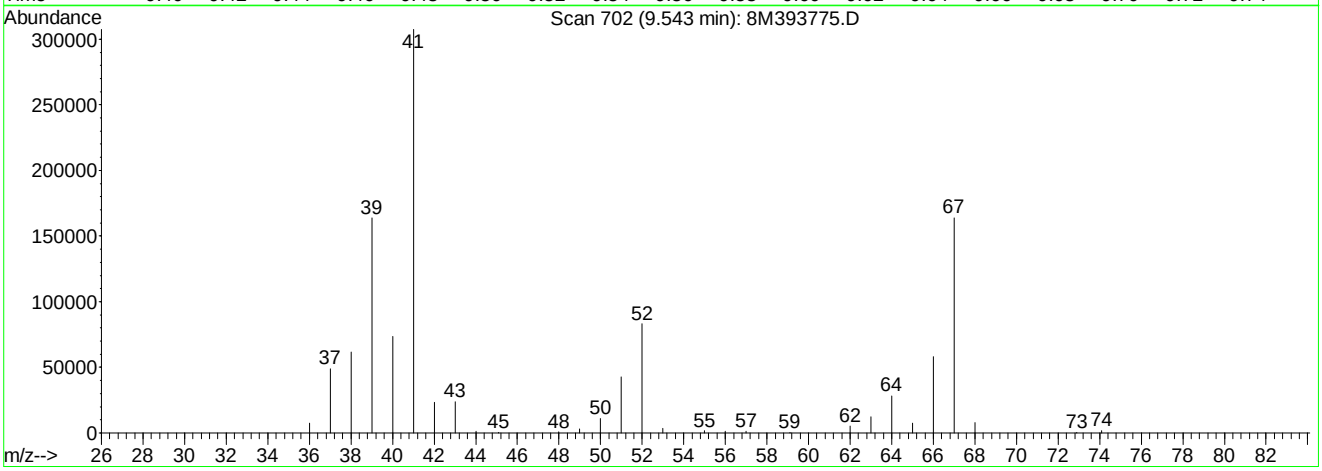
8M393775.D A9FOOWTR.M Mon Jan 06 13:39:46 2014

Quantitation Report (Qedit)

Data File : C:\MSDCHEM\2\DATA\010614\8M393775.D Vial: 6
Acq On : 6 Jan 2014 12:27 Operator: MES
Sample : WG458457-06 200 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 6 13:39 2014 Quant Results File: temp.res

Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 13:31:56 2014
Response via : Multiple Level Calibration





TIC: 8M393775.D

(7) Isobutyl Alcohol (T)

9.54min 377.50ug/L mint

response 74465

Ion	Exp%	Act%
43.00	100	100
42.00	0.00	94.57#
74.00	4.20	1.71
0.00	0.00	0.00

8M393775.D A9FOOWTR.M Mon Jan 2014

Analyst: 01/07/2014 12:13 Supervisor: 01/08/2014 08:38

#1 - Data system fails to select correct peak

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\010614\8M393776.D Vial: 7
Acq On : 6 Jan 2014 12:55 Operator: MES
Sample : WG458457-07 300 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 06 13:32:02 2014 Quant Results File: A9FOOWTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 13:31:56 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

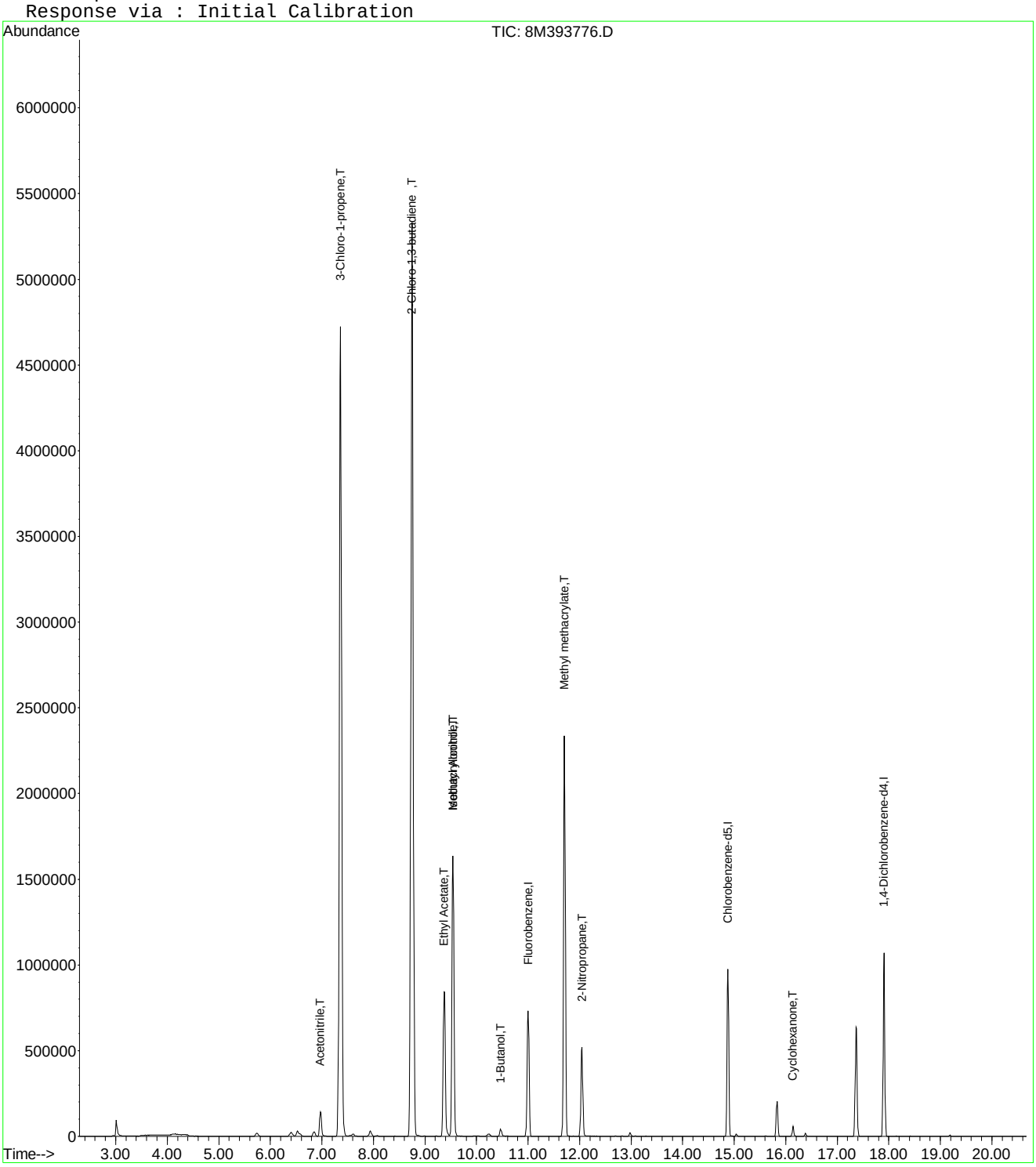
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	11.00	96	868072	25.00	ug/L	-0.05
11) Chlorobenzene-d5	14.88	117	679842	25.00	ug/L	-0.05
12) 1,4-Dichlorobenzene-d4	17.91	152	367617	25.00	ug/L	-0.04
Target Compounds						Qvalue
2) Acetonitrile	6.97	41	204254	279.9755	ug/L	97
3) 3-Chloro-1-propene	7.36	41	5265209	299.1005	ug/L	94
4) 2-Chloro-1,3-butadiene	8.75	53	5375703	308.5114	ug/L	85
5) Ethyl Acetate	9.37	43	1497055	278.4218	ug/L	97
6) Methacrylonitrile	9.54	67	625082	283.7642	ug/L	87
7) Isobutyl Alcohol	9.54	43	114419m	131.0044	ug/L	
8) 1-Butanol	10.46	56	32964	352.8815	ug/L	95
9) Methyl methacrylate	11.71	41	1647187	280.6355	ug/L	89
10) 2-Nitropropane	12.05	43	499841	284.6284	ug/L	96
13) Cyclohexanone	16.14	55	33550	165.5451	ug/L	87

(#) = qualifier out of range (m) = manual integration
8M393776.D A9FOOWTR.M Mon Jan 06 13:40:24 2014 Page 1

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\010614\8M393776.D Vial: 7
Acq On : 6 Jan 2014 12:55 Operator: MES
Sample : WG458457-07 300 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 6 13:40 2014 Quant Results File: A9FOOWTR.RES

Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 13:40:19 2014
Response via : Initial Calibration

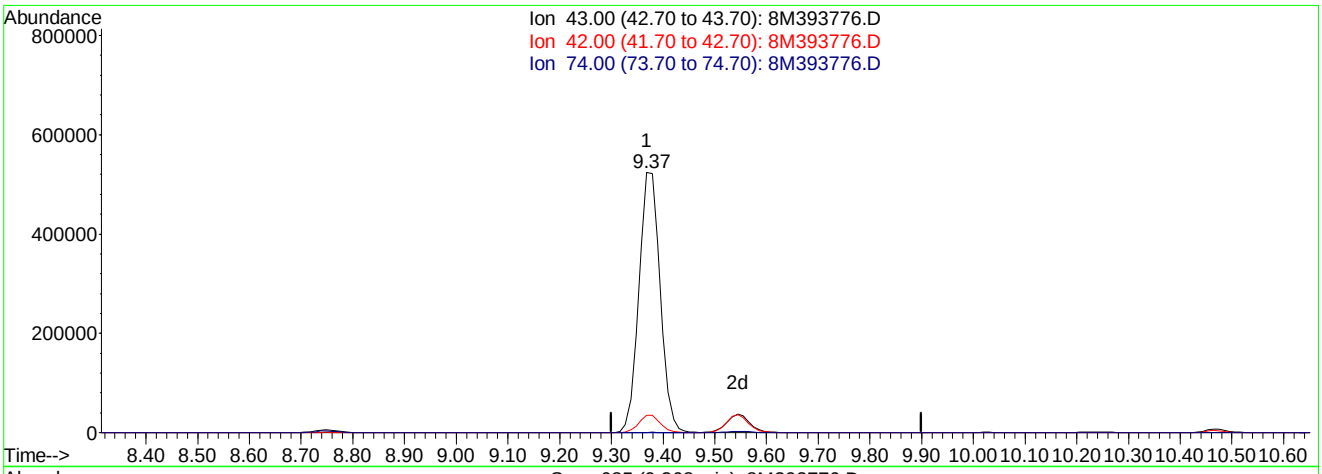


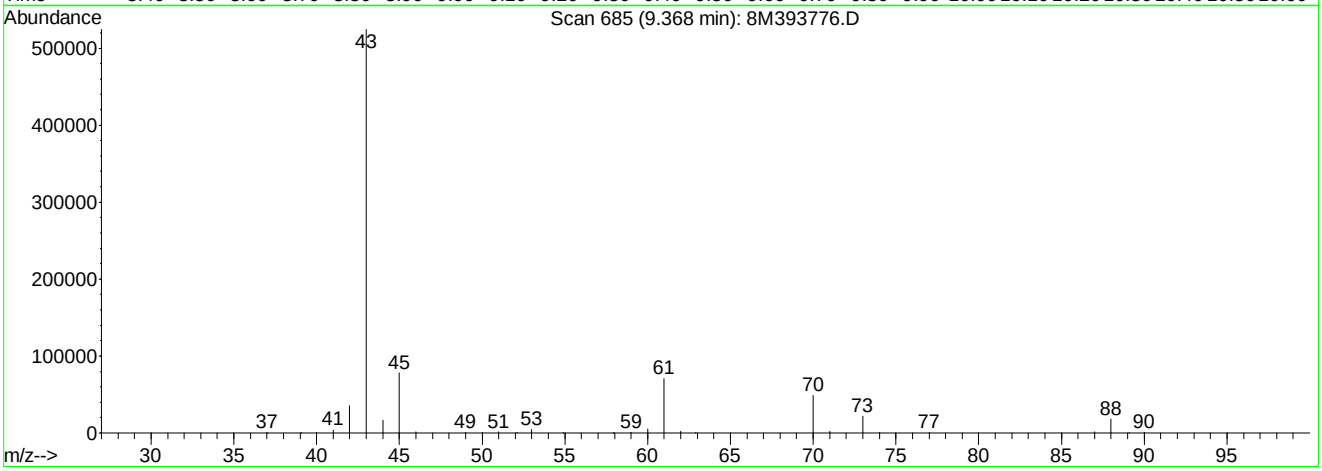
8M393776.D A9FOOWTR.M Mon Jan 06 13:40:24 2014 Page 2

Quantitation Report (Qedit)

Data File : C:\MSDCHEM\2\DATA\010614\8M393776.D Vial: 7
Acq On : 6 Jan 2014 12:55 Operator: MES
Sample : WG458457-07 300 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 6 13:32 2014 Quant Results File: temp.res

Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 13:31:56 2014
Response via : Multiple Level Calibration





TIC: 8M393776.D

(7) Isobutyl Alcohol (T)

9.37min 1705.97ug/L

response 1489991

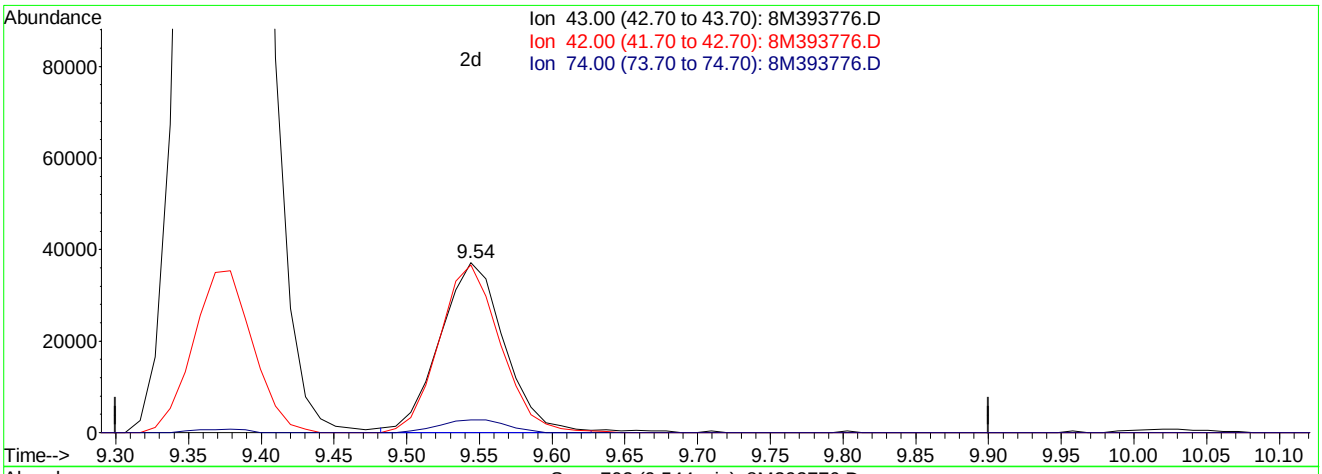
Ion	Exp%	Act%
43.00	100	100
42.00	0.00	6.78
74.00	4.20	0.13
0.00	0.00	0.00

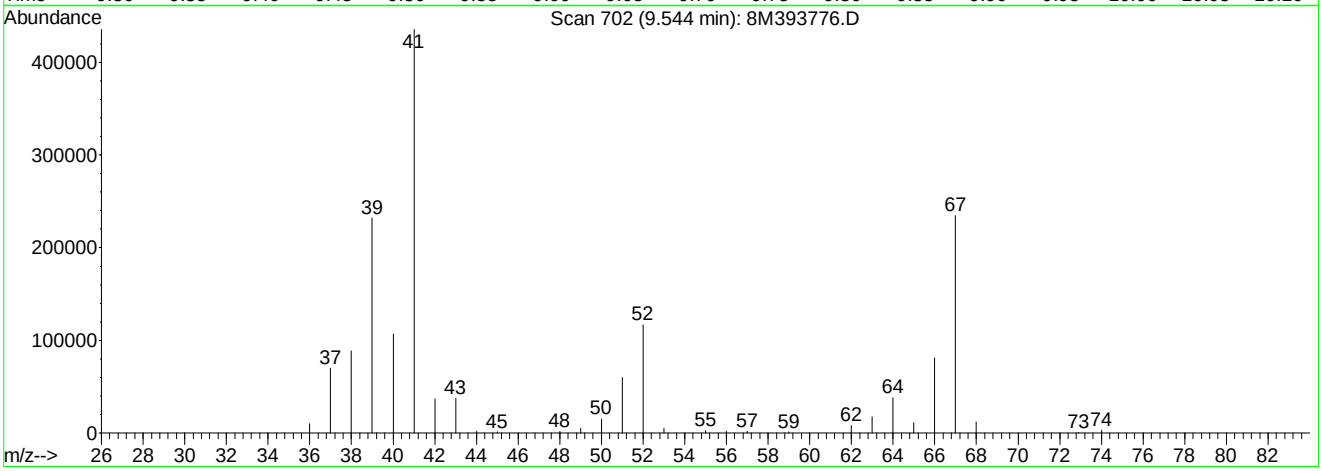
8M393776.D A9FOOWTR.M Mon Jan 06 13:40:00 2014

Quantitation Report (Qedit)

Data File : C:\MSDCHEM\2\DATA\010614\8M393776.D Vial: 7
Acq On : 6 Jan 2014 12:55 Operator: MES
Sample : WG458457-07 300 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 6 13:40 2014 Quant Results File: temp.res

Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 13:31:56 2014
Response via : Multiple Level Calibration





TIC: 8M393776.D

(7) Isobutyl Alcohol (T)

9.54min 131.00ug/L mint

response 114419

Ion	Exp%	Act%
43.00	100	100
42.00	0.00	88.26#
74.00	4.20	1.67
0.00	0.00	0.00

8M393776.D A9FOOWTR.M Mon Jan 6 2014

Analyst: 01/07/2014 12:13 Supervisor: 01/08/2014 08:38

#1 - Data system fails to select correct peak

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\010614\8M393777.D Vial: 8
Acq On : 6 Jan 2014 13:23 Operator: MES
Sample : WG458457-08 400 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 06 14:21:16 2014 Quant Results File: A9FOOWTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 13:40:28 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

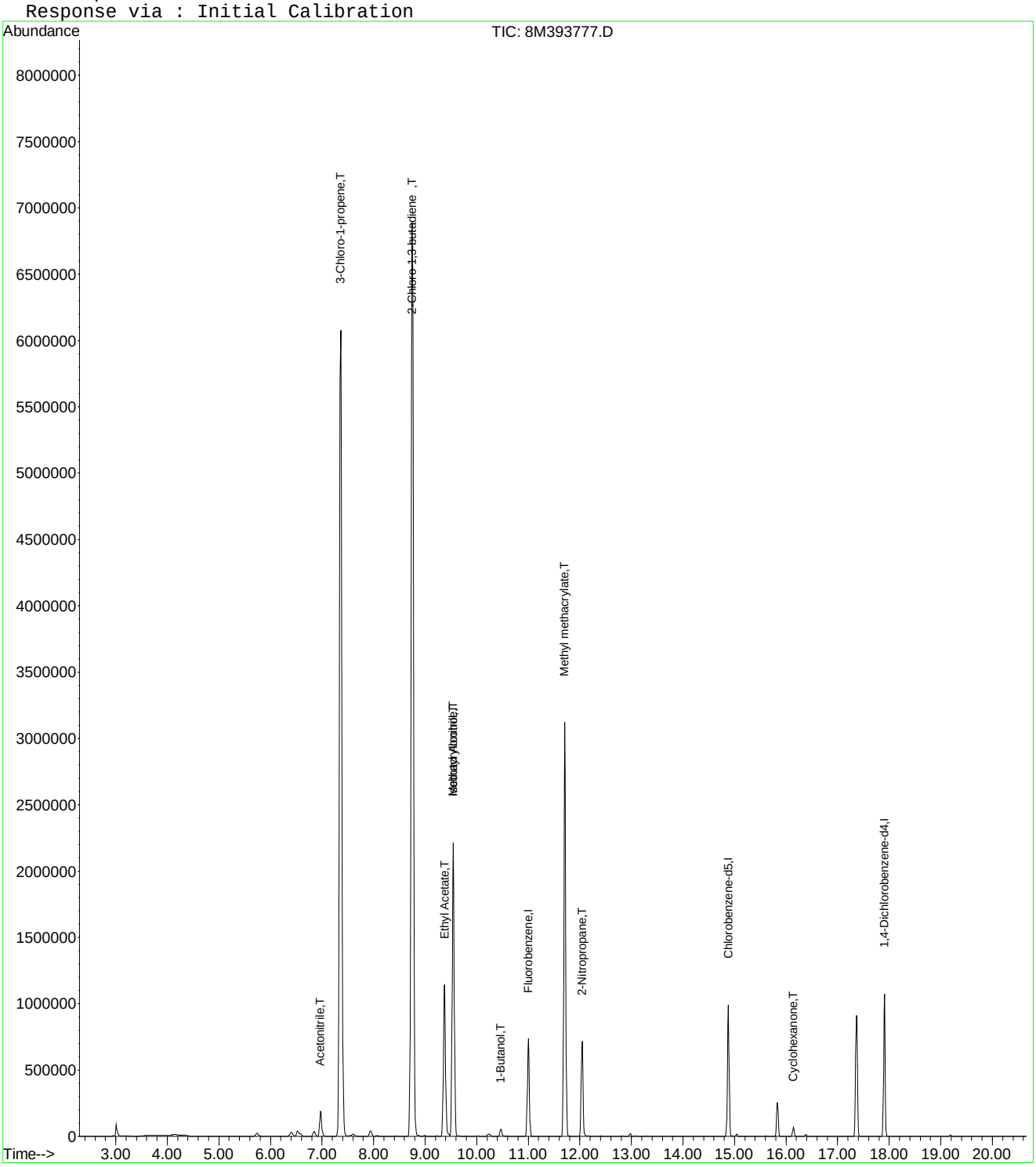
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	11.00	96	870348	25.00	ug/L	-0.05
11) Chlorobenzene-d5	14.88	117	687312	25.00	ug/L	-0.05
12) 1,4-Dichlorobenzene-d4	17.91	152	367289	25.00	ug/L	-0.04
Target Compounds						Qvalue
2) Acetonitrile	6.97	41	273535	373.9600	ug/L	98
3) 3-Chloro-1-propene	7.36	41	6823135	386.5879	ug/L	94
4) 2-Chloro-1,3-butadiene	8.75	53	6947947	397.6997	ug/L	84
5) Ethyl Acetate	9.38	43	2028744	376.3185	ug/L	97
6) Methacrylonitrile	9.54	67	845610	382.8720	ug/L	86
7) Isobutyl Alcohol	9.54	43	151163m	772.2472	ug/L	
8) 1-Butanol	10.46	56	44142	471.3069	ug/L	96
9) Methyl methacrylate	11.71	41	2218087	376.9130	ug/L	89
10) 2-Nitropropane	12.05	43	685097	389.1001	ug/L	97
13) Cyclohexanone	16.14	55	39952	197.3104	ug/L	91

(#) = qualifier out of range (m) = manual integration
8M393777.D A9FOOWTR.M Mon Jan 06 14:23:10 2014 Page 1

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\010614\8M393777.D Vial: 8
Acq On : 6 Jan 2014 13:23 Operator: MES
Sample : WG458457-08 400 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 6 14:22 2014 Quant Results File: A9FOOWTR.RES

Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 14:23:04 2014
Response via : Initial Calibration

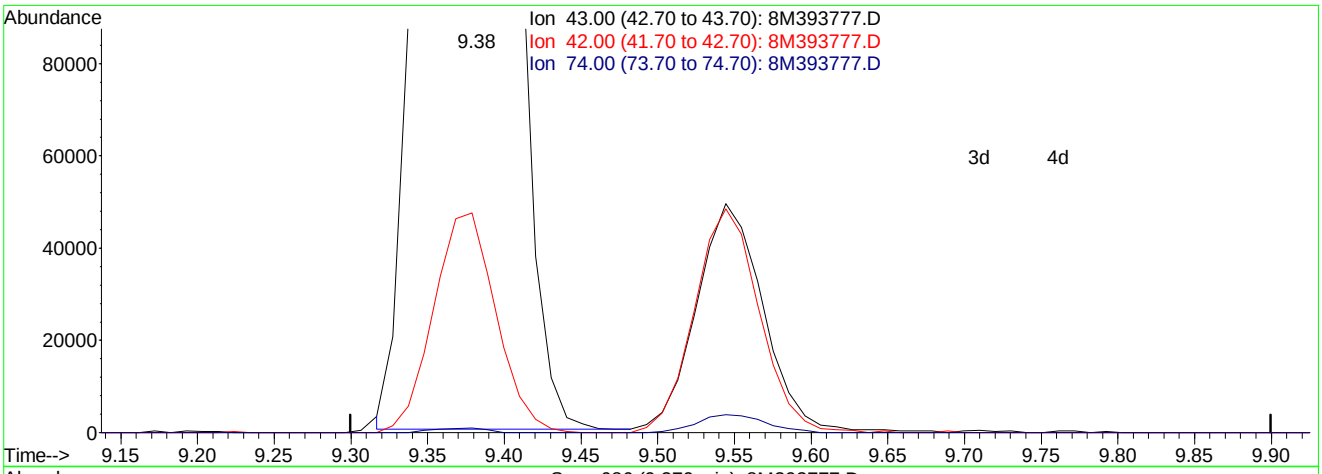


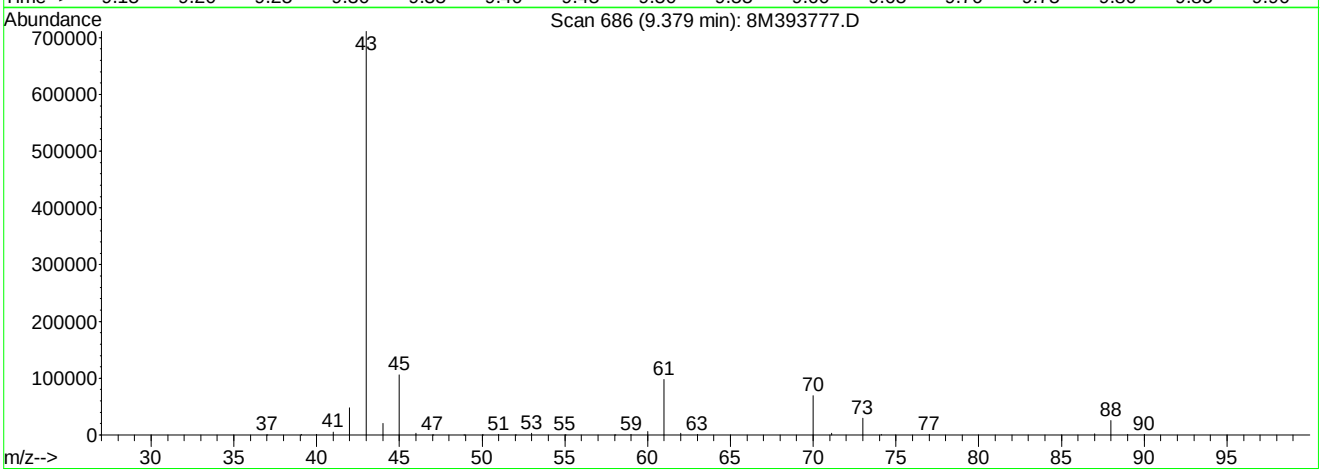
8M393777.D A9FOOWTR.M Mon Jan 06 14:23:11 2014 Page 2

Quantitation Report (Qedit)

Data File : C:\MSDCHEM\2\DATA\010614\8M393777.D Vial: 8
Acq On : 6 Jan 2014 13:23 Operator: MES
Sample : WG458457-08 400 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 6 14:21 2014 Quant Results File: temp.res

Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 14:21:35 2014
Response via : Multiple Level Calibration





TIC: 8M393777.D

(7) Isobutyl Alcohol (T)

9.38min 10315.46ug/L

response 2019192

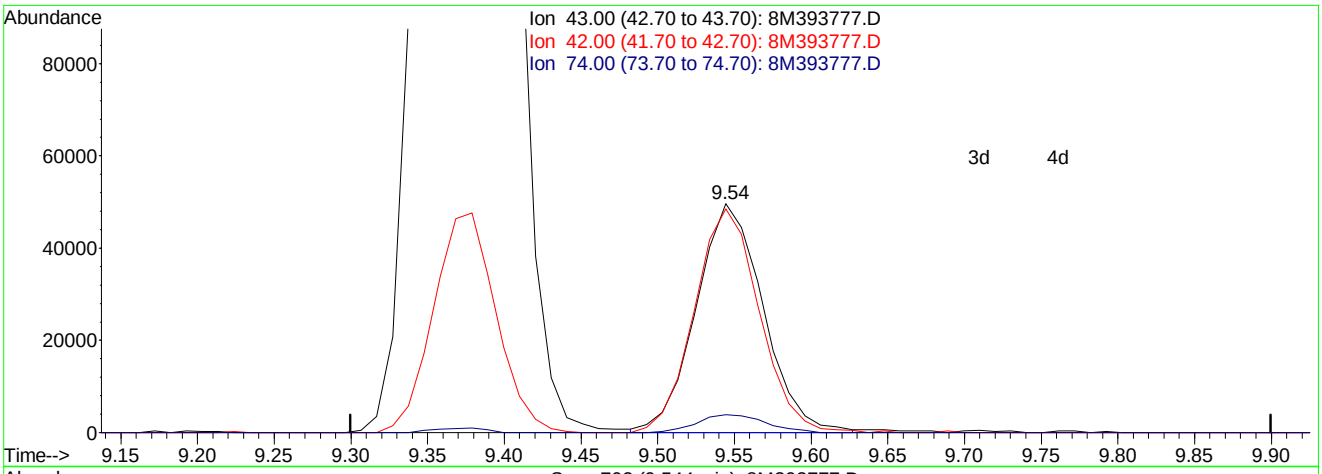
Ion	Exp%	Act%
43.00	100	100
42.00	0.00	6.66
74.00	4.20	0.11
0.00	0.00	0.00

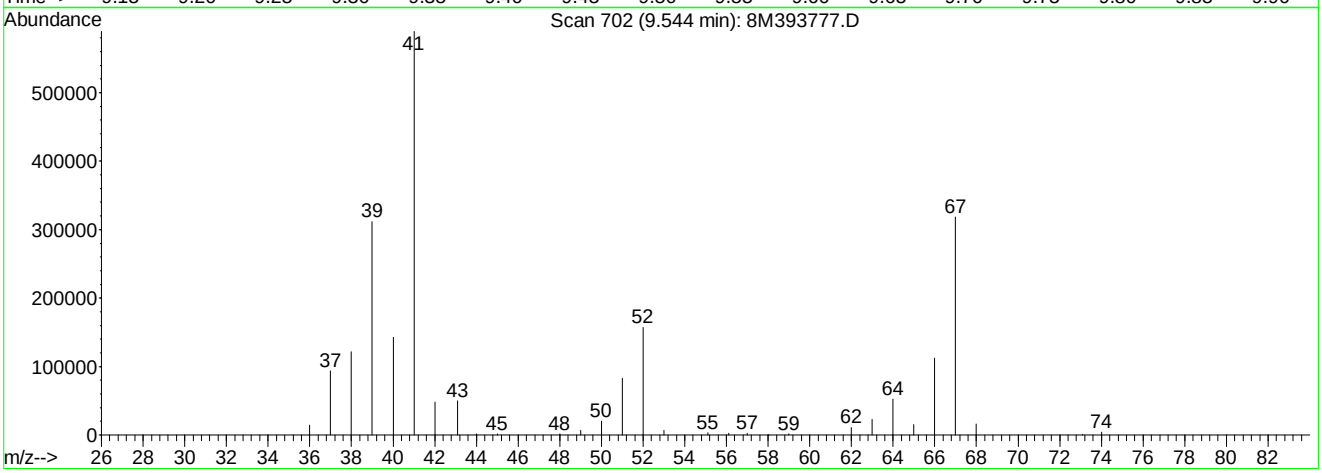
8M393777.D A9FOOWTR.M Mon Jan 06 14:22:40 2014

Quantitation Report (Qedit)

Data File : C:\MSDCHEM\2\DATA\010614\8M393777.D Vial: 8
Acq On : 6 Jan 2014 13:23 Operator: MES
Sample : WG458457-08 400 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 6 14:22 2014 Quant Results File: temp.res

Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 14:21:35 2014
Response via : Multiple Level Calibration





TIC: 8M393777.D

(7) Isobutyl Alcohol (T)

9.54min 772.25ug/L mint

response 151163

Ion	Exp%	Act%
43.00	100	100
42.00	0.00	89.03#
74.00	4.20	1.51
0.00	0.00	0.00

8M393777.D A9FOOWTR.M Mon Jan 2014

Analyst: 01/07/2014 12:13 Supervisor: 01/08/2014 08:38

#1 - Data system fails to select correct peak

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\010614\8M393778.D Vial: 9
Acq On : 6 Jan 2014 13:52 Operator: MES
Sample : WG458457-09 500 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 06 14:21:21 2014 Quant Results File: A9FOOWTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 13:40:28 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

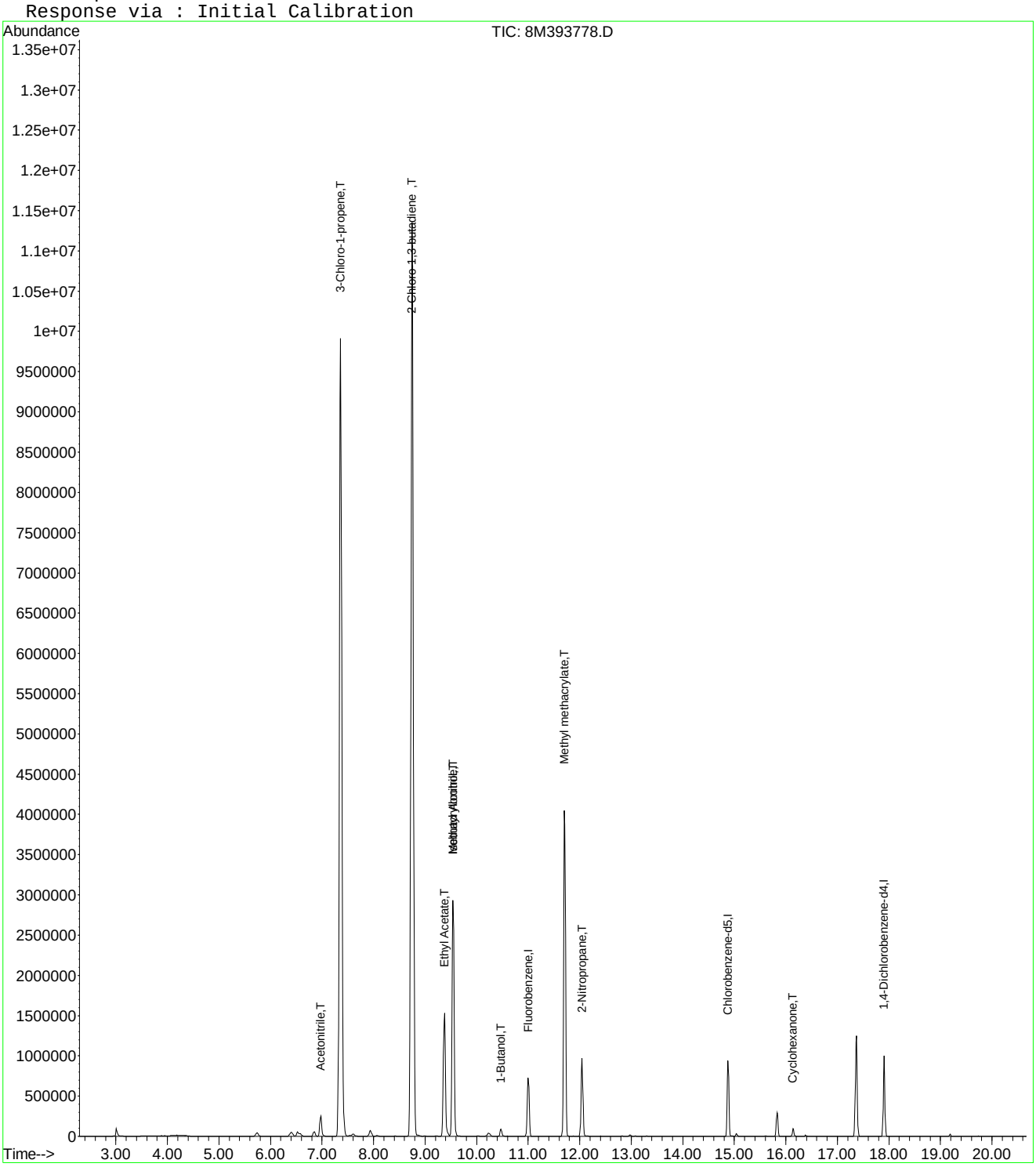
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	11.00	96	861239	25.00	ug/L	-0.05
11) Chlorobenzene-d5	14.88	117	648285	25.00	ug/L	-0.05
12) 1,4-Dichlorobenzene-d4	17.91	152	336347	25.00	ug/L	-0.04
Target Compounds						Qvalue
2) Acetonitrile	6.98	41	367543	507.7964	ug/L	98
3) 3-Chloro-1-propene	7.36	41	11262741	644.8781	ug/L	91
4) 2-Chloro-1,3-butadiene	8.75	53	11329450	655.3554	ug/L	77
5) Ethyl Acetate	9.38	43	2634033	493.7633	ug/L	98
6) Methacrylonitrile	9.54	67	1118399	511.7402	ug/L	86
7) Isobutyl Alcohol	9.54	43	219290m	1132.1368	ug/L	
8) 1-Butanol	10.47	56	66633	718.9694	ug/L	96
9) Methyl methacrylate	11.70	41	2934642	503.9494	ug/L	88
10) 2-Nitropropane	12.04	43	908924	521.6822	ug/L	97
13) Cyclohexanone	16.14	55	56352	303.9074	ug/L	90

(#) = qualifier out of range (m) = manual integration
8M393778.D A9FOOWTR.M Mon Jan 06 14:23:01 2014 Page 1

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\010614\8M393778.D Vial: 9
Acq On : 6 Jan 2014 13:52 Operator: MES
Sample : WG458457-09 500 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 6 14:22 2014 Quant Results File: A9FOOWTR.RES

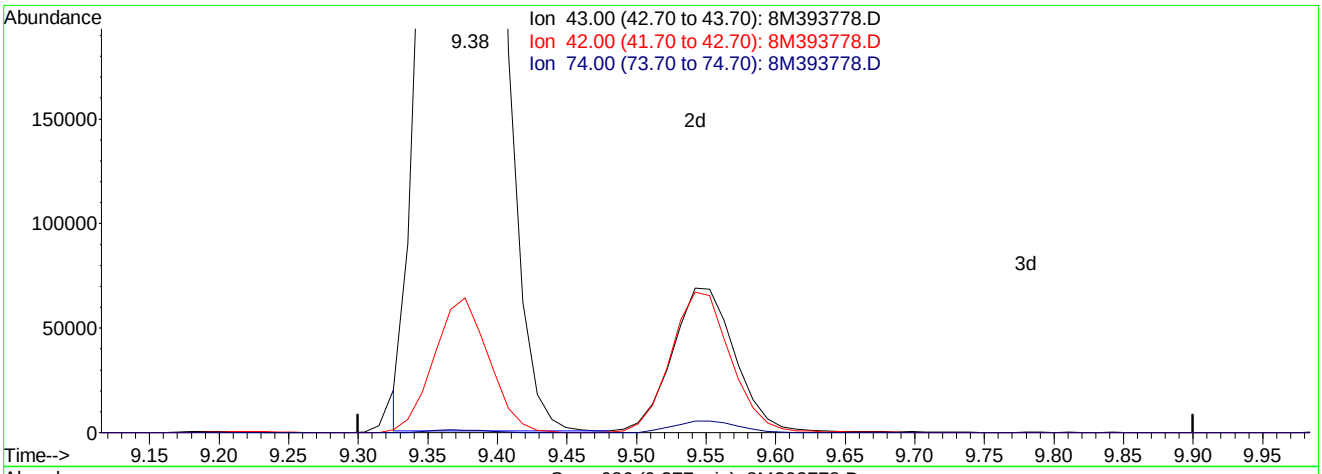
Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 14:22:23 2014
Response via : Initial Calibration

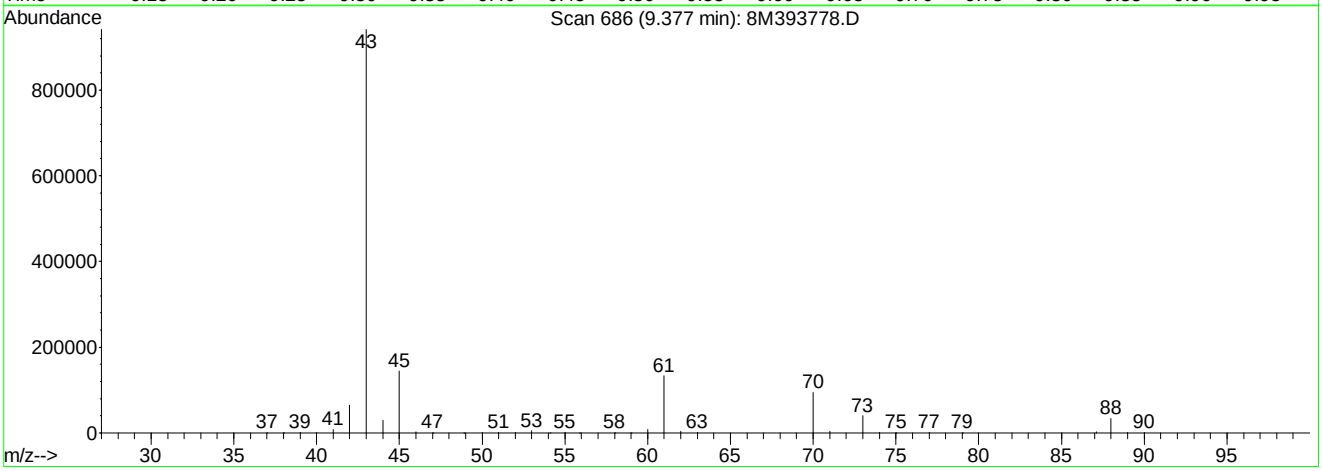


Quantitation Report (Qedit)

Data File : C:\MSDCHEM\2\DATA\010614\8M393778.D Vial: 9
Acq On : 6 Jan 2014 13:52 Operator: MES
Sample : WG458457-09 500 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 6 14:21 2014 Quant Results File: temp.res

Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 14:21:35 2014
Response via : Multiple Level Calibration





TIC: 8M393778.D

(7) Isobutyl Alcohol (T)

9.38min 13474.04ug/L

response 2609863

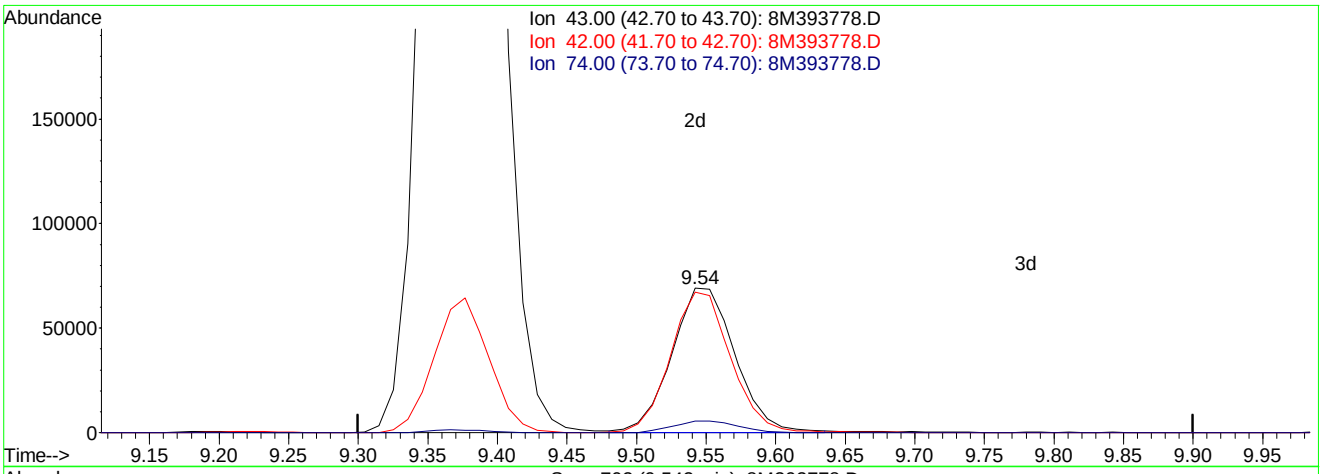
Ion	Exp%	Act%
43.00	100	100
42.00	0.00	6.74
74.00	4.20	0.14
0.00	0.00	0.00

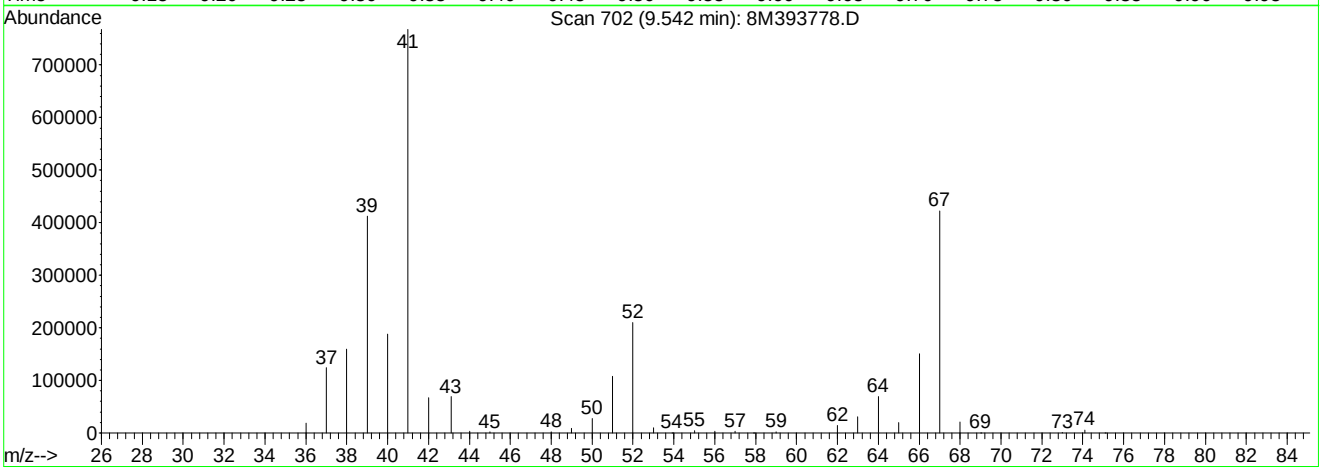
8M393778.D A9FOOWTR.M Mon Jan 06 14:22:52 2014

Quantitation Report (Qedit)

Data File : C:\MSDCHEM\2\DATA\010614\8M393778.D Vial: 9
Acq On : 6 Jan 2014 13:52 Operator: MES
Sample : WG458457-09 500 ug/L APPIX STD Inst : HPMS8
Misc : 1,1 STD61847 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 6 14:22 2014 Quant Results File: temp.res

Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Mon Jan 06 14:21:35 2014
Response via : Multiple Level Calibration





TIC: 8M393778.D

(7) Isobutyl Alcohol (T)

9.54min 1132.14ug/L mint

response 219290

Ion	Exp%	Act%
43.00	100	100
42.00	0.00	80.20#
74.00	4.20	1.70
0.00	0.00	0.00

8M393778.D A9FOOWTR.M Mon Jan 6 14:22:14 2014

Analyst: 01/07/2014 12:13 Supervisor: 01/08/2014 08:38

#1 - Data system fails to select correct peak

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\010614\8M393780.D Vial: 11
Acq On : 6 Jan 2014 14:48 Operator: MES
Sample : WG458457-10 100ug/L APPIX ALT SOURCE Inst : HPMS8
Misc : 1,1 STD62148 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 07 11:35:10 2014 Quant Results File: A9FOOWTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Tue Jan 07 08:20:19 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

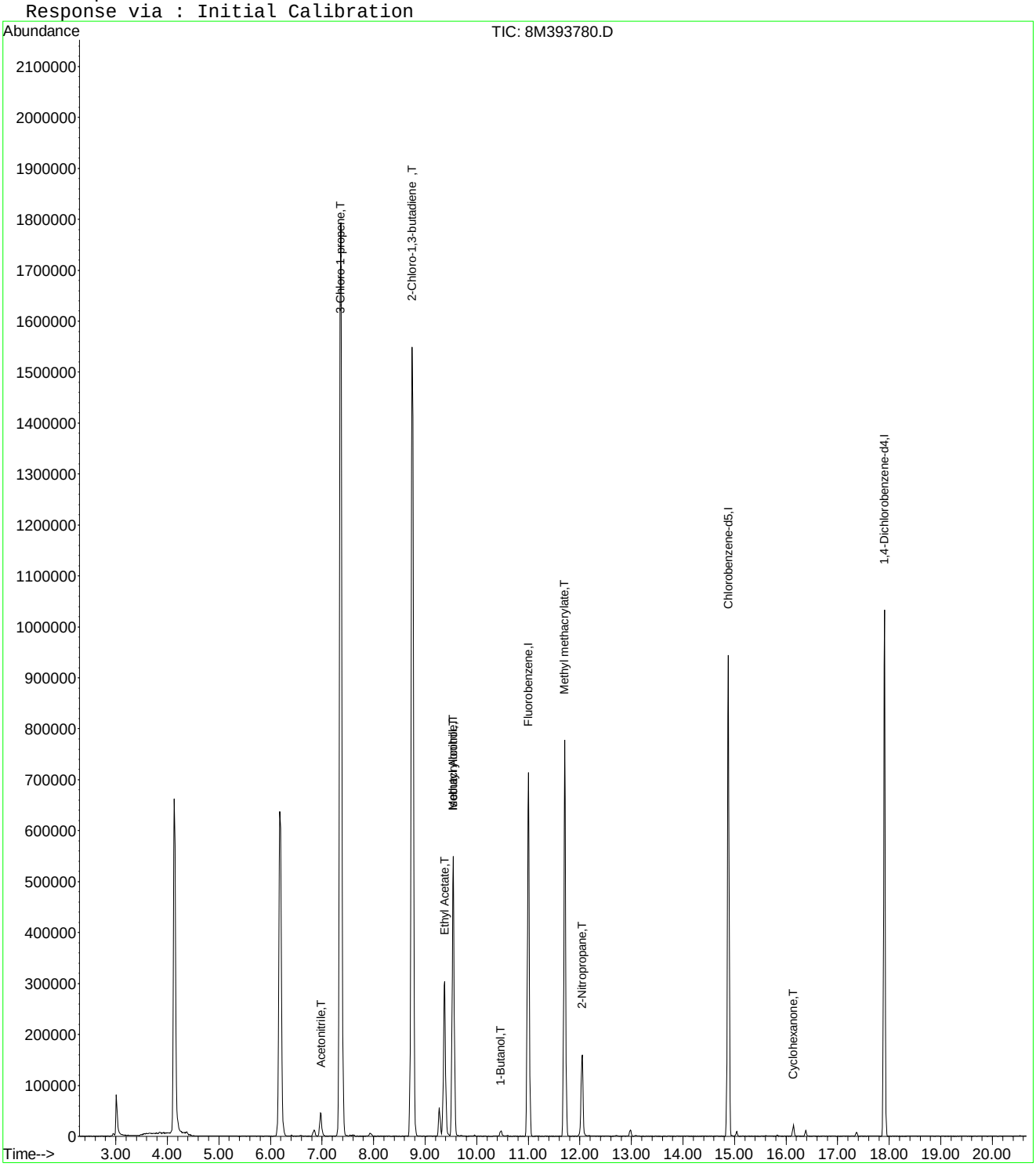
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	11.00	96	847141	25.00	ug/L	0.00
11) Chlorobenzene-d5	14.88	117	656439	25.00	ug/L	0.00
12) 1,4-Dichlorobenzene-d4	17.91	152	353678	25.00	ug/L	0.00
Target Compounds						Qvalue
2) Acetonitrile	6.98	41	66284	97.9157	ug/L	98
3) 3-Chloro-1-propene	7.36	41	1955362	106.3676	ug/L	100
4) 2-Chloro-1,3-butadiene	8.75	53	1595114	86.5702	ug/L	99
5) Ethyl Acetate	9.38	43	538249	107.8025	ug/L	100
6) Methacrylonitrile	9.54	67	205473	99.7996	ug/L	98
7) Isobutyl Alcohol	9.54	43	36874	193.8009	ug/L	99
8) 1-Butanol	10.46	56	8359	85.7723	ug/L	97
9) Methyl methacrylate	11.71	41	557315	100.7135	ug/L	99
10) 2-Nitropropane	12.05	43	147827	91.3716	ug/L	97
13) Cyclohexanone	16.14	55	12634	108.6352	ug/L	91

(#) = qualifier out of range (m) = manual integration
8M393780.D A9FOOWTR.M Tue Jan 07 11:35:11 2014 Page 1

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\010614\8M393780.D Vial: 11
Acq On : 6 Jan 2014 14:48 Operator: MES
Sample : WG458457-10 100ug/L APPIX ALT SOURCE Inst : HPMS8
Misc : 1,1 STD62148 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jan 7 11:35 2014 Quant Results File: A9FOOWTR.RES

Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Tue Jan 07 08:20:19 2014
Response via : Initial Calibration



8M393780.D A9FOOWTR.M Tue Jan 07 11:35:11 2014 Page 2

Evaluate Continuing Calibration Report

Data File : C:\MSDCHEM\2\DATA\010614\8M393780.D Vial: 11
Acq On : 6 Jan 2014 14:48 Operator: MES
Sample : WG458457-10 100ug/L APPIX ALT SOURCE Inst : HPMS8
Misc : 1,1 STD62148 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\MSDCHEM\2\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 01-04-14 HPMS8
Last Update : Tue Jan 07 08:20:19 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 1% Max. R.T. Dev 0.50min
Max. RRF Dev : 75% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	I	Fluorobenzene	25.0000	25.0000	0.0	97	0.00
2	T	Acetonitrile	100.0000	97.9157	2.1	97	0.00
3	T	3-Chloro-1-propene	100.0000	106.3676	-6.4	104	0.00
4	T	2-Chloro-1,3-butadiene	100.0000	86.5702	13.4	84	0.00
5	T	Ethyl Acetate	100.0000	107.8025	-7.8	101	0.00
6	T	Methacrylonitrile	100.0000	99.7996	0.2	94	0.00
7	T	Isobutyl Alcohol	200.0000	193.8009	3.1	100	0.00
8	T	1-Butanol	100.0000	85.7723	14.2	92	0.00
9	T	Methyl methacrylate	100.0000	100.7135	-0.7	95	0.00
10	T	2-Nitropropane	100.0000	91.3716	8.6	88	0.00
11	I	Chlorobenzene-d5	25.0000	25.0000	0.0	97	0.00
12	I	1,4-Dichlorobenzene-d4	25.0000	25.0000	0.0	97	0.00
13	T	Cyclohexanone	100.0000	108.6352	-8.6	96	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
8M393780.D A9FOOWTR.M Tue Jan 07 11:35:14 2014 Page 1

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399407.D Vial: 3
Acq On : 19 Aug 2014 9:19 Operator: TMB
Sample : WG488700-02 0.3ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:49:58 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.90	96	963489	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.77	117	637934	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.79	152	310272	25.00	ug/L	0.00
System Monitoring Compounds						
37) Dibromofluoromethane	0.00	111	0	0.0000	ug/L	
Spiked Amount 25.000	Range 86 - 118		Recovery =	0.00%#		
43) 1,2-Dichloroethane-d4	0.00	65	0	0.0000	ug/L	
Spiked Amount 25.000	Range 80 - 120		Recovery =	0.00%#		
58) Toluene-d8	12.88	98	440	0.0140	ug/L	0.00
Spiked Amount 25.000	Range 88 - 110		Recovery =	0.04%#		
80) p-Bromofluorobenzene	0.00	95	0	0.0000	ug/L	
Spiked Amount 25.000	Range 86 - 115		Recovery =	0.00%#		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	3.30	85	2604	0.3144	ug/L	85
3) Chloromethane	3.76	50	8353	0.3933	ug/L	95
4) Vinyl Chloride	4.00	62	7197	0.2137	ug/L	89
5) 1,3-Butadiene	4.05	54	5618	Below Cal		97
6) Bromomethane	4.91	94	2325	0.3337	ug/L	94
7) Chloroethane	5.08	64	1814	0.2539	ug/L #	55
8) Trichlorofluoromethane	5.55	101	3829	0.2882	ug/L #	89
10) Isoprene	6.14	67	3663	0.2694	ug/L	91
12) 1,1,2-Trichloro-1,2,2-Trif	6.35	101	1712	0.2165	ug/L #	47
13) Acetone	6.43	43	211	0.1842	ug/L #	1
14) 1,1-Dichloroethene	6.66	61	4046	0.2769	ug/L	100
16) Dimethyl Sulfide	6.92	62	2860	0.2975	ug/L	85
17) Iodomethane	7.18	142	872	1.0601	ug/L #	32
19) Methylene Chloride	7.45	84	3450	0.3563	ug/L	89
20) Carbon Disulfide	7.50	76	9140	0.3249	ug/L #	87
22) Methyl Tert Butyl Ether	7.66	73	4802	0.2797	ug/L #	56
23) trans-1,2-Dichloroethene	7.90	61	4456	0.3097	ug/L	98
24) n-Hexane	7.98	57	4211	0.2973	ug/L	95
26) Vinyl Acetate	8.50	43	1698	0.1890	ug/L #	76
27) 1,1-Dichloroethane	8.52	63	5138	0.2763	ug/L #	93
31) 2,2-Dichloropropane	9.29	77	4702	0.2941	ug/L	93
32) cis-1,2-Dichloroethene	9.36	96	2983	0.2889	ug/L	83
33) Chloroform	9.57	83	5265	0.3006	ug/L	98
35) Bromochloromethane	9.80	130	1247	0.2581	ug/L	78
38) 1,1,1-Trichloroethane	10.10	97	4086	0.2624	ug/L	95
39) Cyclohexane	10.13	56	5480	0.3098	ug/L	91
40) 1,1-Dichloropropene	10.30	75	4061	0.2947	ug/L	77
42) Carbon Tetrachloride	10.45	117	3457	0.2921	ug/L #	79
45) 1,2-Dichloroethane	10.63	62	3301	0.2687	ug/L	87
46) Benzene	10.65	78	12289	0.3257	ug/L	97
47) Trichloroethene	11.40	130	2395	0.2683	ug/L	91
48) Methylcyclohexane	11.50	83	4230	0.2772	ug/L	94
49) 1,2-Dichloropropane	11.62	63	2763	0.2549	ug/L	79
50) Bromodichloromethane	11.93	83	3775	0.3013	ug/L #	89
52) Dibromomethane	12.00	93	1241	0.2596	ug/L #	72
53) 2-Chloroethyl Vinyl Ether	12.21	63	1083	0.2575	ug/L #	52
55) cis-1,3-Dichloropropene	12.55	75	4121	0.2875	ug/L	99
56) Dimethyl Disulfide	12.82	94	1763	1.9771	ug/L #	58
59) Toluene	12.97	91	13277	0.3548	ug/L	94
60) Ethyl Methacrylate	13.07	69	1981	0.2521	ug/L	80

(#) = qualifier out of range (m) = manual integration
8M399407.D 8260WTR.M Wed Aug 20 13:49:58 2014 Page 1

Data File : C:\MSDCHEM\2\DATA\081914\8M399407.D Vial: 3
Acq On : 19 Aug 2014 9:19 Operator: TMB
Sample : WG488700-02 0.3ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:49:58 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

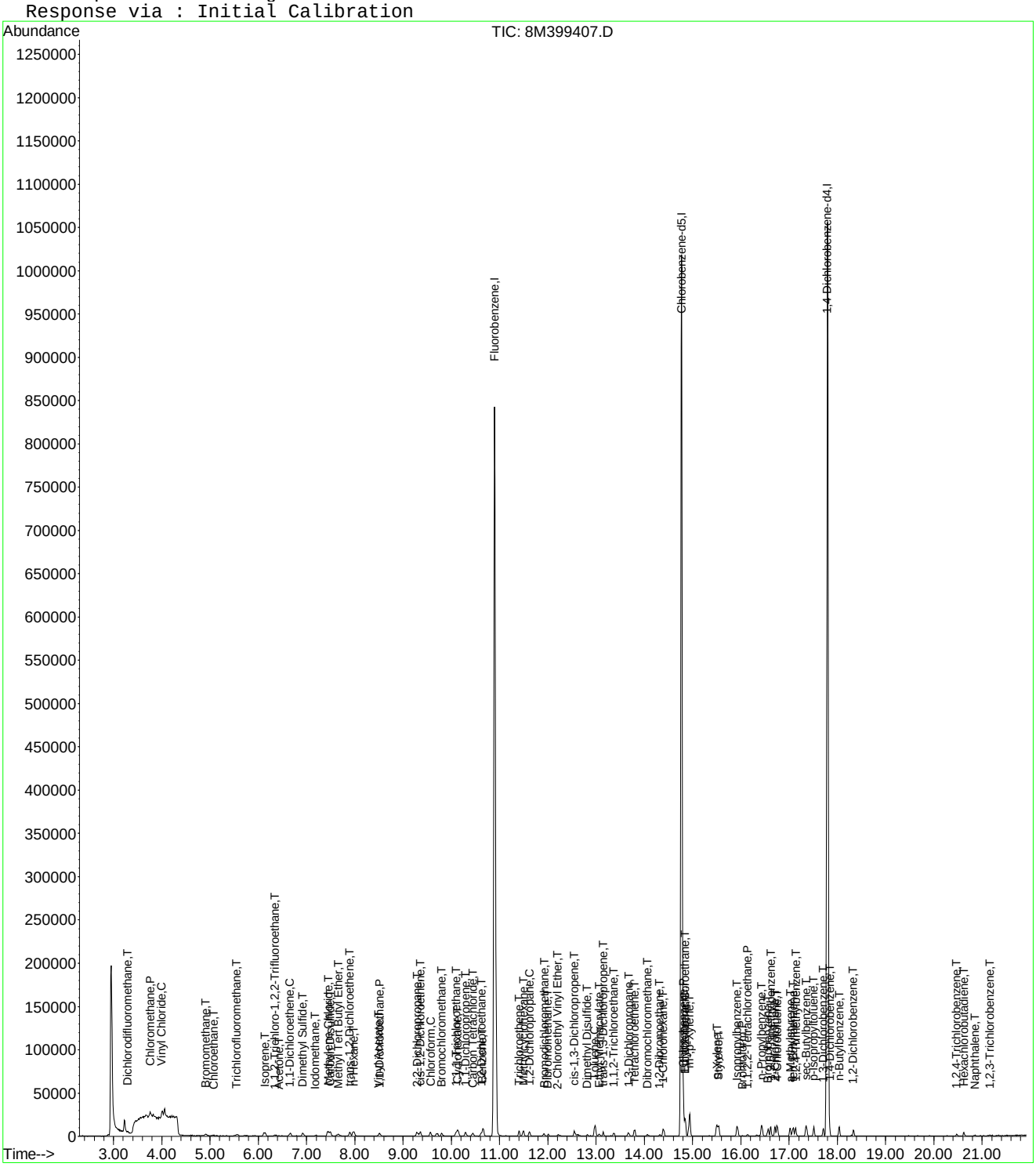
	Compound	R.T.	QIon	Response	Conc Unit		Qvalue
62)	trans-1,3-Dichloropropene	13.15	75	3189	0.2701 ug/L		85
63)	1,1,2-Trichloroethane	13.37	97	1467	0.2538 ug/L		96
65)	1,3-Dichloropropane	13.68	76	2878	0.2711 ug/L		89
66)	Tetrachloroethene	13.80	164	1649	0.2384 ug/L	#	64
67)	Dibromochloromethane	14.06	129	1619	0.2783 ug/L		84
68)	1,2-Dibromoethane	14.32	107	1518	0.2790 ug/L		100
69)	1-Chlorohexane	14.39	91	3805	0.3025 ug/L		87
70)	Chlorobenzene	14.82	112	7516	0.3271 ug/L		92
71)	1,1,1,2-Tetrachloroethane	14.85	131	1900	0.3828 ug/L		78
72)	Ethylbenzene	14.85	106	3625	0.2579 ug/L		54
73)	m-,p-Xylene	14.94	106	9794	0.6324 ug/L		85
74)	o-Xylene	15.51	106	4694	0.3013 ug/L		87
75)	Styrene	15.54	104	6909	0.2866 ug/L	#	65
76)	Bromoform	16.04	173	727	0.8467 ug/L	#	27
77)	Isopropylbenzene	15.92	105	11721	0.3164 ug/L		91
79)	1,1,2,2-Tetrachloroethane	16.14	83	1544	0.2556 ug/L	#	86
83)	n-Propylbenzene	16.43	91	15915	0.3198 ug/L		91
84)	Bromobenzene	16.56	156	2607	0.2863 ug/L		80
85)	1,3,5-Trimethylbenzene	16.62	105	9255	0.3011 ug/L		97
86)	2-Chlorotoluene	16.71	91	9571	0.3074 ug/L		87
87)	4-Chlorotoluene	16.76	91	9426	0.3112 ug/L		98
88)	a-Methylstyrene	17.03	118	4260	0.2549 ug/L		94
89)	tert-Butylbenzene	17.09	134	1926	0.2846 ug/L		81
90)	1,2,4-Trimethylbenzene	17.14	105	8765	0.2978 ug/L		88
91)	sec-Butylbenzene	17.36	105	12721	0.3176 ug/L		89
92)	p-Isopropyltoluene	17.51	119	9312	0.3157 ug/L		91
93)	1,3-Dichlorobenzene	17.71	146	5304	0.3225 ug/L		93
94)	1,4-Dichlorobenzene	17.84	146	5264	0.3189 ug/L	#	16
95)	n-Butylbenzene	18.04	91	9397	0.3263 ug/L		88
96)	1,2-Dichlorobenzene	18.33	146	4580	0.3216 ug/L		90
98)	1,2,4-Trichlorobenzene	20.47	180	1621	0.4293 ug/L	#	84
99)	Hexachlorobutadiene	20.63	225	1644	0.3365 ug/L		90
100)	Naphthalene	20.85	128	1543	0.4846 ug/L	#	68
101)	1,2,3-Trichlorobenzene	21.16	180	1022	0.4173 ug/L	#	46

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399407.D Vial: 3
Acq On : 19 Aug 2014 9:19 Operator: TMB
Sample : WG488700-02 0.3ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:49 2014 Quant Results File: 8260WTR.RES

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399408.D Vial: 4
Acq On : 19 Aug 2014 9:47 Operator: TMB
Sample : WG488700-03 0.4ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:49:59 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.90	96	916021	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.78	117	616383	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.80	152	297506	25.00	ug/L	0.00
System Monitoring Compounds						
37) Dibromofluoromethane	0.00	111	0	0.0000	ug/L	
Spiked Amount 25.000	Range 86 - 118		Recovery =	0.00%#		
43) 1,2-Dichloroethane-d4	0.00	65	0	0.0000	ug/L	
Spiked Amount 25.000	Range 80 - 120		Recovery =	0.00%#		
58) Toluene-d8	12.87	98	433	0.0143	ug/L	0.00
Spiked Amount 25.000	Range 88 - 110		Recovery =	0.04%#		
80) p-Bromofluorobenzene	0.00	95	0	0.0000	ug/L	
Spiked Amount 25.000	Range 86 - 115		Recovery =	0.00%#		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	3.29	85	2699	0.3427	ug/L	90
3) Chloromethane	3.76	50	10153	0.5028	ug/L #	73
4) Vinyl Chloride	4.00	62	8894	0.3333	ug/L	98
5) 1,3-Butadiene	4.05	54	7210	Below Cal		88
6) Bromomethane	4.91	94	3110	0.4695	ug/L	88
7) Chloroethane	5.07	64	2847	0.4192	ug/L #	45
8) Trichlorofluoromethane	5.56	101	4976	0.3940	ug/L #	93
10) Isoprene	6.13	67	4369	0.3380	ug/L	83
12) 1,1,2-Trichloro-1,2,2-Trif	6.35	101	2626	0.3493	ug/L	85
13) Acetone	6.43	43	231	0.2121	ug/L #	1
14) 1,1-Dichloroethene	6.67	61	5620	0.4045	ug/L	97
16) Dimethyl Sulfide	6.93	62	3061	0.3349	ug/L	95
17) Iodomethane	7.19	142	1058	1.0885	ug/L #	32
18) Methyl acetate	7.19	43	1185	0.2958	ug/L #	64
19) Methylene Chloride	7.45	84	4592	0.4988	ug/L	98
20) Carbon Disulfide	7.49	76	12170	0.4551	ug/L	96
22) Methyl Tert Butyl Ether	7.65	73	6655	0.4077	ug/L #	75
23) trans-1,2-Dichloroethene	7.90	61	5511	0.4028	ug/L	86
24) n-Hexane	7.97	57	5408	0.4016	ug/L	94
26) Vinyl Acetate	8.49	43	2627	0.3075	ug/L #	76
27) 1,1-Dichloroethane	8.52	63	7029	0.3975	ug/L #	90
31) 2,2-Dichloropropane	9.30	77	5933	0.3904	ug/L	92
32) cis-1,2-Dichloroethene	9.36	96	3963	0.4037	ug/L	78
33) Chloroform	9.58	83	6259	0.3759	ug/L	92
35) Bromochloromethane	9.79	130	1832	0.3988	ug/L	82
38) 1,1,1-Trichloroethane	10.09	97	5775	0.3901	ug/L	88
39) Cyclohexane	10.13	56	6605	0.3928	ug/L	93
40) 1,1-Dichloropropene	10.30	75	5366	0.4096	ug/L	91
42) Carbon Tetrachloride	10.45	117	3347	0.2975	ug/L	84
45) 1,2-Dichloroethane	10.61	62	4911	0.4205	ug/L	80
46) Benzene	10.65	78	16566	0.4618	ug/L	93
47) Trichloroethene	11.41	130	3169	0.3733	ug/L	94
48) Methylcyclohexane	11.49	83	5504	0.3794	ug/L	93
49) 1,2-Dichloropropane	11.62	63	4232	0.4106	ug/L	90
50) Bromodichloromethane	11.92	83	4760	0.3996	ug/L #	89
52) Dibromomethane	12.01	93	1454	0.3199	ug/L	71
53) 2-Chloroethyl Vinyl Ether	12.21	63	1263	0.3159	ug/L #	52
55) cis-1,3-Dichloropropene	12.55	75	5330	0.3911	ug/L	99
56) Dimethyl Disulfide	12.81	94	1821	1.9902	ug/L	94
59) Toluene	12.98	91	15344	0.4243	ug/L	99

(#) = qualifier out of range (m) = manual integration
8M399408.D 8260WTR.M Wed Aug 20 13:49:59 2014 Page 1

Data File : C:\MSDCHEM\2\DATA\081914\8M399408.D Vial: 4
Acq On : 19 Aug 2014 9:47 Operator: TMB
Sample : WG488700-03 0.4ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:49:59 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

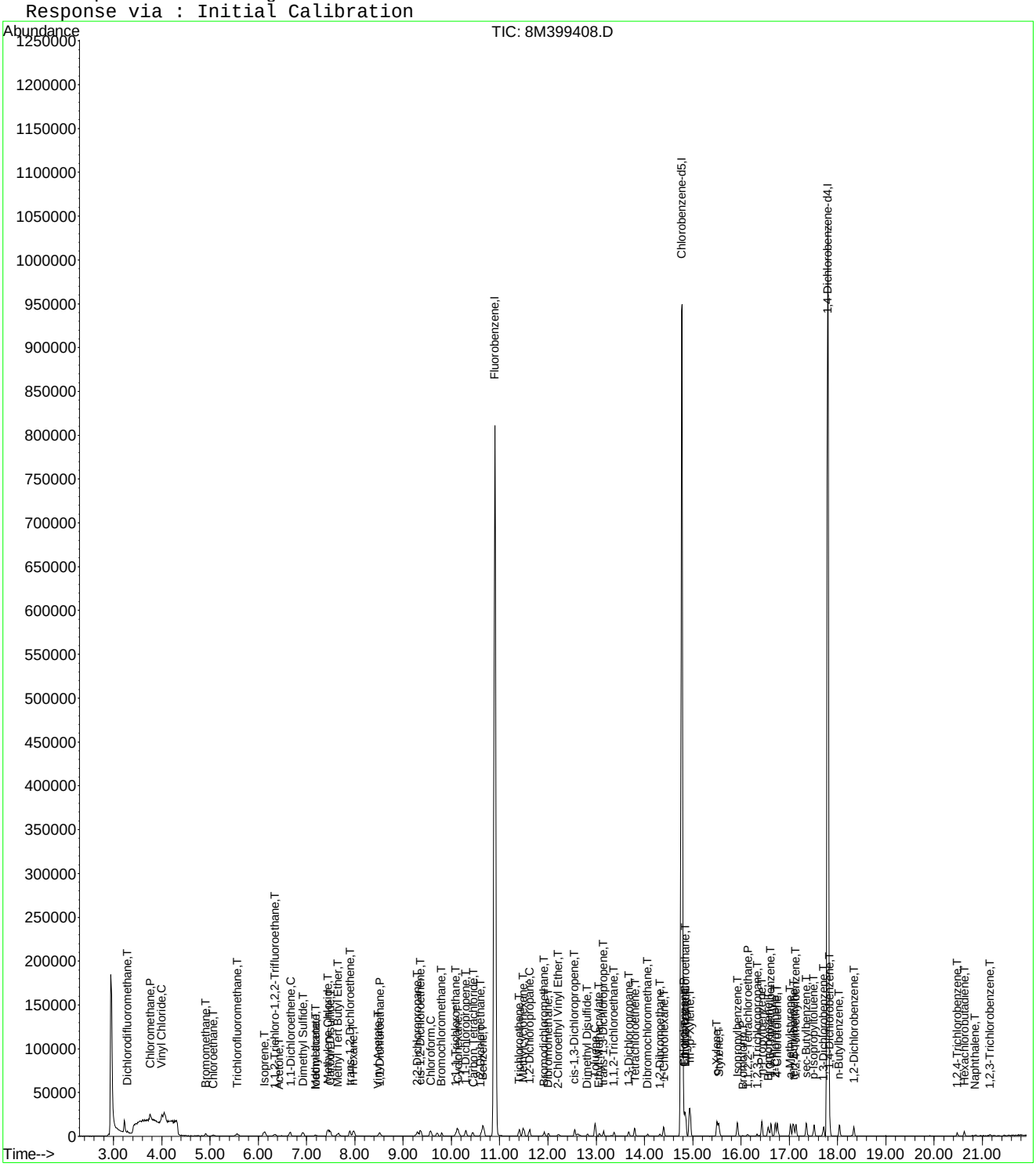
	Compound	R.T.	QIon	Response	Conc Unit		Qvalue
60)	Ethyl Methacrylate	13.06	69	2503	0.3297 ug/L		86
62)	trans-1,3-Dichloropropene	13.15	75	4242	0.3718 ug/L		96
63)	1,1,2-Trichloroethane	13.37	97	2002	0.3585 ug/L		80
65)	1,3-Dichloropropane	13.68	76	3832	0.3737 ug/L		97
66)	Tetrachloroethene	13.80	164	2661	0.3982 ug/L		91
67)	Dibromochloromethane	14.06	129	2027	0.3607 ug/L		92
68)	1,2-Dibromoethane	14.32	107	2207	0.4198 ug/L		90
69)	1-Chlorohexane	14.40	91	4584	0.3771 ug/L		96
70)	Chlorobenzene	14.82	112	10111	0.4554 ug/L		97
71)	1,1,1,2-Tetrachloroethane	14.85	131	2540	0.4744 ug/L		89
72)	Ethylbenzene	14.85	106	5094	0.3750 ug/L		84
73)	m-,p-Xylene	14.94	106	12451	0.8320 ug/L		87
74)	o-Xylene	15.50	106	5474	0.3637 ug/L		77
75)	Styrene	15.54	104	9315	0.3999 ug/L		79
76)	Bromoform	16.04	173	764	0.8646 ug/L	#	27
77)	Isopropylbenzene	15.92	105	14894	0.4161 ug/L		96
79)	1,1,2,2-Tetrachloroethane	16.14	83	2166	0.3740 ug/L	#	95
81)	1,2,3-Trichloropropane	16.34	110	400	0.2630 ug/L	#	17
83)	n-Propylbenzene	16.43	91	19840	0.4158 ug/L		93
84)	Bromobenzene	16.56	156	3754	0.4300 ug/L		90
85)	1,3,5-Trimethylbenzene	16.62	105	12025	0.4079 ug/L		94
86)	2-Chlorotoluene	16.71	91	12587	0.4216 ug/L		86
87)	4-Chlorotoluene	16.75	91	12156	0.4186 ug/L		99
88)	a-Methylstyrene	17.02	118	4973	0.3104 ug/L		90
89)	tert-Butylbenzene	17.09	134	2177	0.3354 ug/L	#	57
90)	1,2,4-Trimethylbenzene	17.13	105	11283	0.3998 ug/L		92
91)	sec-Butylbenzene	17.35	105	15951	0.4153 ug/L		89
92)	p-Isopropyltoluene	17.51	119	11584	0.4096 ug/L		89
93)	1,3-Dichlorobenzene	17.71	146	7000	0.4439 ug/L		99
94)	1,4-Dichlorobenzene	17.84	146	7090	0.4480 ug/L	#	2
95)	n-Butylbenzene	18.03	91	11431	0.4140 ug/L		89
96)	1,2-Dichlorobenzene	18.34	146	5407	0.3960 ug/L		93
98)	1,2,4-Trichlorobenzene	20.48	180	1997	0.4990 ug/L	#	83
99)	Hexachlorobutadiene	20.63	225	1848	0.3945 ug/L		92
100)	Naphthalene	20.85	128	1710	0.5191 ug/L	#	68
101)	1,2,3-Trichlorobenzene	21.16	180	891	0.3951 ug/L	#	48

(#) = qualifier out of range (m) = manual integration
8M399408.D 8260WTR.M Wed Aug 20 13:50:00 2014 Page 2

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399408.D Vial: 4
Acq On : 19 Aug 2014 9:47 Operator: TMB
Sample : WG488700-03 0.4ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:49 2014 Quant Results File: 8260WTR.RES

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration



8M399408.D 8260WTR.M Wed Aug 20 13:50:00 2014 Page 3

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399409.D Vial: 5
Acq On : 19 Aug 2014 10:16 Operator: TMB
Sample : WG488700-04 1ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50:00 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.90	96	905220	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.78	117	607355	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.80	152	290134	25.00	ug/L	0.00
System Monitoring Compounds						
37) Dibromofluoromethane	9.85	111	4041	0.4835	ug/L	0.00
Spiked Amount 25.000	Range 86 - 118		Recovery =	1.92%#		
43) 1,2-Dichloroethane-d4	10.51	65	4833	0.5240	ug/L	0.01
Spiked Amount 25.000	Range 80 - 120		Recovery =	2.08%#		
58) Toluene-d8	12.87	98	15834	0.5304	ug/L	0.00
Spiked Amount 25.000	Range 88 - 110		Recovery =	2.12%#		
80) p-Bromofluorobenzene	16.28	95	6120	0.5395	ug/L	0.00
Spiked Amount 25.000	Range 86 - 115		Recovery =	2.16%#		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	3.29	85	7800	1.0022	ug/L	95
3) Chloromethane	3.76	50	23272	1.1663	ug/L	91
4) Vinyl Chloride	4.00	62	20829	1.0444	ug/L	94
5) 1,3-Butadiene	4.05	54	17561	0.5453	ug/L	92
6) Bromomethane	4.90	94	7542	1.1522	ug/L	91
7) Chloroethane	5.07	64	6194	0.9229	ug/L	97
8) Trichlorofluoromethane	5.56	101	12479	0.9998	ug/L	96
9) Diethyl ether	6.09	59	24968	4.6573	ug/L	96
10) Isoprene	6.13	67	10593	0.8293	ug/L	97
12) 1,1,2-Trichloro-1,2,2-Trif	6.36	101	7053	0.9493	ug/L	92
13) Acetone	6.41	43	777	0.7219	ug/L #	1
14) 1,1-Dichloroethene	6.66	61	13722	0.9994	ug/L	100
15) Tert-Butyl Alcohol	6.76	59	2960	8.7008	ug/L #	59
16) Dimethyl Sulfide	6.92	62	8410	0.9310	ug/L	93
17) Iodomethane	7.18	142	3613	1.4106	ug/L	85
18) Methyl acetate	7.19	43	3310	0.8362	ug/L #	64
19) Methylene Chloride	7.45	84	10669	1.1727	ug/L	94
20) Carbon Disulfide	7.49	76	29618	1.1208	ug/L	97
21) Acrylonitrile	7.63	53	3315	1.9908	ug/L	88
22) Methyl Tert Butyl Ether	7.66	73	15133	0.9381	ug/L	90
23) trans-1,2-Dichloroethene	7.90	61	12902	0.9544	ug/L	91
24) n-Hexane	7.97	57	13611	1.0229	ug/L	93
25) Diisopropyl ether	8.31	45	146802	5.2497	ug/L	97
26) Vinyl Acetate	8.49	43	7492	0.8876	ug/L #	76
27) 1,1-Dichloroethane	8.52	63	17883	1.0235	ug/L	96
28) Ethyl-Tert-Butyl ether	8.89	59	127508	5.1061	ug/L	98
29) 2-Butanone	9.08	43	1382	0.7720	ug/L #	55
30) Propionitrile	9.18	54	2088	3.4328	ug/L #	56
31) 2,2-Dichloropropane	9.29	77	15551	1.0354	ug/L	97
32) cis-1,2-Dichloroethene	9.36	96	9346	0.9635	ug/L	98
33) Chloroform	9.57	83	17768	1.0799	ug/L	97
34) 1-Bromopropane	9.70	122	1335	0.7869	ug/L	96
35) Bromochloromethane	9.80	130	4326	0.9529	ug/L	84
36) Tetrahydrofuran	9.83	42	5512	4.6952	ug/L	85
38) 1,1,1-Trichloroethane	10.10	97	14217	0.9719	ug/L	95
39) Cyclohexane	10.13	56	16510	0.9936	ug/L	91
40) 1,1-Dichloropropene	10.30	75	13208	1.0203	ug/L	96
41) Tert-Amyl-Methyl ether	10.40	73	95228	4.9467	ug/L	98
42) Carbon Tetrachloride	10.44	117	10470	0.9416	ug/L	98
45) 1,2-Dichloroethane	10.62	62	10929	0.9470	ug/L	95

(#) = qualifier out of range (m) = manual integration
8M399409.D 8260WTR.M Wed Aug 20 13:50:01 2014 Page 1

Data File : C:\MSDCHEM\2\DATA\081914\8M399409.D Vial: 5
Acq On : 19 Aug 2014 10:16 Operator: TMB
Sample : WG488700-04 1ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50:00 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

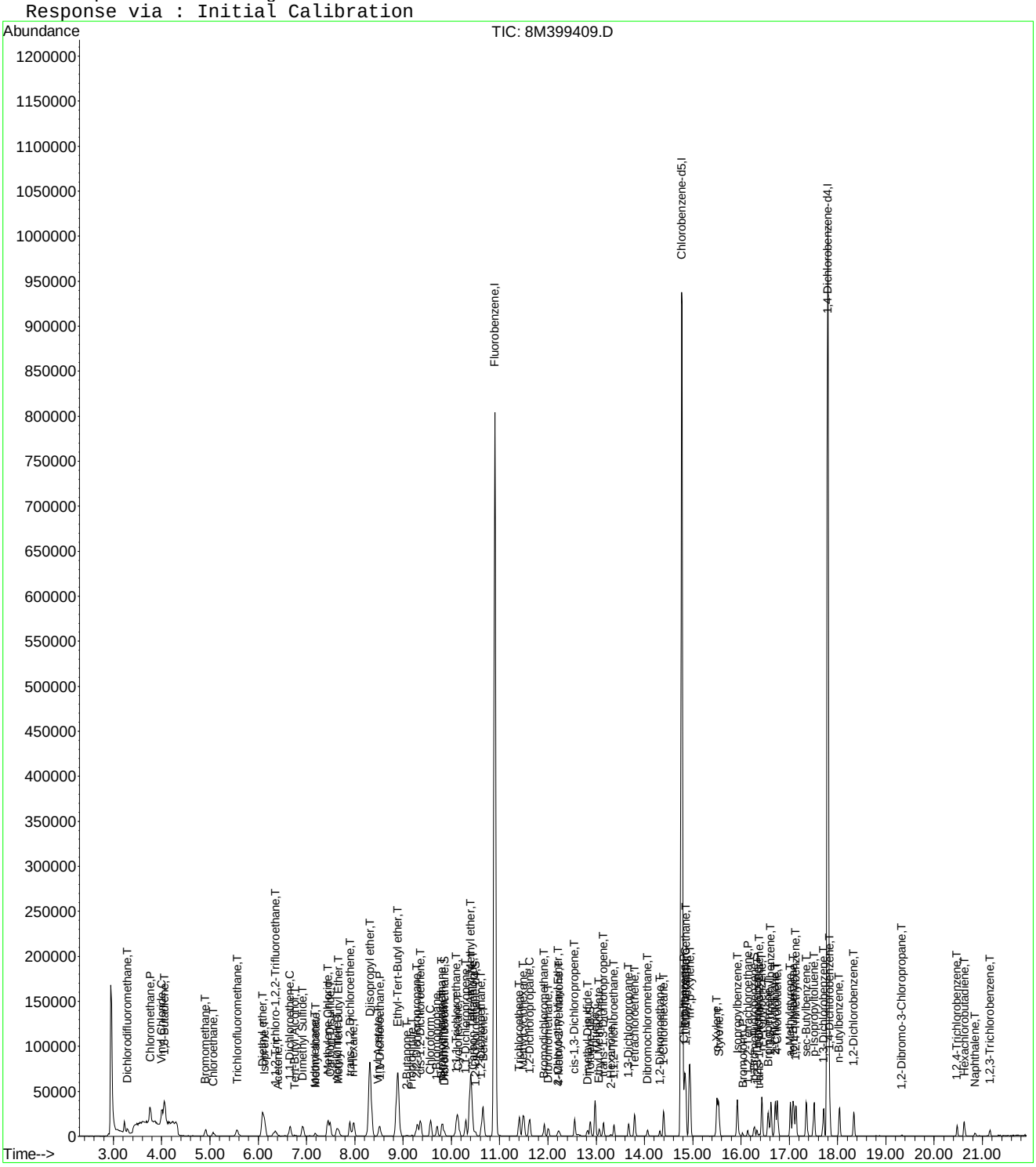
	Compound	R.T.	QIon	Response	Conc Unit		Qvalue
46)	Benzene	10.66	78	37965	1.0710 ug/L		97
47)	Trichloroethene	11.41	130	8210	0.9788 ug/L		91
48)	Methylcyclohexane	11.49	83	14776	1.0306 ug/L		90
49)	1,2-Dichloropropane	11.62	63	10237	1.0050 ug/L		96
50)	Bromodichloromethane	11.92	83	11504	0.9774 ug/L		90
52)	Dibromomethane	12.01	93	4572	1.0179 ug/L		86
53)	2-Chloroethyl Vinyl Ether	12.21	63	3350	0.8478 ug/L	#	78
54)	4-Methyl-2-Pentanone	12.23	58	1386	0.7716 ug/L	#	42
55)	cis-1,3-Dichloropropene	12.55	75	13343	0.9907 ug/L		94
56)	Dimethyl Disulfide	12.82	94	4309	2.2204 ug/L		95
59)	Toluene	12.98	91	38849	1.0903 ug/L		97
60)	Ethyl Methacrylate	13.06	69	6187	0.8270 ug/L		99
62)	trans-1,3-Dichloropropene	13.15	75	10416	0.9266 ug/L		97
63)	1,1,2-Trichloroethane	13.37	97	5026	0.9135 ug/L		93
64)	2-Hexanone	13.31	58	1065	0.6664 ug/L	#	20
65)	1,3-Dichloropropane	13.67	76	9907	0.9804 ug/L		100
66)	Tetrachloroethene	13.79	164	6326	0.9608 ug/L		87
67)	Dibromochloromethane	14.06	129	4978	0.8989 ug/L		99
68)	1,2-Dibromoethane	14.32	107	4642	0.8962 ug/L		99
69)	1-Chlorohexane	14.39	91	11785	0.9839 ug/L		98
70)	Chlorobenzene	14.82	112	22248	1.0169 ug/L		87
71)	1,1,1,2-Tetrachloroethane	14.86	131	6658	1.0219 ug/L		99
72)	Ethylbenzene	14.85	106	12095	0.9037 ug/L		73
73)	m-,p-Xylene	14.94	106	29623	2.0090 ug/L		84
74)	o-Xylene	15.50	106	14111	0.9514 ug/L		82
75)	Styrene	15.54	104	23127	1.0076 ug/L		87
76)	Bromoform	16.04	173	2165	1.2811 ug/L		87
77)	Isopropylbenzene	15.92	105	38025	1.0782 ug/L		97
79)	1,1,2,2-Tetrachloroethane	16.14	83	5307	0.9397 ug/L	#	96
81)	1,2,3-Trichloropropane	16.34	110	1339	0.9026 ug/L		70
82)	trans-1,4-Dichloro-2-Buten	16.38	53	949	1.2627 ug/L	#	5
83)	n-Propylbenzene	16.43	91	48923	1.0514 ug/L		95
84)	Bromobenzene	16.57	156	8344	0.9800 ug/L		85
85)	1,3,5-Trimethylbenzene	16.62	105	29993	1.0434 ug/L		92
86)	2-Chlorotoluene	16.71	91	31054	1.0666 ug/L		86
87)	4-Chlorotoluene	16.75	91	30200	1.0664 ug/L		100
88)	a-Methylstyrene	17.02	118	13458	0.8612 ug/L		85
89)	tert-Butylbenzene	17.08	134	5688	0.8987 ug/L		76
90)	1,2,4-Trimethylbenzene	17.13	105	27285	0.9915 ug/L		100
91)	sec-Butylbenzene	17.35	105	38907	1.0387 ug/L		94
92)	p-Isopropyltoluene	17.52	119	28433	1.0310 ug/L		92
93)	1,3-Dichlorobenzene	17.71	146	15432	1.0034 ug/L		91
94)	1,4-Dichlorobenzene	17.84	146	15484	1.0033 ug/L	#	51
95)	n-Butylbenzene	18.03	91	28178	1.0465 ug/L		89
96)	1,2-Dichlorobenzene	18.33	146	13666	1.0263 ug/L		100
97)	1,2-Dibromo-3-Chloropropan	19.33	75	506	1.1889 ug/L	#	42
98)	1,2,4-Trichlorobenzene	20.47	180	4997	0.9914 ug/L		98
99)	Hexachlorobutadiene	20.63	225	4481	0.9810 ug/L		97
100)	Naphthalene	20.85	128	4786	0.9975 ug/L		88
101)	1,2,3-Trichlorobenzene	21.16	180	2929	0.9217 ug/L		96

(#) = qualifier out of range (m) = manual integration
8M399409.D 8260WTR.M Wed Aug 20 13:50:01 2014 Page 2

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399409.D Vial: 5
Acq On : 19 Aug 2014 10:16 Operator: TMB
Sample : WG488700-04 1ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50 2014 Quant Results File: 8260WTR.RES

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399410.D Vial: 6
Acq On : 19 Aug 2014 10:45 Operator: TMB
Sample : WG488700-05 2ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50:01 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	10.90	96	902140	25.00	ug/L		0.00
57) Chlorobenzene-d5	14.78	117	607922	25.00	ug/L		0.00
78) 1,4-Dichlorobenzene-d4	17.80	152	287254	25.00	ug/L		0.00
System Monitoring Compounds							
37) Dibromofluoromethane	9.86	111	8209	0.9855	ug/L		0.00
Spiked Amount 25.000	Range 86 - 118		Recovery =	3.96%#			
43) 1,2-Dichloroethane-d4	10.50	65	9249	1.0061	ug/L		0.00
Spiked Amount 25.000	Range 80 - 120		Recovery =	4.04%#			
58) Toluene-d8	12.87	98	31083	1.0402	ug/L		0.00
Spiked Amount 25.000	Range 88 - 110		Recovery =	4.16%#			
80) p-Bromofluorobenzene	16.28	95	10835	0.9647	ug/L		0.00
Spiked Amount 25.000	Range 86 - 115		Recovery =	3.84%#			
Target Compounds							Qvalue
2) Dichlorodifluoromethane	3.29	85	14549	1.8758	ug/L		95
3) Chloromethane	3.76	50	41461	2.0850	ug/L		99
4) Vinyl Chloride	3.99	62	39628	2.1661	ug/L		98
5) 1,3-Butadiene	4.06	54	34941	2.0686	ug/L		99
6) Bromomethane	4.90	94	13523	2.0730	ug/L		99
7) Chloroethane	5.07	64	13037	1.9491	ug/L		97
8) Trichlorofluoromethane	5.56	101	25162	2.0228	ug/L		98
9) Diethyl ether	6.09	59	126852	23.7426	ug/L		95
10) Isoprene	6.13	67	21997	1.7280	ug/L		98
11) Acrolein	6.35	56	394	13.3941	ug/L	#	14
12) 1,1,2-Trichloro-1,2,2-Trif	6.33	101	13713	1.8519	ug/L		94
13) Acetone	6.43	43	2347	2.1881	ug/L	#	1
14) 1,1-Dichloroethene	6.66	61	26599	1.9439	ug/L		98
15) Tert-Butyl Alcohol	6.75	59	18150	53.5331	ug/L	#	93
16) Dimethyl Sulfide	6.92	62	16662	1.8509	ug/L		97
17) Iodomethane	7.18	142	7322	1.8790	ug/L		87
18) Methyl acetate	7.19	43	7510	1.9036	ug/L	#	89
19) Methylene Chloride	7.44	84	17864	1.9703	ug/L		100
20) Carbon Disulfide	7.50	76	53797	2.0427	ug/L		96
21) Acrylonitrile	7.62	53	20313	12.2407	ug/L		92
22) Methyl Tert Butyl Ether	7.65	73	30366	1.8889	ug/L		94
23) trans-1,2-Dichloroethene	7.89	61	25822	1.9166	ug/L		95
24) n-Hexane	7.97	57	26877	2.0268	ug/L		99
25) Diisopropyl ether	8.32	45	759418	27.2498	ug/L		97
26) Vinyl Acetate	8.48	43	16090	1.9127	ug/L		95
27) 1,1-Dichloroethane	8.52	63	34814	1.9992	ug/L		100
28) Ethyl-Tert-Butyl ether	8.88	59	665693	26.7490	ug/L		98
29) 2-Butanone	9.09	43	3239	1.8155	ug/L	#	55
30) Propionitrile	9.18	54	15018	24.7744	ug/L		97
31) 2,2-Dichloropropane	9.30	77	28609	1.9114	ug/L		97
32) cis-1,2-Dichloroethene	9.36	96	18282	1.8912	ug/L		99
33) Chloroform	9.57	83	33075	2.0171	ug/L		97
34) 1-Bromopropane	9.70	122	3280	1.9399	ug/L		93
35) Bromochloromethane	9.80	130	8340	1.8433	ug/L		81
36) Tetrahydrofuran	9.82	42	30202	25.8143	ug/L		96
38) 1,1,1-Trichloroethane	10.10	97	26660	1.8287	ug/L		96
39) Cyclohexane	10.13	56	33165	2.0027	ug/L		97
40) 1,1-Dichloropropene	10.30	75	25150	1.9494	ug/L		91
41) Tert-Amyl-Methyl ether	10.39	73	508855	26.5231	ug/L		96
42) Carbon Tetrachloride	10.45	117	20979	1.8932	ug/L		94

(#) = qualifier out of range (m) = manual integration
8M399410.D 8260WTR.M Wed Aug 20 13:50:02 2014 Page 1

Data File : C:\MSDCHEM\2\DATA\081914\8M399410.D Vial: 6
Acq On : 19 Aug 2014 10:45 Operator: TMB
Sample : WG488700-05 2ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50:01 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

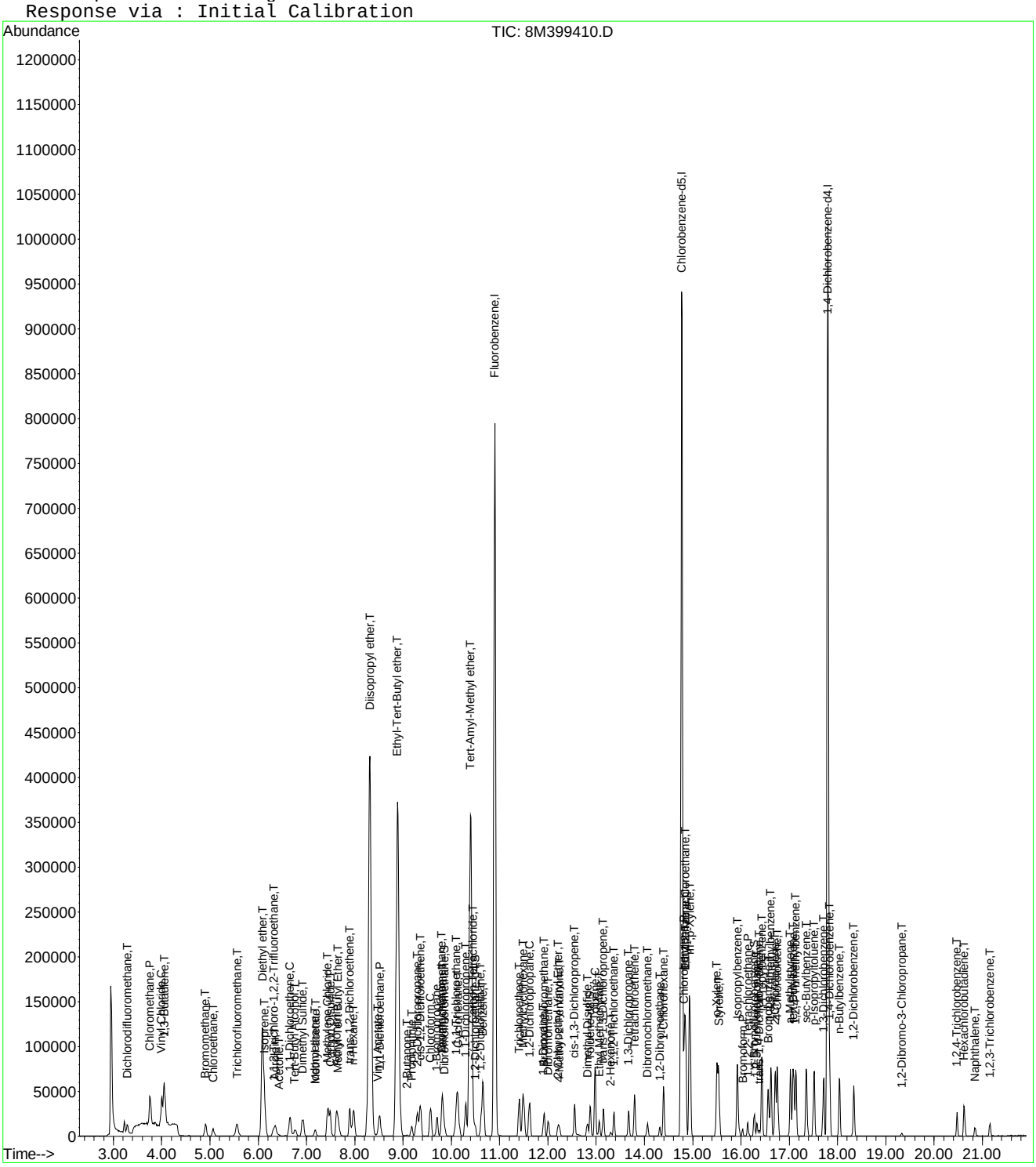
	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
45)	1,2-Dichloroethane	10.61	62	22068	1.9187	ug/L		98
46)	Benzene	10.65	78	71719	2.0301	ug/L		96
47)	Trichloroethene	11.41	130	16035	1.9182	ug/L		91
48)	Methylcyclohexane	11.49	83	29233	2.0460	ug/L		92
49)	1,2-Dichloropropane	11.62	63	19723	1.9429	ug/L		97
50)	Bromodichloromethane	11.92	83	21887	1.8658	ug/L		97
51)	1,4-Dioxane	11.90	88	1873	48.8852	ug/L		85
52)	Dibromomethane	12.01	93	8577	1.9161	ug/L		89
53)	2-Chloroethyl Vinyl Ether	12.21	63	6864	1.7431	ug/L		84
54)	4-Methyl-2-Pentanone	12.24	58	2756	1.5395	ug/L		92
55)	cis-1,3-Dichloropropene	12.55	75	25026	1.8645	ug/L		99
56)	Dimethyl Disulfide	12.82	94	10069	2.7517	ug/L		94
59)	Toluene	12.98	91	75375	2.1134	ug/L		98
60)	Ethyl Methacrylate	13.07	69	12997	1.7356	ug/L		93
62)	trans-1,3-Dichloropropene	13.14	75	20901	1.8575	ug/L		95
63)	1,1,2-Trichloroethane	13.37	97	10596	1.9240	ug/L		97
64)	2-Hexanone	13.30	58	2432	1.5203	ug/L	#	41
65)	1,3-Dichloropropane	13.67	76	20230	2.0001	ug/L		93
66)	Tetrachloroethene	13.80	164	12188	1.8494	ug/L		91
67)	Dibromochloromethane	14.06	129	9797	1.7674	ug/L		90
68)	1,2-Dibromoethane	14.32	107	9209	1.7762	ug/L		97
69)	1-Chlorohexane	14.39	91	22963	1.9154	ug/L		95
70)	Chlorobenzene	14.82	112	42669	1.9485	ug/L		66
71)	1,1,1,2-Tetrachloroethane	14.85	131	12561	1.7956	ug/L		99
72)	Ethylbenzene	14.85	106	23955	1.7881	ug/L		81
73)	m-,p-Xylene	14.94	106	57882	3.9219	ug/L		85
74)	o-Xylene	15.50	106	27727	1.8677	ug/L		84
75)	Styrene	15.54	104	43945	1.9128	ug/L		89
76)	Bromoform	16.04	173	4302	1.9097	ug/L		93
77)	Isopropylbenzene	15.92	105	72348	2.0495	ug/L		95
79)	1,1,2,2-Tetrachloroethane	16.14	83	10516	1.8807	ug/L	#	98
81)	1,2,3-Trichloropropane	16.33	110	2786	1.8968	ug/L		73
82)	trans-1,4-Dichloro-2-Buten	16.38	53	2420	2.0256	ug/L		49
83)	n-Propylbenzene	16.43	91	97152	2.1087	ug/L		92
84)	Bromobenzene	16.57	156	16200	1.9217	ug/L		89
85)	1,3,5-Trimethylbenzene	16.62	105	58834	2.0672	ug/L		96
86)	2-Chlorotoluene	16.71	91	60211	2.0888	ug/L		84
87)	4-Chlorotoluene	16.75	91	55985	1.9966	ug/L		99
88)	a-Methylstyrene	17.02	118	28109	1.8168	ug/L		97
89)	tert-Butylbenzene	17.08	134	11256	1.7963	ug/L		81
90)	1,2,4-Trimethylbenzene	17.13	105	53807	1.9749	ug/L		98
91)	sec-Butylbenzene	17.35	105	74524	2.0095	ug/L		95
92)	p-Isopropyltoluene	17.52	119	55284	2.0247	ug/L		96
93)	1,3-Dichlorobenzene	17.71	146	31518	2.0699	ug/L		96
94)	1,4-Dichlorobenzene	17.84	146	31411	2.0557	ug/L		80
95)	n-Butylbenzene	18.04	91	53776	2.0172	ug/L		90
96)	1,2-Dichlorobenzene	18.33	146	26374	2.0006	ug/L		99
97)	1,2-Dibromo-3-Chloropropan	19.34	75	1237	2.0237	ug/L		86
98)	1,2,4-Trichlorobenzene	20.47	180	9950	1.8059	ug/L		99
99)	Hexachlorobutadiene	20.62	225	8574	1.8958	ug/L		97
100)	Naphthalene	20.85	128	9406	1.7199	ug/L		90
101)	1,2,3-Trichlorobenzene	21.16	180	5938	1.7051	ug/L		97

(#) = qualifier out of range (m) = manual integration
8M399410.D 8260WTR.M Wed Aug 20 13:50:02 2014 Page 2

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399410.D Vial: 6
Acq On : 19 Aug 2014 10:45 Operator: TMB
Sample : WG488700-05 2ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50 2014 Quant Results File: 8260WTR.RES

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399411.D Vial: 7
Acq On : 19 Aug 2014 11:14 Operator: TMB
Sample : WG488700-06 5ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50:02 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.90	96	925148	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.77	117	607601	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.79	152	292789	25.00	ug/L	0.00
System Monitoring Compounds						
37) Dibromofluoromethane	9.86	111	19799	2.3179	ug/L	0.00
Spiked Amount 25.000	Range 86 - 118		Recovery =	9.28%#		
43) 1,2-Dichloroethane-d4	10.49	65	21662	2.2978	ug/L	0.00
Spiked Amount 25.000	Range 80 - 120		Recovery =	9.20%#		
58) Toluene-d8	12.88	98	73291	2.4539	ug/L	0.00
Spiked Amount 25.000	Range 88 - 110		Recovery =	9.80%#		
80) p-Bromofluorobenzene	16.27	95	27014	2.3597	ug/L	0.00
Spiked Amount 25.000	Range 86 - 115		Recovery =	9.44%#		
Target Compounds						Qvalue
2) Dichlorodifluoromethane	3.29	85	35641	4.4809	ug/L	96
3) Chloromethane	3.76	50	102090	5.0063	ug/L	98
4) Vinyl Chloride	4.00	62	87384	4.8922	ug/L	99
5) 1,3-Butadiene	4.05	54	76824	5.6145	ug/L	98
6) Bromomethane	4.91	94	30447	4.5512	ug/L	97
7) Chloroethane	5.08	64	30842	4.4965	ug/L	98
8) Trichlorofluoromethane	5.56	101	60063	4.7084	ug/L	98
9) Diethyl ether	6.09	59	249779	45.5880	ug/L	96
10) Isoprene	6.13	67	53344	4.0863	ug/L	96
11) Acrolein	6.35	56	1220	22.7418	ug/L	80
12) 1,1,2-Trichloro-1,2,2-Trif	6.36	101	32330	4.2576	ug/L	93
13) Acetone	6.43	43	4586	4.1692	ug/L #	21
14) 1,1-Dichloroethene	6.66	61	65218	4.6476	ug/L	99
15) Tert-Butyl Alcohol	6.76	59	34491	99.2005	ug/L	96
16) Dimethyl Sulfide	6.93	62	39596	4.2890	ug/L	91
17) Iodomethane	7.17	142	22988	3.7778	ug/L	88
18) Methyl acetate	7.19	43	18877	4.6660	ug/L #	89
19) Methylene Chloride	7.44	84	41391	4.4516	ug/L	99
20) Carbon Disulfide	7.50	76	132068	4.8899	ug/L	99
21) Acrylonitrile	7.62	53	38952	22.8888	ug/L	91
22) Methyl Tert Butyl Ether	7.66	73	73055	4.4314	ug/L	94
23) trans-1,2-Dichloroethene	7.90	61	63018	4.5611	ug/L	98
24) n-Hexane	7.98	57	64065	4.7110	ug/L	96
25) Diisopropyl ether	8.31	45	1492077	52.2079	ug/L	96
26) Vinyl Acetate	8.49	43	39677	4.5992	ug/L	97
27) 1,1-Dichloroethane	8.52	63	84566	4.7356	ug/L	98
28) Ethyl-Tert-Butyl ether	8.89	59	1306273	51.1836	ug/L	98
29) 2-Butanone	9.09	43	7871	4.3020	ug/L	93
30) Propionitrile	9.18	54	29308	47.1456	ug/L	100
31) 2,2-Dichloropropane	9.29	77	68506	4.4630	ug/L	99
32) cis-1,2-Dichloroethene	9.37	96	45225	4.5619	ug/L	98
33) Chloroform	9.57	83	82267	4.8923	ug/L	97
34) 1-Bromopropane	9.71	122	7436	4.2885	ug/L	96
35) Bromochloromethane	9.80	130	20751	4.4723	ug/L	88
36) Tetrahydrofuran	9.82	42	55703	46.4266	ug/L	94
38) 1,1,1-Trichloroethane	10.10	97	67525	4.5166	ug/L	98
39) Cyclohexane	10.13	56	78740	4.6365	ug/L	91
40) 1,1-Dichloropropene	10.30	75	61157	4.6224	ug/L	91
41) Tert-Amyl-Methyl ether	10.40	73	993580	50.5006	ug/L	96
42) Carbon Tetrachloride	10.44	117	51239	4.5090	ug/L	95

(#) = qualifier out of range (m) = manual integration
8M399411.D 8260WTR.M Wed Aug 20 13:50:03 2014 Page 1

Data File : C:\MSDCHEM\2\DATA\081914\8M399411.D Vial: 7
Acq On : 19 Aug 2014 11:14 Operator: TMB
Sample : WG488700-06 5ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50:02 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

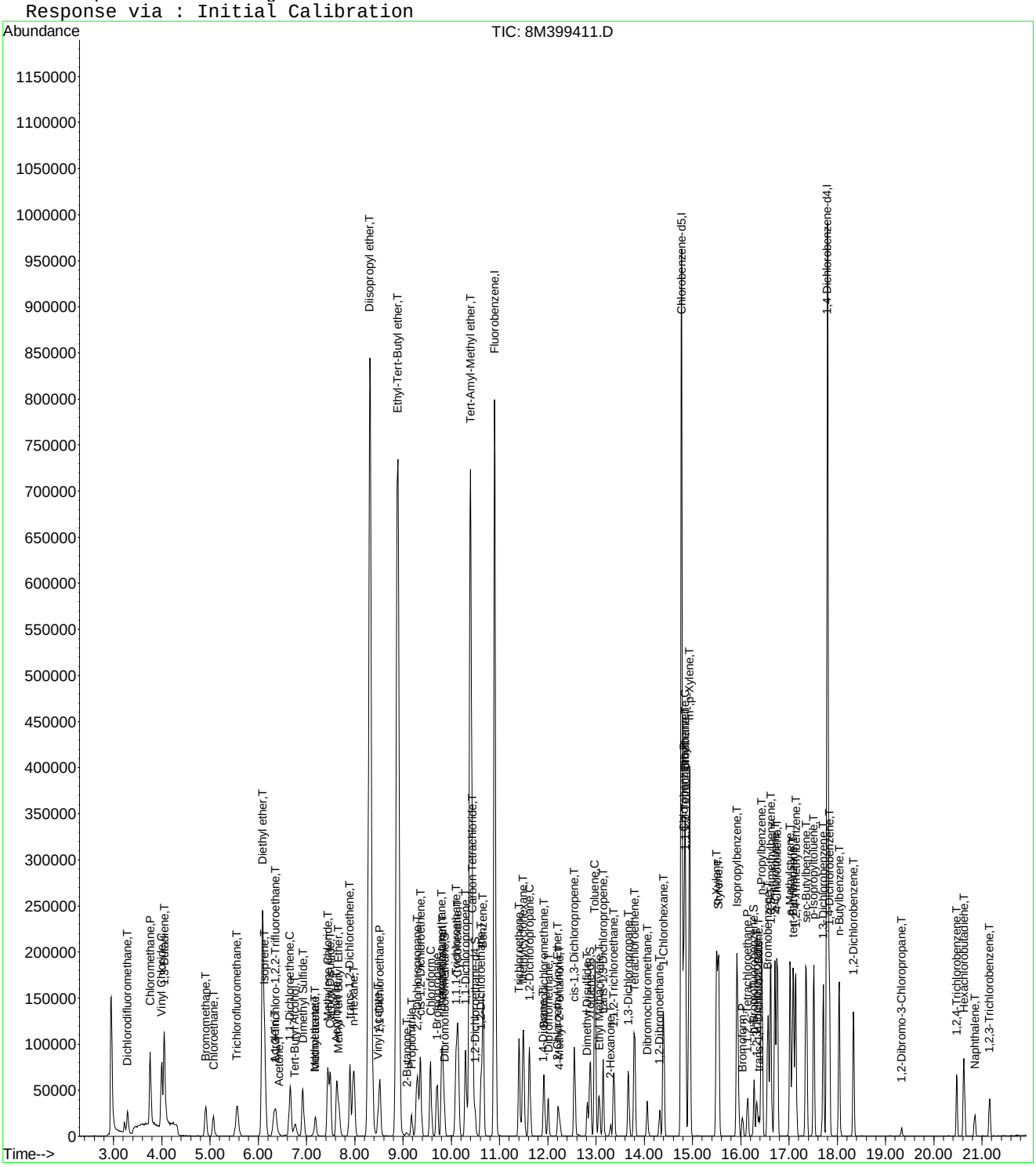
	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
45)	1,2-Dichloroethane	10.62	62	55459	4.7020	ug/L		99
46)	Benzene	10.66	78	178597	4.9297	ug/L		96
47)	Trichloroethene	11.40	130	39195	4.5720	ug/L		92
48)	Methylcyclohexane	11.50	83	70083	4.7831	ug/L		92
49)	1,2-Dichloropropane	11.62	63	48108	4.6213	ug/L		96
50)	Bromodichloromethane	11.92	83	54911	4.5646	ug/L		99
51)	1,4-Dioxane	11.90	88	3269	83.1989	ug/L		91
52)	Dibromomethane	12.01	93	20822	4.5359	ug/L		90
53)	2-Chloroethyl Vinyl Ether	12.21	63	17171	4.2521	ug/L		94
54)	4-Methyl-2-Pentanone	12.24	58	7541	4.1075	ug/L		97
55)	cis-1,3-Dichloropropene	12.55	75	64792	4.7072	ug/L		97
56)	Dimethyl Disulfide	12.82	94	26190	4.1734	ug/L		100
59)	Toluene	12.98	91	182823	5.1288	ug/L		98
60)	Ethyl Methacrylate	13.07	69	32874	4.3922	ug/L		92
62)	trans-1,3-Dichloropropene	13.15	75	52173	4.6392	ug/L		100
63)	1,1,2-Trichloroethane	13.37	97	25717	4.6721	ug/L		97
64)	2-Hexanone	13.31	58	6368	3.9829	ug/L	#	79
65)	1,3-Dichloropropane	13.67	76	49067	4.8536	ug/L		95
66)	Tetrachloroethene	13.80	164	29884	4.5370	ug/L		86
67)	Dibromochloromethane	14.06	129	24676	4.4541	ug/L		97
68)	1,2-Dibromoethane	14.32	107	23238	4.4844	ug/L		99
69)	1-Chlorohexane	14.40	91	58759	4.9038	ug/L		96
70)	Chlorobenzene	14.83	112	105879	4.8377	ug/L		80
71)	1,1,1,2-Tetrachloroethane	14.86	131	32531	4.3959	ug/L		99
72)	Ethylbenzene	14.85	106	59611	4.4520	ug/L		82
73)	m-,p-Xylene	14.94	106	143431	9.7234	ug/L		86
74)	o-Xylene	15.50	106	68088	4.5889	ug/L		88
75)	Styrene	15.54	104	113527	4.9441	ug/L		92
76)	Bromoform	16.04	173	11882	4.1379	ug/L		96
77)	Isopropylbenzene	15.92	105	178577	5.0614	ug/L		95
79)	1,1,2,2-Tetrachloroethane	16.14	83	26642	4.6745	ug/L		99
81)	1,2,3-Trichloropropane	16.34	110	6638	4.4340	ug/L		61
82)	trans-1,4-Dichloro-2-Buten	16.38	53	6521	4.0756	ug/L		61
83)	n-Propylbenzene	16.43	91	237881	5.0657	ug/L		93
84)	Bromobenzene	16.56	156	40639	4.7297	ug/L		90
85)	1,3,5-Trimethylbenzene	16.63	105	144994	4.9981	ug/L		95
86)	2-Chlorotoluene	16.71	91	145770	4.9614	ug/L		84
87)	4-Chlorotoluene	16.75	91	141009	4.9338	ug/L		96
88)	a-Methylstyrene	17.02	118	71488	4.5333	ug/L		95
89)	tert-Butylbenzene	17.09	134	27829	4.3571	ug/L		88
90)	1,2,4-Trimethylbenzene	17.14	105	135422	4.8764	ug/L		85
91)	sec-Butylbenzene	17.36	105	183883	4.8646	ug/L		95
92)	p-Isopropyltoluene	17.51	119	136126	4.8912	ug/L		96
93)	1,3-Dichlorobenzene	17.71	146	75329	4.8535	ug/L		97
94)	1,4-Dichlorobenzene	17.83	146	75347	4.8379	ug/L		89
95)	n-Butylbenzene	18.04	91	131433	4.8370	ug/L		92
96)	1,2-Dichlorobenzene	18.34	146	63213	4.7044	ug/L		97
97)	1,2-Dibromo-3-Chloropropan	19.33	75	3417	4.4232	ug/L		85
98)	1,2,4-Trichlorobenzene	20.48	180	24445	4.0824	ug/L		100
99)	Hexachlorobutadiene	20.63	225	20594	4.4674	ug/L		97
100)	Naphthalene	20.85	128	24003	3.9016	ug/L		97
101)	1,2,3-Trichlorobenzene	21.15	180	15157	4.0025	ug/L		97

(#) = qualifier out of range (m) = manual integration
8M399411.D 8260WTR.M Wed Aug 20 13:50:03 2014 Page 2

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399411.D Vial: 7
Acq On : 19 Aug 2014 11:14 Operator: TMB
Sample : WG488700-06 5ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50 2014 Quant Results File: 8260WTR.RES

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration



8M399411.D 8260WTR.M Wed Aug 20 13:50:03 2014 Page 3

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399412.D Vial: 8
Acq On : 19 Aug 2014 11:42 Operator: TMB
Sample : WG488700-07 20ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50:03 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	10.90	96	944334	25.00 ug/L	0.00
57) Chlorobenzene-d5	14.77	117	630173	25.00 ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.80	152	307193	25.00 ug/L	0.00
System Monitoring Compounds					
37) Dibromofluoromethane	9.86	111	89806	10.2999 ug/L	0.00
Spiked Amount 25.000	Range 86 - 118		Recovery = 41.20%#		
43) 1,2-Dichloroethane-d4	10.50	65	99204	10.3094 ug/L	0.00
Spiked Amount 25.000	Range 80 - 120		Recovery = 41.24%#		
58) Toluene-d8	12.87	98	335749	10.8389 ug/L	0.00
Spiked Amount 25.000	Range 88 - 110		Recovery = 43.36%#		
80) p-Bromofluorobenzene	16.28	95	125728	10.4674 ug/L	0.00
Spiked Amount 25.000	Range 86 - 115		Recovery = 41.88%#		
Target Compounds					Qvalue
2) Dichlorodifluoromethane	3.29	85	173236	21.3371 ug/L	100
3) Chloromethane	3.77	50	455720	21.8935 ug/L	99
4) Vinyl Chloride	3.99	62	374343	21.7045 ug/L	97
5) 1,3-Butadiene	4.06	54	329648	28.8184 ug/L	97
6) Bromomethane	4.91	94	132272	19.3703 ug/L	100
7) Chloroethane	5.07	64	144945	20.7023 ug/L	99
8) Trichlorofluoromethane	5.55	101	264397	20.3050 ug/L	99
9) Diethyl ether	6.09	59	454771	81.3154 ug/L	96
10) Isoprene	6.13	67	250020	18.7630 ug/L	95
11) Acrolein	6.33	56	2952	41.8969 ug/L	94
12) 1,1,2-Trichloro-1,2,2-Trif	6.35	101	154527	19.9363 ug/L	92
13) Acetone	6.43	43	22134	19.7135 ug/L #	28
14) 1,1-Dichloroethene	6.66	61	299850	20.9340 ug/L	99
15) Tert-Butyl Alcohol	6.76	59	56082	158.0219 ug/L	98
16) Dimethyl Sulfide	6.92	62	192127	20.3884 ug/L	97
17) Iodomethane	7.18	142	140201	17.7578 ug/L	88
18) Methyl acetate	7.19	43	84084	20.3613 ug/L	98
19) Methylene Chloride	7.45	84	186208	19.6198 ug/L	99
20) Carbon Disulfide	7.49	76	601382	21.8140 ug/L	100
21) Acrylonitrile	7.62	53	73968	42.5817 ug/L	96
22) Methyl Tert Butyl Ether	7.65	73	359261	21.3494 ug/L	95
23) trans-1,2-Dichloroethene	7.89	61	298813	21.1880 ug/L	97
24) n-Hexane	7.97	57	278308	20.0496 ug/L	97
25) Diisopropyl ether	8.31	45	2491060	85.3915 ug/L	95
26) Vinyl Acetate	8.48	43	181857	20.6518 ug/L	99
27) 1,1-Dichloroethane	8.52	63	388371	21.3063 ug/L	98
28) Ethyl-Tert-Butyl ether	8.88	59	2233098	85.7216 ug/L	97
29) 2-Butanone	9.07	43	37241	19.9410 ug/L	95
30) Propionitrile	9.17	54	52006	81.9584 ug/L	99
31) 2,2-Dichloropropane	9.30	77	327671	20.9135 ug/L	100
32) cis-1,2-Dichloroethene	9.36	96	210163	20.7689 ug/L	98
33) Chloroform	9.57	83	369261	21.5133 ug/L	100
34) 1-Bromopropane	9.71	122	36104	20.3991 ug/L	98
35) Bromochloromethane	9.80	130	97525	20.5918 ug/L	89
36) Tetrahydrofuran	9.82	42	101768	83.0969 ug/L	93
38) 1,1,1-Trichloroethane	10.10	97	311564	20.4163 ug/L	99
39) Cyclohexane	10.13	56	349007	20.1332 ug/L	92
40) 1,1-Dichloropropene	10.30	75	282415	20.9122 ug/L	92
41) Tert-Amyl-Methyl ether	10.39	73	1713423	85.3186 ug/L	96
42) Carbon Tetrachloride	10.44	117	236974	20.4300 ug/L	98

(#) = qualifier out of range (m) = manual integration
8M399412.D 8260WTR.M Wed Aug 20 13:50:04 2014 Page 1

Data File : C:\MSDCHEM\2\DATA\081914\8M399412.D Vial: 8
Acq On : 19 Aug 2014 11:42 Operator: TMB
Sample : WG488700-07 20ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50:03 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

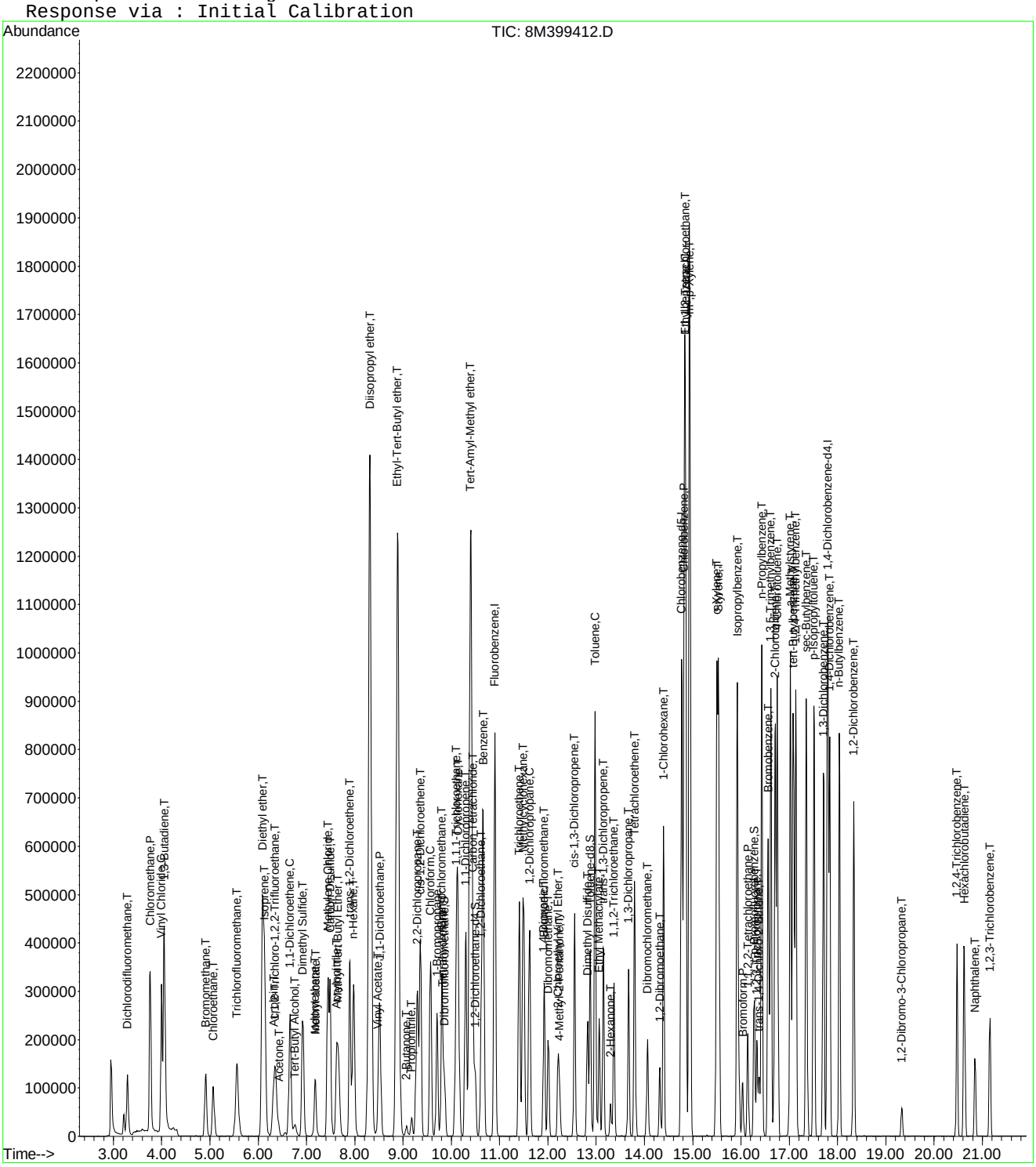
	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45)	1,2-Dichloroethane	10.62	62	256078	21.2699	ug/L	97
46)	Benzene	10.66	78	800210	21.6390	ug/L	97
47)	Trichloroethene	11.41	130	175973	20.1099	ug/L	92
48)	Methylcyclohexane	11.49	83	302278	20.2109	ug/L	93
49)	1,2-Dichloropropane	11.62	63	220619	20.7623	ug/L	97
50)	Bromodichloromethane	11.92	83	258167	21.0248	ug/L	99
51)	1,4-Dioxane	11.91	88	6350	158.3295	ug/L	90
52)	Dibromomethane	12.01	93	98294	20.9774	ug/L	90
53)	2-Chloroethyl Vinyl Ether	12.21	63	83237	20.1935	ug/L	93
54)	4-Methyl-2-Pentanone	12.24	58	37712	20.1242	ug/L	99
55)	cis-1,3-Dichloropropene	12.55	75	305373	21.7348	ug/L	99
56)	Dimethyl Disulfide	12.82	94	164547	16.1814	ug/L	98
59)	Toluene	12.98	91	826069	22.3438	ug/L	99
60)	Ethyl Methacrylate	13.06	69	171772	22.1277	ug/L	93
62)	trans-1,3-Dichloropropene	13.15	75	257572	22.0827	ug/L	98
63)	1,1,2-Trichloroethane	13.37	97	124900	21.8782	ug/L	97
64)	2-Hexanone	13.30	58	34308	20.6894	ug/L	92
65)	1,3-Dichloropropane	13.67	76	229178	21.8579	ug/L	94
66)	Tetrachloroethene	13.79	164	134347	19.6660	ug/L	86
67)	Dibromochloromethane	14.06	129	127483	22.1867	ug/L	100
68)	1,2-Dibromoethane	14.32	107	115039	21.4047	ug/L	99
69)	1-Chlorohexane	14.39	91	263508	21.2039	ug/L	94
70)	Chlorobenzene	14.82	112	492734	21.7068	ug/L	87
71)	1,1,1,2-Tetrachloroethane	14.85	131	165978	20.2643	ug/L	97
72)	Ethylbenzene	14.85	106	280857	20.2243	ug/L	86
73)	m-,p-Xylene	14.93	106	671823	43.9128	ug/L	90
74)	o-Xylene	15.50	106	322916	20.9838	ug/L	89
75)	Styrene	15.53	104	550648	23.1217	ug/L	91
76)	Bromoform	16.04	173	64997	18.8535	ug/L	99
77)	Isopropylbenzene	15.92	105	822916	22.4883	ug/L	98
79)	1,1,2,2-Tetrachloroethane	16.14	83	140911	23.5645	ug/L	97
81)	1,2,3-Trichloropropane	16.33	110	35419	22.5494	ug/L	79
82)	trans-1,4-Dichloro-2-Buten	16.37	53	35842	18.0510	ug/L	85
83)	n-Propylbenzene	16.43	91	1079734	21.9150	ug/L	94
84)	Bromobenzene	16.57	156	187027	20.7463	ug/L	92
85)	1,3,5-Trimethylbenzene	16.62	105	681028	22.3752	ug/L	96
86)	2-Chlorotoluene	16.71	91	717315	23.2697	ug/L	85
87)	4-Chlorotoluene	16.75	91	619075	20.6455	ug/L	95
88)	a-Methylstyrene	17.02	118	367337	22.2019	ug/L	96
89)	tert-Butylbenzene	17.08	134	132392	19.7564	ug/L	84
90)	1,2,4-Trimethylbenzene	17.13	105	667897	22.9225	ug/L	97
91)	sec-Butylbenzene	17.35	105	855734	21.5770	ug/L	97
92)	p-Isopropyltoluene	17.51	119	659840	22.5975	ug/L	97
93)	1,3-Dichlorobenzene	17.71	146	355305	21.8192	ug/L	95
94)	1,4-Dichlorobenzene	17.84	146	358674	21.9500	ug/L	95
95)	n-Butylbenzene	18.03	91	646583	22.6800	ug/L	93
96)	1,2-Dichlorobenzene	18.33	146	312528	22.1680	ug/L	97
97)	1,2-Dibromo-3-Chloropropan	19.33	75	20014	21.8490	ug/L	81
98)	1,2,4-Trichlorobenzene	20.47	180	137630	20.6949	ug/L	99
99)	Hexachlorobutadiene	20.63	225	96597	19.9721	ug/L	96
100)	Naphthalene	20.85	128	146810	21.0802	ug/L	99
101)	1,2,3-Trichlorobenzene	21.16	180	86311	20.6637	ug/L	97

(#) = qualifier out of range (m) = manual integration
8M399412.D 8260WTR.M Wed Aug 20 13:50:04 2014 Page 2

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399412.D Vial: 8
Acq On : 19 Aug 2014 11:42 Operator: TMB
Sample : WG488700-07 20ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50 2014 Quant Results File: 8260WTR.RES

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399413.D Vial: 9
Acq On : 19 Aug 2014 12:11 Operator: TMB
Sample : WG488700-08 50ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50:05 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	10.90	96	958223	25.00 ug/L	0.00
57) Chlorobenzene-d5	14.77	117	657389	25.00 ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.79	152	327810	25.00 ug/L	0.00
System Monitoring Compounds					
37) Dibromofluoromethane	9.85	111	222948	25.1994 ug/L	0.00
Spiked Amount 25.000	Range 86 - 118		Recovery = 100.80%		
43) 1,2-Dichloroethane-d4	10.49	65	245963	25.1904 ug/L	0.00
Spiked Amount 25.000	Range 80 - 120		Recovery = 100.76%		
58) Toluene-d8	12.88	98	830910	25.7136 ug/L	0.00
Spiked Amount 25.000	Range 88 - 110		Recovery = 102.84%		
80) p-Bromofluorobenzene	16.27	95	317411	24.7639 ug/L	0.00
Spiked Amount 25.000	Range 86 - 115		Recovery = 99.04%		
Target Compounds					Qvalue
2) Dichlorodifluoromethane	3.29	85	436511	52.9849 ug/L	100
3) Chloromethane	3.76	50	1067543	50.5431 ug/L	100
4) Vinyl Chloride	3.99	62	841073	50.6754 ug/L	95
5) 1,3-Butadiene	4.05	54	565933	53.9694 ug/L	97
6) Bromomethane	4.91	94	323342	46.6647 ug/L	100
7) Chloroethane	5.07	64	363639	51.1852 ug/L	98
8) Trichlorofluoromethane	5.56	101	670569	50.7516 ug/L	99
9) Diethyl ether	6.09	59	582404	102.6274 ug/L	96
10) Isoprene	6.13	67	693766	51.3096 ug/L	96
11) Acrolein	6.34	56	3687	49.5464 ug/L	92
12) 1,1,2-Trichloro-1,2,2-Trif	6.35	101	409779	52.1014 ug/L	93
13) Acetone	6.42	43	57763	50.7005 ug/L #	28
14) 1,1-Dichloroethene	6.66	61	751648	51.7155 ug/L	99
15) Tert-Butyl Alcohol	6.76	59	70382	195.4404 ug/L	98
16) Dimethyl Sulfide	6.93	62	492283	51.4836 ug/L	98
17) Iodomethane	7.18	142	403387	48.2773 ug/L	88
18) Methyl acetate	7.18	43	211753	50.5337 ug/L	96
19) Methylene Chloride	7.44	84	470369	48.8422 ug/L	97
20) Carbon Disulfide	7.48	76	1525211	54.5223 ug/L	100
21) Acrylonitrile	7.62	53	98899	56.1087 ug/L	100
22) Methyl Tert Butyl Ether	7.65	73	916360	53.6661 ug/L	95
23) trans-1,2-Dichloroethene	7.90	61	767259	53.6157 ug/L	97
24) n-Hexane	7.97	57	726115	51.5519 ug/L	98
25) Diisopropyl ether	8.31	45	3032467	102.4438 ug/L	94
26) Vinyl Acetate	8.49	43	471923	52.8151 ug/L	99
27) 1,1-Dichloroethane	8.52	63	970371	52.4635 ug/L	98
28) Ethyl-Tert-Butyl ether	8.89	59	2727236	103.1726 ug/L	96
29) 2-Butanone	9.07	43	99593	52.5550 ug/L	98
30) Propionitrile	9.18	54	64314	99.8860 ug/L	98
31) 2,2-Dichloropropane	9.29	77	829346	52.1655 ug/L	100
32) cis-1,2-Dichloroethene	9.36	96	526834	51.3086 ug/L	98
33) Chloroform	9.57	83	914121	52.4851 ug/L	100
34) 1-Bromopropane	9.71	122	91123	50.7390 ug/L	100
35) Bromochloromethane	9.80	130	243744	50.7192 ug/L	89
36) Tetrahydrofuran	9.82	42	126090	101.4643 ug/L	94
38) 1,1,1-Trichloroethane	10.10	97	799645	51.6400 ug/L	99
39) Cyclohexane	10.13	56	901721	51.2636 ug/L	91
40) 1,1-Dichloropropene	10.30	75	712954	52.0274 ug/L	93
41) Tert-Amyl-Methyl ether	10.40	73	2076439	101.8961 ug/L	96
42) Carbon Tetrachloride	10.44	117	621357	52.7920 ug/L	98

(#) = qualifier out of range (m) = manual integration
8M399413.D 8260WTR.M Wed Aug 20 13:50:05 2014 Page 1

Data File : C:\MSDCHEM\2\DATA\081914\8M399413.D Vial: 9
Acq On : 19 Aug 2014 12:11 Operator: TMB
Sample : WG488700-08 50ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50:05 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

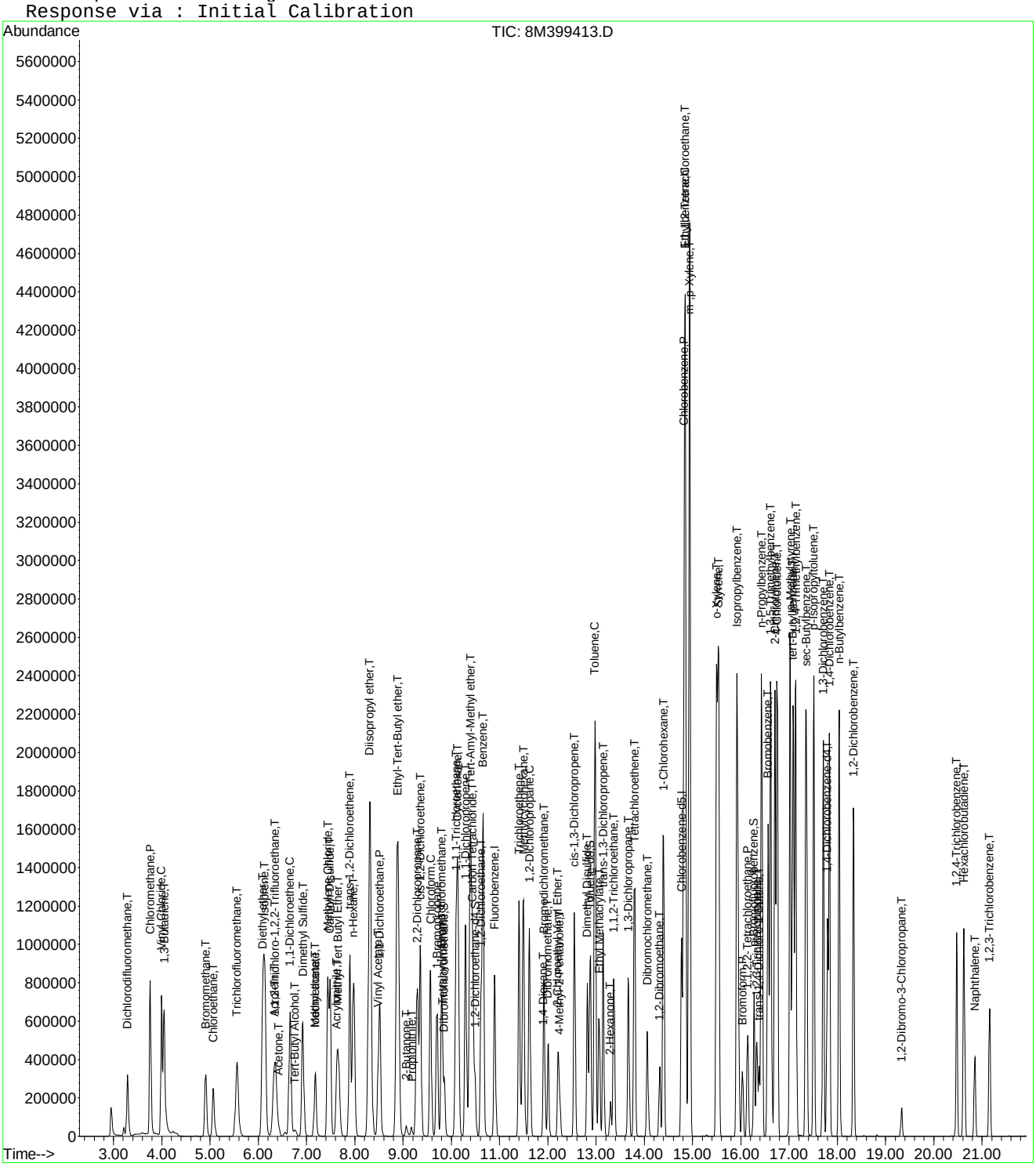
	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,2-Dichloroethane	10.62	62	629928	51.5637 ug/L	96
46)	Benzene	10.66	78	1921922	51.2186 ug/L	99
47)	Trichloroethene	11.40	130	444405	50.0498 ug/L	93
48)	Methylcyclohexane	11.50	83	764707	50.3888 ug/L	93
49)	1,2-Dichloropropane	11.62	63	543066	50.3669 ug/L	95
50)	Bromodichloromethane	11.92	83	655323	52.5951 ug/L	99
51)	1,4-Dioxane	11.90	88	8288	203.6559 ug/L	96
52)	Dibromomethane	12.00	93	243529	51.2194 ug/L	91
53)	2-Chloroethyl Vinyl Ether	12.21	63	218807	52.3137 ug/L	96
54)	4-Methyl-2-Pentanone	12.24	58	98290	51.6900 ug/L	98
55)	cis-1,3-Dichloropropene	12.55	75	767366	53.8252 ug/L	100
56)	Dimethyl Disulfide	12.82	94	525514	46.2564 ug/L	96
59)	Toluene	12.97	91	2007974	52.0638 ug/L	98
60)	Ethyl Methacrylate	13.07	69	449125	55.4611 ug/L	92
62)	trans-1,3-Dichloropropene	13.15	75	657980	54.0758 ug/L	100
63)	1,1,2-Trichloroethane	13.37	97	307430	51.6218 ug/L	96
64)	2-Hexanone	13.30	58	91984	53.1744 ug/L	93
65)	1,3-Dichloropropane	13.67	76	575886	52.6512 ug/L	93
66)	Tetrachloroethene	13.80	164	345377	48.4638 ug/L	86
67)	Dibromochloromethane	14.06	129	341374	56.9519 ug/L	100
68)	1,2-Dibromoethane	14.32	107	292228	52.1222 ug/L	98
69)	1-Chlorohexane	14.40	91	678454	52.3334 ug/L	94
70)	Chlorobenzene	14.83	112	1267344	53.5199 ug/L	86
71)	1,1,1,2-Tetrachloroethane	14.85	131	456628	49.7029 ug/L	100
72)	Ethylbenzene	14.85	106	754427	52.0767 ug/L	100
73)	m-,p-Xylene	14.94	106	1741330	109.1074 ug/L	92
74)	o-Xylene	15.50	106	844251	52.5901 ug/L	95
75)	Styrene	15.54	104	1423537	57.2996 ug/L	88
76)	Bromoform	16.04	173	184460	48.9770 ug/L	99
77)	Isopropylbenzene	15.92	105	2045001	53.5714 ug/L	100
79)	1,1,2,2-Tetrachloroethane	16.14	83	344805	54.0352 ug/L	99
81)	1,2,3-Trichloropropane	16.34	110	88920	53.0503 ug/L	77
82)	trans-1,4-Dichloro-2-Buten	16.38	53	104157	47.8156 ug/L	94
83)	n-Propylbenzene	16.43	91	2560818	48.7072 ug/L	99
84)	Bromobenzene	16.56	156	486878	50.6110 ug/L	95
85)	1,3,5-Trimethylbenzene	16.61	105	1749879	53.8764 ug/L	98
86)	2-Chlorotoluene	16.71	91	1703092	51.7736 ug/L	87
87)	4-Chlorotoluene	16.75	91	1644042	51.3788 ug/L	93
88)	a-Methylstyrene	17.03	118	992286	56.2021 ug/L	96
89)	tert-Butylbenzene	17.08	134	357511	49.9948 ug/L	91
90)	1,2,4-Trimethylbenzene	17.14	105	1740097	55.9647 ug/L	100
91)	sec-Butylbenzene	17.36	105	2134162	50.4277 ug/L	99
92)	p-Isopropyltoluene	17.51	119	1691744	54.2933 ug/L	100
93)	1,3-Dichlorobenzene	17.71	146	921229	53.0145 ug/L	95
94)	1,4-Dichlorobenzene	17.83	146	912609	52.3370 ug/L	95
95)	n-Butylbenzene	18.04	91	1654975	54.4000 ug/L	95
96)	1,2-Dichlorobenzene	18.34	146	795098	52.8503 ug/L	96
97)	1,2-Dibromo-3-Chloropropan	19.33	75	51174	51.4858 ug/L	83
98)	1,2,4-Trichlorobenzene	20.47	180	371156	50.2808 ug/L	100
99)	Hexachlorobutadiene	20.63	225	254318	49.2750 ug/L	97
100)	Naphthalene	20.85	128	393237	50.8852 ug/L	99
101)	1,2,3-Trichlorobenzene	21.15	180	232526	50.6194 ug/L	99

(#) = qualifier out of range (m) = manual integration
8M399413.D 8260WTR.M Wed Aug 20 13:50:05 2014 Page 2

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399413.D Vial: 9
Acq On : 19 Aug 2014 12:11 Operator: TMB
Sample : WG488700-08 50ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50 2014 Quant Results File: 8260WTR.RES

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399414.D Vial: 10
Acq On : 19 Aug 2014 12:40 Operator: TMB
Sample : WG488700-09 100ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50:06 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	10.90	96	997021	25.00 ug/L	0.00
57) Chlorobenzene-d5	14.78	117	671018	25.00 ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.80	152	342676	25.00 ug/L	0.00
System Monitoring Compounds					
37) Dibromofluoromethane	9.86	111	459798	49.9479 ug/L	0.00
Spiked Amount 25.000	Range 86 - 118		Recovery = 199.80%#		
43) 1,2-Dichloroethane-d4	10.50	65	498878	49.1045 ug/L	0.00
Spiked Amount 25.000	Range 80 - 120		Recovery = 196.40%#		
58) Toluene-d8	12.87	98	1696035	51.4199 ug/L	0.00
Spiked Amount 25.000	Range 88 - 110		Recovery = 205.68%#		
80) p-Bromofluorobenzene	16.28	95	659854	49.2475 ug/L	0.00
Spiked Amount 25.000	Range 86 - 115		Recovery = 197.00%#		
Target Compounds					Qvalue
2) Dichlorodifluoromethane	3.29	85	877661	102.3874 ug/L	100
3) Chloromethane	3.75	50	1996851	90.8624 ug/L	96
4) Vinyl Chloride	3.99	62	1508055	94.5377 ug/L	92
5) 1,3-Butadiene	4.03	54	665190	63.2190 ug/L	96
6) Bromomethane	4.91	94	677888	94.0258 ug/L	100
7) Chloroethane	5.07	64	750876	101.5790 ug/L	99
8) Trichlorofluoromethane	5.55	101	1369228	99.5966 ug/L	99
9) Diethyl ether	6.09	59	1228330	208.0255 ug/L	95
10) Isoprene	6.12	67	1496110	106.3437 ug/L	96
11) Acrolein	6.33	56	8575	99.9208 ug/L	97
12) 1,1,2-Trichloro-1,2,2-Trif	6.35	101	845460	103.3131 ug/L	93
13) Acetone	6.42	43	125918	106.2215 ug/L #	28
14) 1,1-Dichloroethene	6.66	61	1528957	101.1030 ug/L	98
15) Tert-Butyl Alcohol	6.76	59	134750	359.6200 ug/L	98
16) Dimethyl Sulfide	6.92	62	1019520	102.4735 ug/L	97
17) Iodomethane	7.18	142	898741	101.1257 ug/L	87
18) Methyl acetate	7.18	43	426670	97.8602 ug/L	97
19) Methylene Chloride	7.45	84	969704	96.7738 ug/L	95
20) Carbon Disulfide	7.49	76	2980319	102.3928 ug/L	97
21) Acrylonitrile	7.62	53	205801	112.2143 ug/L	99
22) Methyl Tert Butyl Ether	7.65	73	1828376	102.9109 ug/L	96
23) trans-1,2-Dichloroethene	7.89	61	1553780	104.3522 ug/L	95
24) n-Hexane	7.97	57	1475172	100.6570 ug/L	97
25) Diisopropyl ether	8.31	45	5671816	184.1509 ug/L	87
26) Vinyl Acetate	8.48	43	951560	102.3494 ug/L	98
27) 1,1-Dichloroethane	8.52	63	1983507	103.0660 ug/L	97
28) Ethyl-Tert-Butyl ether	8.88	59	5172966	188.0804 ug/L	90
29) 2-Butanone	9.07	43	194929	98.8608 ug/L	97
30) Propionitrile	9.17	54	131188	195.8194 ug/L	99
31) 2,2-Dichloropropane	9.30	77	1704831	103.0602 ug/L	99
32) cis-1,2-Dichloroethene	9.36	96	1087748	101.8138 ug/L	96
33) Chloroform	9.57	83	1847905	101.9704 ug/L	98
34) 1-Bromopropane	9.70	122	194105	103.8755 ug/L	99
35) Bromochloromethane	9.80	130	507956	101.5843 ug/L	92
36) Tetrahydrofuran	9.82	42	251630	194.6064 ug/L	92
38) 1,1,1-Trichloroethane	10.10	97	1693997	105.1391 ug/L	98
39) Cyclohexane	10.13	56	1875566	102.4782 ug/L	90
40) 1,1-Dichloropropene	10.30	75	1452868	101.8965 ug/L	94
41) Tert-Amyl-Methyl ether	10.39	73	4040209	190.5480 ug/L	99
42) Carbon Tetrachloride	10.44	117	1352518	110.4416 ug/L	98

(#) = qualifier out of range (m) = manual integration
8M399414.D 8260WTR.M Wed Aug 20 13:50:06 2014 Page 1

Data File : C:\MSDCHEM\2\DATA\081914\8M399414.D Vial: 10
Acq On : 19 Aug 2014 12:40 Operator: TMB
Sample : WG488700-09 100ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50:06 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

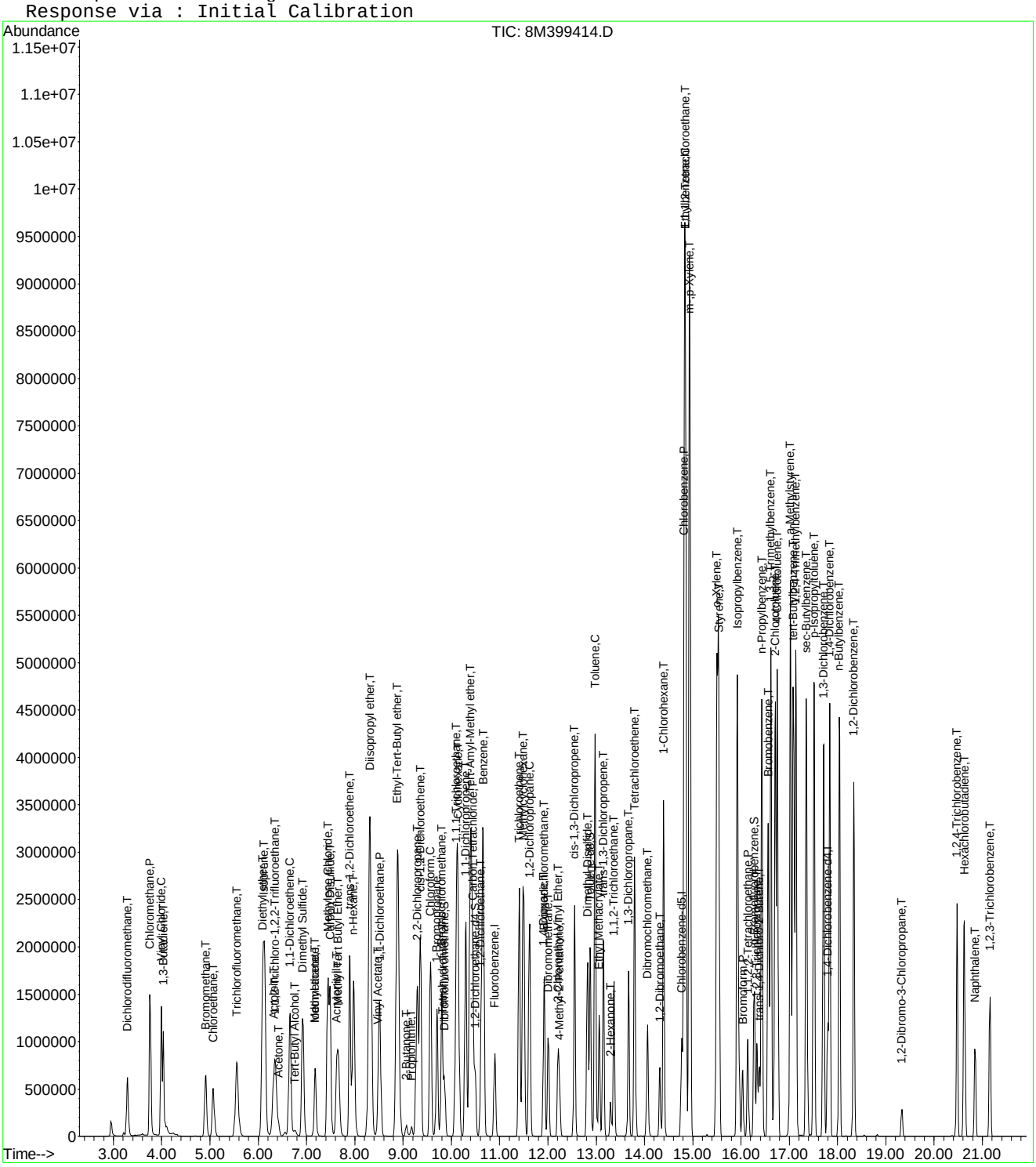
	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
45)	1,2-Dichloroethane	10.61	62	1270037	99.9152	ug/L		95
46)	Benzene	10.66	78	3609230	92.4418	ug/L		95
47)	Trichloroethene	11.41	130	940774	101.8289	ug/L		94
48)	Methylcyclohexane	11.49	83	1589728	100.6756	ug/L		93
49)	1,2-Dichloropropane	11.62	63	1127015	100.4580	ug/L		95
50)	Bromodichloromethane	11.92	83	1348826	104.0418	ug/L		98
51)	1,4-Dioxane	11.91	88	16113	380.5274	ug/L		92
52)	Dibromomethane	12.01	93	504109	101.8992	ug/L		90
53)	2-Chloroethyl Vinyl Ether	12.21	63	442691	101.7225	ug/L		96
54)	4-Methyl-2-Pentanone	12.24	58	194811	98.4629	ug/L		98
55)	cis-1,3-Dichloropropene	12.55	75	1563866	105.4254	ug/L		98
56)	Dimethyl Disulfide	12.82	94	1250560	100.4762	ug/L		95
59)	Toluene	12.98	91	3651538	92.7560	ug/L		89
60)	Ethyl Methacrylate	13.06	69	883405	106.8733	ug/L		92
62)	trans-1,3-Dichloropropene	13.15	75	1329604	107.0535	ug/L		98
63)	1,1,2-Trichloroethane	13.37	97	623790	102.6156	ug/L		95
64)	2-Hexanone	13.30	58	178508	101.0965	ug/L		94
65)	1,3-Dichloropropane	13.67	76	1151923	103.1772	ug/L		93
66)	Tetrachloroethene	13.79	164	737089	101.3287	ug/L		86
67)	Dibromochloromethane	14.06	129	719840	117.6528	ug/L		98
68)	1,2-Dibromoethane	14.32	107	592320	103.5013	ug/L		99
69)	1-Chlorohexane	14.39	91	1410359	106.5802	ug/L		95
70)	Chlorobenzene	14.82	112	2620710	108.4247	ug/L		83
71)	1,1,1,2-Tetrachloroethane	14.85	131	1057226	100.9656	ug/L		100
72)	Ethylbenzene	14.85	106	1695931	114.6893	ug/L		67
73)	m-,p-Xylene	14.93	106	3360098	206.2593	ug/L		67
74)	o-Xylene	15.50	106	1792024	109.3614	ug/L		88
75)	Styrene	15.54	104	2798161	110.3428	ug/L		82
76)	Bromoform	16.04	173	397850	98.8132	ug/L		99
77)	Isopropylbenzene	15.92	105	3707225	95.1429	ug/L		89
79)	1,1,2,2-Tetrachloroethane	16.14	83	663769	99.5081	ug/L		99
81)	1,2,3-Trichloropropane	16.33	110	172873	98.6630	ug/L		49
82)	trans-1,4-Dichloro-2-Buten	16.38	53	237838	103.5262	ug/L	#	24
83)	n-Propylbenzene	16.43	91	4241448	77.1733	ug/L		88
84)	Bromobenzene	16.57	156	1007778	100.2139	ug/L		97
85)	1,3,5-Trimethylbenzene	16.62	105	3280523	96.6212	ug/L		92
86)	2-Chlorotoluene	16.71	91	3295449	95.8348	ug/L		94
87)	4-Chlorotoluene	16.75	91	2817230	84.2233	ug/L		82
88)	a-Methylstyrene	17.02	118	2037380	110.3891	ug/L		93
89)	tert-Butylbenzene	17.08	134	773629	103.4919	ug/L		86
90)	1,2,4-Trimethylbenzene	17.13	105	3277951	100.8514	ug/L		89
91)	sec-Butylbenzene	17.35	105	3795644	85.7958	ug/L		92
92)	p-Isopropyltoluene	17.52	119	3213330	98.6518	ug/L		92
93)	1,3-Dichlorobenzene	17.71	146	1869009	102.8909	ug/L		91
94)	1,4-Dichlorobenzene	17.84	146	1848171	101.3922	ug/L		91
95)	n-Butylbenzene	18.03	91	3120121	98.1109	ug/L		98
96)	1,2-Dichlorobenzene	18.33	146	1611273	102.4553	ug/L		93
97)	1,2-Dibromo-3-Chloropropan	19.33	75	100645	96.3184	ug/L		85
98)	1,2,4-Trichlorobenzene	20.47	180	818270	100.1857	ug/L		99
99)	Hexachlorobutadiene	20.63	225	547359	101.4519	ug/L		97
100)	Naphthalene	20.85	128	843690	99.1626	ug/L		98
101)	1,2,3-Trichlorobenzene	21.16	180	501765	100.1967	ug/L		100

(#) = qualifier out of range (m) = manual integration
8M399414.D 8260WTR.M Wed Aug 20 13:50:06 2014 Page 2

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399414.D Vial: 10
Acq On : 19 Aug 2014 12:40 Operator: TMB
Sample : WG488700-09 100ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50 2014 Quant Results File: 8260WTR.RES

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399415.D Vial: 11
Acq On : 19 Aug 2014 13:08 Operator: TMB
Sample : WG488700-10 200ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50:07 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	10.90	96	1006387	25.00 ug/L	0.00
57) Chlorobenzene-d5	14.78	117	704740	25.00 ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.80	152	361092	25.00 ug/L	0.00
System Monitoring Compounds					
37) Dibromofluoromethane	9.86	111	971333	104.5339 ug/L	0.00
Spiked Amount 25.000	Range 86 - 118		Recovery = 418.12%#		
43) 1,2-Dichloroethane-d4	10.50	65	1043182	101.7247 ug/L	0.00
Spiked Amount 25.000	Range 80 - 120		Recovery = 406.88%#		
58) Toluene-d8	12.87	98	3289692	94.9636 ug/L	0.00
Spiked Amount 25.000	Range 88 - 110		Recovery = 379.84%#		
80) p-Bromofluorobenzene	16.28	95	1436994	101.7787 ug/L	0.00
Spiked Amount 25.000	Range 86 - 115		Recovery = 407.12%#		
Target Compounds					Qvalue
2) Dichlorodifluoromethane	3.29	85	1808071	208.9654 ug/L	98
3) Chloromethane	3.76	50	3441681	155.1488 ug/L	87
4) Vinyl Chloride	3.99	62	2622483	204.3676 ug/L	85
5) 1,3-Butadiene	4.03	54	1136998	Below Cal	93
6) Bromomethane	4.90	94	1500598	206.2019 ug/L	99
7) Chloroethane	5.07	64	1614222	216.3408 ug/L	98
8) Trichlorofluoromethane	5.55	101	2862459	206.2753 ug/L	98
10) Isoprene	6.13	67	3104522	218.6162 ug/L	97
12) 1,1,2-Trichloro-1,2,2-Trif	6.34	101	1839623	222.7053 ug/L	94
13) Acetone	6.42	43	248050	207.3019 ug/L #	30
14) 1,1-Dichloroethene	6.66	61	3164193	207.2864 ug/L	94
15) Tert-Butyl Alcohol	6.76	59	13150	34.7680 ug/L #	90
16) Dimethyl Sulfide	6.92	62	2184869	217.5608 ug/L	98
17) Iodomethane	7.18	142	1939692	210.2000 ug/L	86
18) Methyl acetate	7.18	43	921981	209.4958 ug/L	94
19) Methylene Chloride	7.45	84	2096771	207.3045 ug/L	89
20) Carbon Disulfide	7.49	76	5352051	182.1655 ug/L #	89
21) Acrylonitrile	7.64	53	44852	24.2282 ug/L #	33
22) Methyl Tert Butyl Ether	7.65	73	3860490	215.2672 ug/L	98
23) trans-1,2-Dichloroethene	7.89	61	3176198	211.3290 ug/L	91
24) n-Hexane	7.97	57	3077470	208.0341 ug/L	95
26) Vinyl Acetate	8.48	43	1899451	202.4028 ug/L	97
27) 1,1-Dichloroethane	8.52	63	3896865	200.6025 ug/L	91
29) 2-Butanone	9.07	43	420712	211.3839 ug/L	96
30) Propionitrile	9.17	54	3019	4.4644 ug/L #	72
31) 2,2-Dichloropropane	9.30	77	3499150	209.5615 ug/L	95
32) cis-1,2-Dichloroethene	9.36	96	2309105	214.1221 ug/L	92
33) Chloroform	9.57	83	3615520	197.6534 ug/L	92
34) 1-Bromopropane	9.71	122	432890	229.5056 ug/L	97
35) Bromochloromethane	9.80	130	1110600	220.0378 ug/L	95
36) Tetrahydrofuran	9.83	42	1933	1.4810 ug/L #	38
38) 1,1,1-Trichloroethane	10.10	97	3600975	221.4171 ug/L	94
39) Cyclohexane	10.13	56	3895996	210.8905 ug/L	85
40) 1,1-Dichloropropene	10.30	75	2987514	207.5784 ug/L	99
41) Tert-Amyl-Methyl ether	10.30	73	538918	25.1804 ug/L #	52
42) Carbon Tetrachloride	10.44	117	2832427	229.1330 ug/L	97
45) 1,2-Dichloroethane	10.62	62	2691751	209.7922 ug/L	92
46) Benzene	10.66	78	5854211	148.5462 ug/L #	77
47) Trichloroethene	11.41	130	2077523	222.7774 ug/L	95
48) Methylcyclohexane	11.49	83	3320769	208.3432 ug/L	93

(#) = qualifier out of range (m) = manual integration
8M399415.D 8260WTR.M Wed Aug 20 13:50:07 2014 Page 1

Data File : C:\MSDCHEM\2\DATA\081914\8M399415.D Vial: 11
Acq On : 19 Aug 2014 13:08 Operator: TMB
Sample : WG488700-10 200ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50:07 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

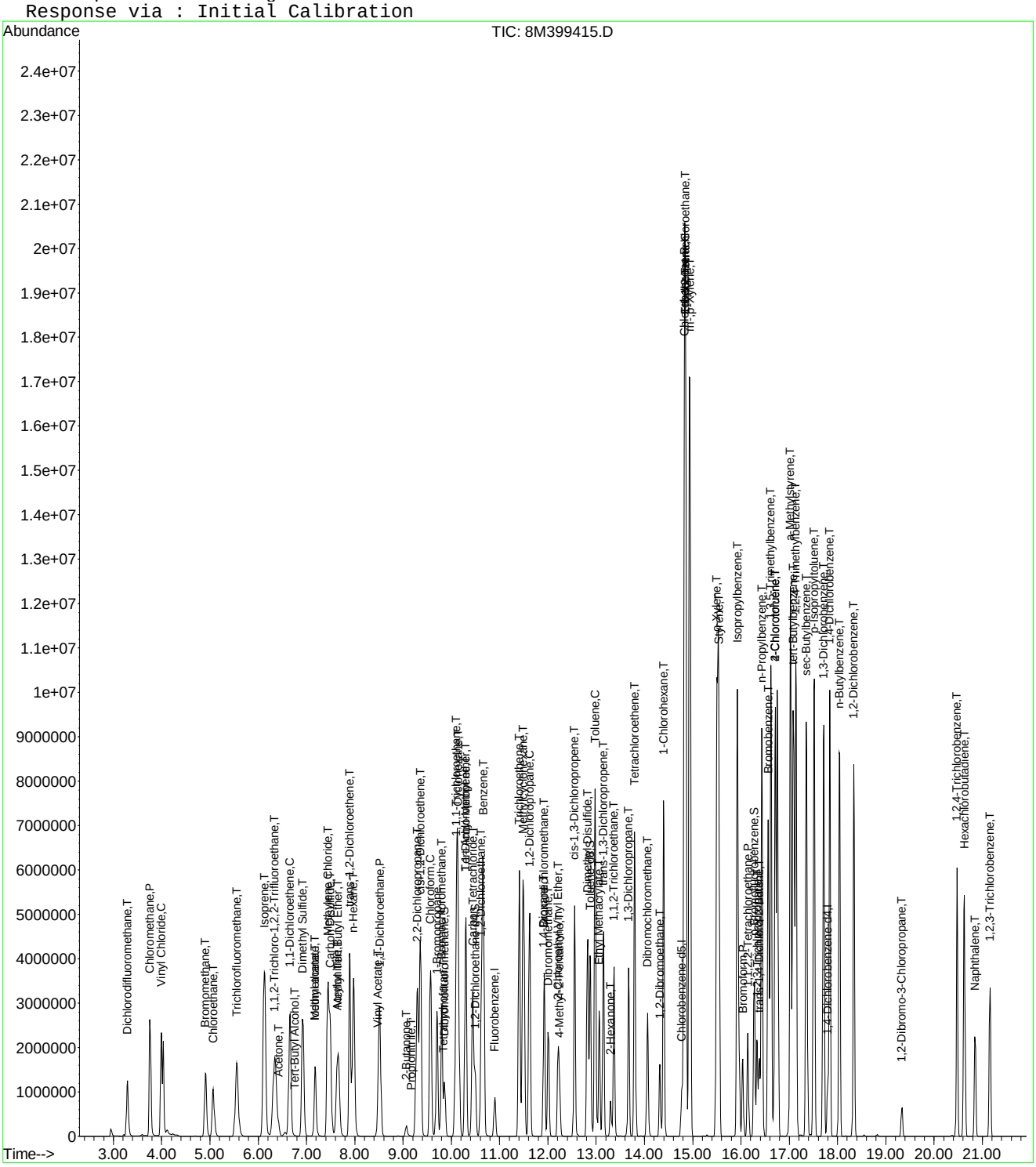
	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
49)	1,2-Dichloropropane	11.62	63	2373870	209.6288	ug/L		90
50)	Bromodichloromethane	11.92	83	2802427	214.1536	ug/L		95
51)	1,4-Dioxane	11.91	88	6416	150.1112	ug/L	#	50
52)	Dibromomethane	12.01	93	1124931	225.2741	ug/L		91
53)	2-Chloroethyl Vinyl Ether	12.21	63	975859	222.1482	ug/L		97
54)	4-Methyl-2-Pentanone	12.24	58	434477	217.5532	ug/L		98
55)	cis-1,3-Dichloropropene	12.55	75	3119498	208.3385	ug/L		90
56)	Dimethyl Disulfide	12.82	94	2912649	216.1086	ug/L		89
59)	Toluene	12.98	91	5626800	136.0921	ug/L		75
60)	Ethyl Methacrylate	13.06	69	1936282	223.0402	ug/L		92
62)	trans-1,3-Dichloropropene	13.15	75	2731561	209.4086	ug/L		91
63)	1,1,2-Trichloroethane	13.37	97	1388370	217.4630	ug/L		95
64)	2-Hexanone	13.30	58	396800	213.9712	ug/L		96
65)	1,3-Dichloropropane	13.67	76	2383262	203.2532	ug/L		97
66)	Tetrachloroethene	13.79	164	1718882	224.9904	ug/L		86
67)	Dibromochloromethane	14.06	129	1650754	256.8939	ug/L		98
68)	1,2-Dibromoethane	14.32	107	1297629	215.8964	ug/L		100
69)	1-Chlorohexane	14.39	91	2887439	207.7613	ug/L		97
70)	Chlorobenzene	14.83	112	4715290	185.7475	ug/L		73
71)	1,1,1,2-Tetrachloroethane	14.85	131	2633808	199.6781	ug/L		100
72)	Ethylbenzene	14.85	106	3640982	234.4437	ug/L	#	30
73)	m-,p-Xylene	14.94	106	5354774	312.9738	ug/L		53
74)	o-Xylene	15.50	106	3699134	214.9441	ug/L		60
75)	Styrene	15.54	104	4850827	182.1346	ug/L	#	62
76)	Bromoform	16.04	173	957952	208.0701	ug/L		98
77)	Isopropylbenzene	15.92	105	5706616	139.4477	ug/L	#	61
79)	1,1,2,2-Tetrachloroethane	16.14	83	1465965	208.5600	ug/L		99
81)	1,2,3-Trichloropropane	16.34	110	393232	212.9814	ug/L		49
82)	trans-1,4-Dichloro-2-Buten	16.38	53	502238	206.6832	ug/L	#	29
83)	n-Propylbenzene	16.43	91	6134424	105.9236	ug/L	#	58
84)	Bromobenzene	16.57	156	2249742	212.3057	ug/L		91
85)	1,3,5-Trimethylbenzene	16.62	105	5277470	147.5098	ug/L	#	71
86)	2-Chlorotoluene	16.71	91	4966588	137.0668	ug/L		81
87)	4-Chlorotoluene	16.71	91	4966588	140.9074	ug/L	#	59
88)	a-Methylstyrene	17.02	118	3924846	201.8099	ug/L		82
89)	tert-Butylbenzene	17.08	134	1826938	231.9334	ug/L	#	41
90)	1,2,4-Trimethylbenzene	17.13	105	5289924	154.4524	ug/L	#	61
91)	sec-Butylbenzene	17.35	105	5811519	124.6625	ug/L	#	65
92)	p-Isopropyltoluene	17.52	119	5162472	150.4088	ug/L	#	65
93)	1,3-Dichlorobenzene	17.71	146	3591678	187.6414	ug/L		76
94)	1,4-Dichlorobenzene	17.84	146	3521323	183.3301	ug/L		75
95)	n-Butylbenzene	18.04	91	4955139	147.8658	ug/L	#	75
96)	1,2-Dichlorobenzene	18.33	146	3221488	194.3961	ug/L		81
97)	1,2-Dibromo-3-Chloropropan	19.33	75	231016	209.0781	ug/L		85
98)	1,2,4-Trichlorobenzene	20.47	180	1905377	199.8367	ug/L		98
99)	Hexachlorobutadiene	20.63	225	1255012	220.7505	ug/L		96
100)	Naphthalene	20.85	128	1977387	200.1264	ug/L		96
101)	1,2,3-Trichlorobenzene	21.16	180	1138677	199.7592	ug/L		99

(#) = qualifier out of range (m) = manual integration
8M399415.D 8260WTR.M Wed Aug 20 13:50:07 2014 Page 2

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399415.D Vial: 11
Acq On : 19 Aug 2014 13:08 Operator: TMB
Sample : WG488700-10 200ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50 2014 Quant Results File: 8260WTR.RES

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration

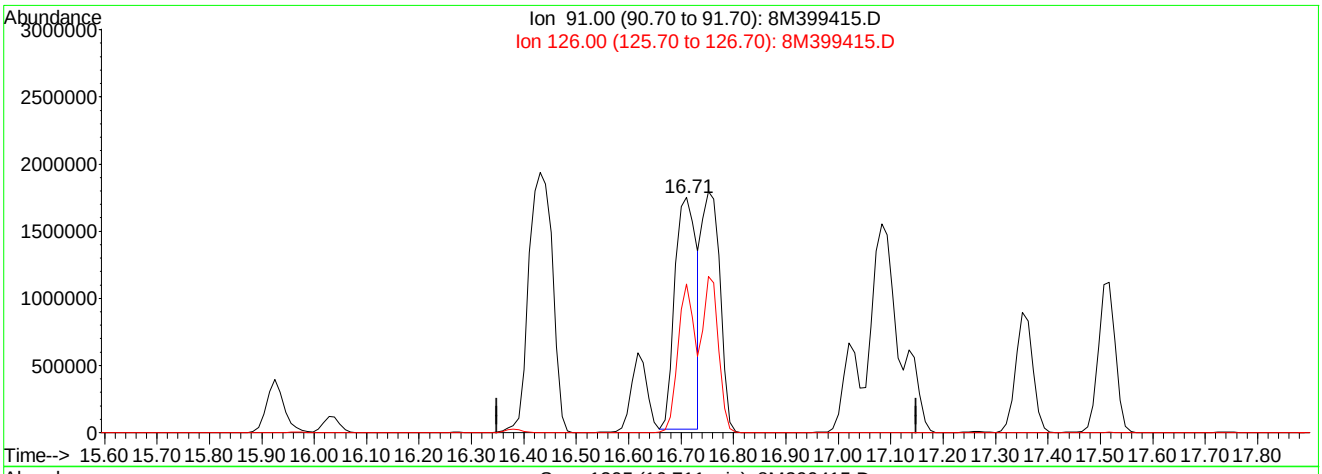


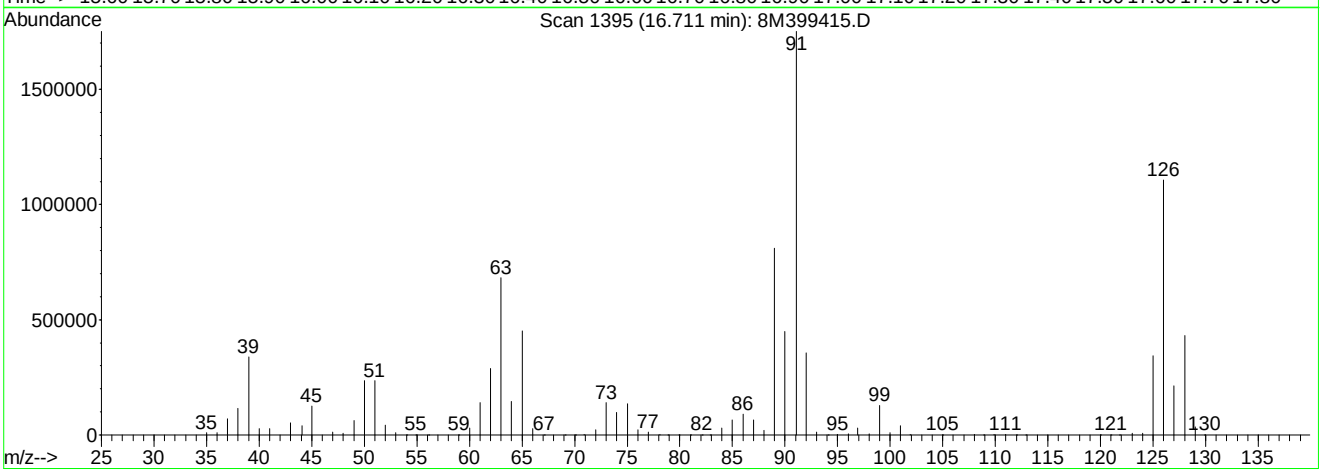
8M399415.D 8260WTR.M Wed Aug 20 13:50:08 2014 Page 3

Quantitation Report (Qedit)

Data File : C:\MSDCHEM\2\DATA\081914\8M399415.D Vial: 11
Acq On : 19 Aug 2014 13:08 Operator: TMB
Sample : WG488700-10 200ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 19 13:30 2014 Quant Results File: temp.res

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-13-14 HPMS 8
Last Update : Tue Aug 19 14:00:39 2014
Response via : Multiple Level Calibration





TIC: 8M399415.D

(87) 4-Chlorotoluene (T)

16.71min 137.08ug/L

response 4966588

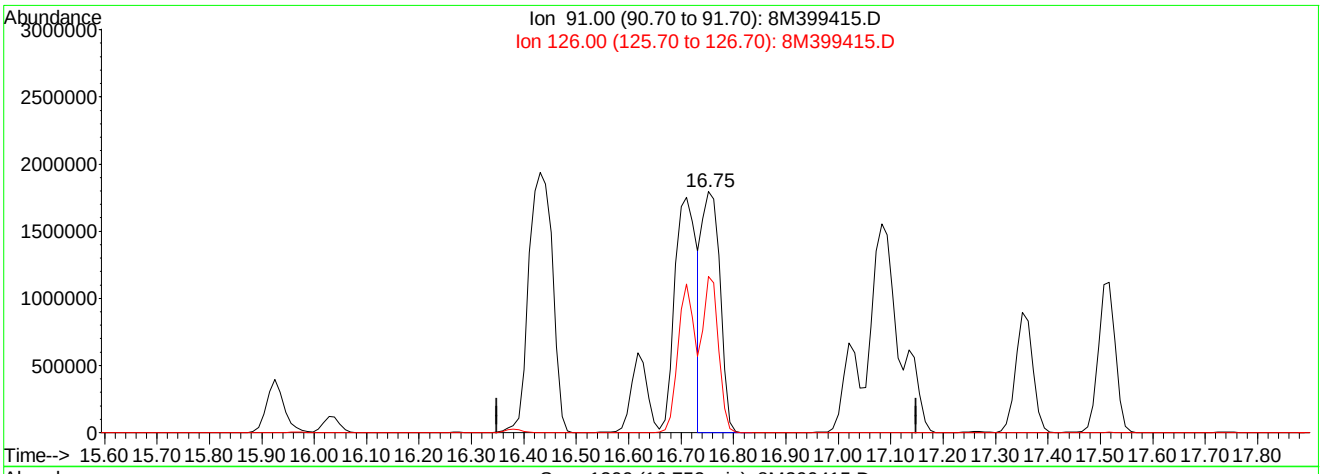
Ion	Exp%	Act%
91.00	100	100
126.00	28.60	50.18#
0.00	0.00	0.00
0.00	0.00	0.00

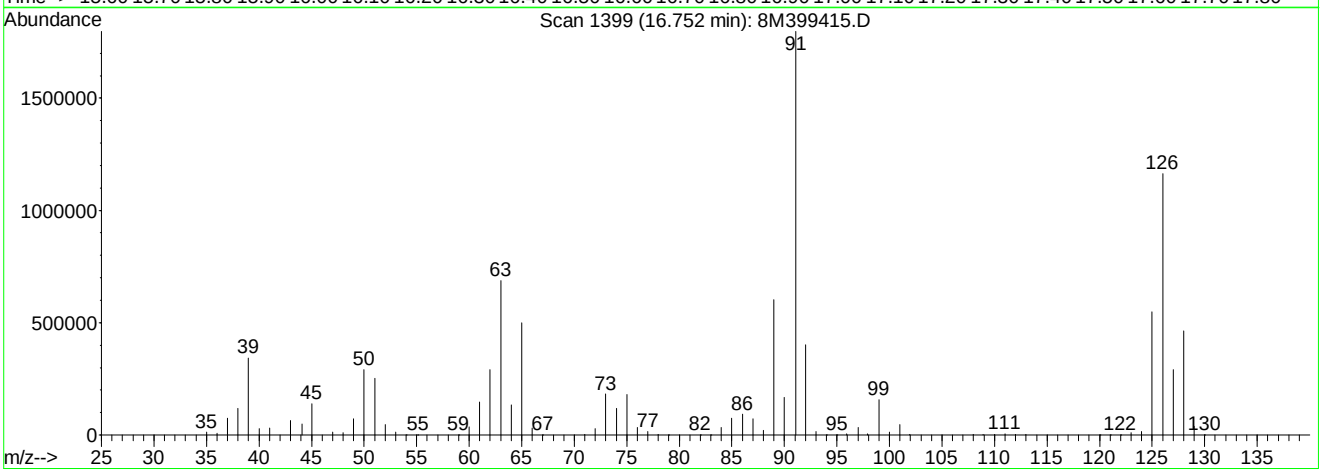
8M399415.D 8260WTR.M Tue Aug 19 14:03:45 2014

Quantitation Report (Qedit)

Data File : C:\MSDCHEM\2\DATA\081914\8M399415.D Vial: 11
Acq On : 19 Aug 2014 13:08 Operator: TMB
Sample : WG488700-10 200ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 19 14:03 2014 Quant Results File: temp.res

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-13-14 HPMS 8
Last Update : Tue Aug 19 14:00:39 2014
Response via : Multiple Level Calibration





TIC: 8M399415.D

(87) 4-Chlorotoluene (T)

16.75min 119.95ug/L mint

response 4345889

Ion	Exp%	Act%
91.00	100	100
126.00	28.60	57.35#
0.00	0.00	0.00
0.00	0.00	0.00

8M399415.D 8260WTR.M Tue Aug 19 2014

Analyst: 08/20/2014 10:17 Tiffany Bailey Supervisor: 08/20/2014 12:59

#1 - Data system fails to select correct peak

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399416.D Vial: 12
Acq On : 19 Aug 2014 13:37 Operator: TMB
Sample : WG488700-11 300ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50:08 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	10.91	96	1030141	25.00 ug/L	0.00
57) Chlorobenzene-d5	14.77	117	723743	25.00 ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.80	152	377688	25.00 ug/L	0.00
System Monitoring Compounds					
37) Dibromofluoromethane	9.86	111	1481031	155.7118 ug/L	0.00
Spiked Amount 25.000	Range 86 - 118		Recovery = 622.84%#		
43) 1,2-Dichloroethane-d4	10.49	65	1557129	148.3403 ug/L	0.00
Spiked Amount 25.000	Range 80 - 120		Recovery = 593.36%#		
58) Toluene-d8	12.88	98	4413396	124.0565 ug/L	0.00
Spiked Amount 25.000	Range 88 - 110		Recovery = 496.24%#		
80) p-Bromofluorobenzene	16.27	95	2154146	145.8686 ug/L	0.00
Spiked Amount 25.000	Range 86 - 115		Recovery = 583.48%#		
Target Compounds					Qvalue
2) Dichlorodifluoromethane	3.29	85	2573196	290.5361 ug/L	96
3) Chloromethane	3.76	50	4248130	187.0872 ug/L	78
4) Vinyl Chloride	3.99	62	3271003	Below Cal	80
5) 1,3-Butadiene	4.03	54	1600159	Below Cal	92
6) Bromomethane	4.91	94	2297309	308.4012 ug/L	100
7) Chloroethane	5.06	64	2398780	314.0754 ug/L	97
8) Trichlorofluoromethane	5.56	101	4281214	301.4000 ug/L	96
9) Diethyl ether	6.09	59	2056984	337.1631 ug/L	95
10) Isoprene	6.13	67	4630664	318.5658 ug/L	100
11) Acrolein	6.34	56	26859	285.1072 ug/L	96
12) 1,1,2-Trichloro-1,2,2-Trif	6.35	101	2759194	326.3264 ug/L	95
13) Acetone	6.43	43	369000	301.2720 ug/L #	30
14) 1,1-Dichloroethene	6.66	61	4497563	287.8416 ug/L	89
15) Tert-Butyl Alcohol	6.78	59	232048	599.3776 ug/L	99
16) Dimethyl Sulfide	6.92	62	3253898	316.5393 ug/L	98
17) Iodomethane	7.18	142	2824789	293.5072 ug/L	85
18) Methyl acetate	7.18	43	1432167	317.9182 ug/L	93
19) Methylene Chloride	7.44	84	3074049	296.9183 ug/L	84
20) Carbon Disulfide	7.49	76	6893191	229.2106 ug/L #	80
21) Acrylonitrile	7.63	53	380691	200.9005 ug/L	93
22) Methyl Tert Butyl Ether	7.65	73	5423766	295.4640 ug/L	99
23) trans-1,2-Dichloroethene	7.90	61	4320394	280.8298 ug/L	85
24) n-Hexane	7.97	57	4440643	293.2613 ug/L	92
25) Diisopropyl ether	8.31	45	7667325	240.9368 ug/L #	77
26) Vinyl Acetate	8.49	43	2754319	286.7286 ug/L	95
27) 1,1-Dichloroethane	8.52	63	5295464	266.3137 ug/L #	84
28) Ethyl-Tert-Butyl ether	8.89	59	7173880	252.4443 ug/L	81
29) 2-Butanone	9.06	43	639241	313.7761 ug/L	95
30) Propionitrile	9.18	54	220882	319.1020 ug/L	99
31) 2,2-Dichloropropane	9.29	77	4988798	291.8860 ug/L	90
32) cis-1,2-Dichloroethene	9.36	96	3363901	304.7400 ug/L	87
33) Chloroform	9.57	83	4818516	257.3447 ug/L	86
34) 1-Bromopropane	9.71	122	674460	349.3335 ug/L	98
35) Bromochloromethane	9.80	130	1664740	322.2214 ug/L	99
36) Tetrahydrofuran	9.82	42	430250	322.0500 ug/L	90
38) 1,1,1-Trichloroethane	10.10	97	5109309	306.9174 ug/L	89
39) Cyclohexane	10.13	56	5483769	289.9920 ug/L #	78
40) 1,1-Dichloropropene	10.30	75	4143416	281.2542 ug/L	94
41) Tert-Amyl-Methyl ether	10.40	73	5926978	270.5462 ug/L	95
42) Carbon Tetrachloride	10.44	117	4322985	341.6496 ug/L	96

(#) = qualifier out of range (m) = manual integration
8M399416.D 8260WTR.M Wed Aug 20 13:50:08 2014 Page 1

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399416.D Vial: 12
Acq On : 19 Aug 2014 13:37 Operator: TMB
Sample : WG488700-11 300ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50:08 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

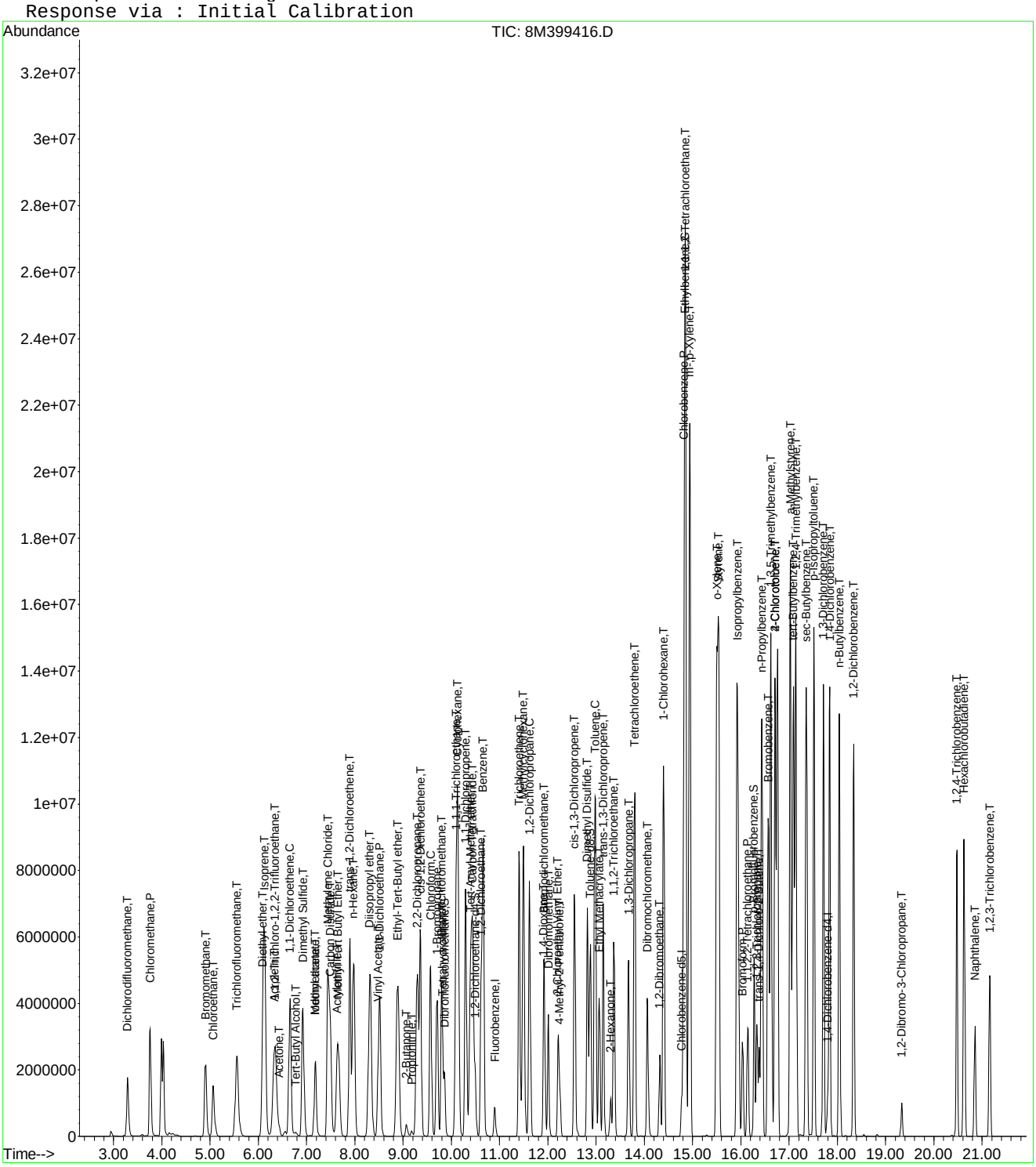
	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
45)	1,2-Dichloroethane	10.62	62	3778810	287.7252	ug/L		86
46)	Benzene	10.66	78	7104466	176.1136	ug/L	#	62
47)	Trichloroethene	11.40	130	3080539	322.7159	ug/L		96
48)	Methylcyclohexane	11.49	83	4779957	292.9767	ug/L		91
49)	1,2-Dichloropropane	11.62	63	3389151	292.3838	ug/L		85
50)	Bromodichloromethane	11.92	83	3871482	289.0258	ug/L		89
51)	1,4-Dioxane	11.91	88	32318	738.6891	ug/L		86
52)	Dibromomethane	12.01	93	1684534	329.5593	ug/L		92
53)	2-Chloroethyl Vinyl Ether	12.21	63	1475901	328.2323	ug/L		99
54)	4-Methyl-2-Pentanone	12.24	58	653805	319.8271	ug/L		99
55)	cis-1,3-Dichloropropene	12.55	75	4132149	269.6058	ug/L		80
56)	Dimethyl Disulfide	12.82	94	4169899	290.6211	ug/L		83
59)	Toluene	12.98	91	6709663	158.0217	ug/L		69
60)	Ethyl Methacrylate	13.07	69	2747629	308.1891	ug/L		95
62)	trans-1,3-Dichloropropene	13.15	75	3671664	274.0887	ug/L		82
63)	1,1,2-Trichloroethane	13.37	97	2073170	316.1983	ug/L		95
64)	2-Hexanone	13.30	58	585418	307.3933	ug/L		97
65)	1,3-Dichloropropane	13.68	76	3326343	276.2340	ug/L		100
66)	Tetrachloroethene	13.80	164	2637834	336.2094	ug/L		86
67)	Dibromochloromethane	14.06	129	2475953	375.1961	ug/L		96
68)	1,2-Dibromoethane	14.32	107	1929730	312.6338	ug/L		100
69)	1-Chlorohexane	14.40	91	3953498	276.9989	ug/L		100
70)	Chlorobenzene	14.82	112	5741092	220.2184	ug/L		70
71)	1,1,1,2-Tetrachloroethane	14.86	131	3729363	252.7559	ug/L		99
72)	Ethylbenzene	14.84	106	4796405	300.7325	ug/L	#	21
73)	m-,p-Xylene	14.94	106	6371653	362.6298	ug/L		49
74)	o-Xylene	15.51	106	4918420	278.2888	ug/L		51
75)	Styrene	15.54	104	6000632	219.3907	ug/L	#	51
76)	Bromoform	16.03	173	1487230	295.6790	ug/L		97
77)	Isopropylbenzene	15.93	105	6831714	162.5575	ug/L	#	44
79)	1,1,2,2-Tetrachloroethane	16.14	83	2102501	285.9751	ug/L		97
81)	1,2,3-Trichloropropane	16.33	110	592208	306.6562	ug/L		52
82)	trans-1,4-Dichloro-2-Buten	16.37	53	749520	294.5602	ug/L	#	33
83)	n-Propylbenzene	16.44	91	7196754	118.8065	ug/L	#	40
84)	Bromobenzene	16.57	156	3227578	291.1993	ug/L		86
85)	1,3,5-Trimethylbenzene	16.62	105	6355117	169.8256	ug/L	#	62
86)	2-Chlorotoluene	16.71	91	6208902	163.8226	ug/L	#	61
87)	4-Chlorotoluene	16.71	91	6208902	168.4128	ug/L	#	37
88)	a-Methylstyrene	17.03	118	5113010	251.3513	ug/L		74
89)	tert-Butylbenzene	17.09	134	2841036	344.8267	ug/L	#	39
90)	1,2,4-Trimethylbenzene	17.14	105	6370875	177.8398	ug/L		78
91)	sec-Butylbenzene	17.36	105	6867743	140.8461	ug/L	#	44
92)	p-Isopropyltoluene	17.51	119	6189715	172.4134	ug/L	#	47
93)	1,3-Dichlorobenzene	17.71	146	4582406	228.8809	ug/L	#	64
94)	1,4-Dichlorobenzene	17.84	146	4479640	222.9748	ug/L	#	63
95)	n-Butylbenzene	18.04	91	5905615	168.4852	ug/L	#	58
96)	1,2-Dichlorobenzene	18.34	146	4203603	242.5143	ug/L	#	69
97)	1,2-Dibromo-3-Chloropropan	19.33	75	337546	291.8218	ug/L		86
98)	1,2,4-Trichlorobenzene	20.48	180	2773682	262.2176	ug/L		95
99)	Hexachlorobutadiene	20.62	225	1942668	326.6910	ug/L		94
100)	Naphthalene	20.85	128	2789901	256.7188	ug/L		92
101)	1,2,3-Trichlorobenzene	21.16	180	1699655	270.8079	ug/L		98

(#) = qualifier out of range (m) = manual integration
8M399416.D 8260WTR.M Wed Aug 20 13:50:09 2014 Page 2

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399416.D Vial: 12
Acq On : 19 Aug 2014 13:37 Operator: TMB
Sample : WG488700-11 300ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50 2014 Quant Results File: 8260WTR.RES

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration

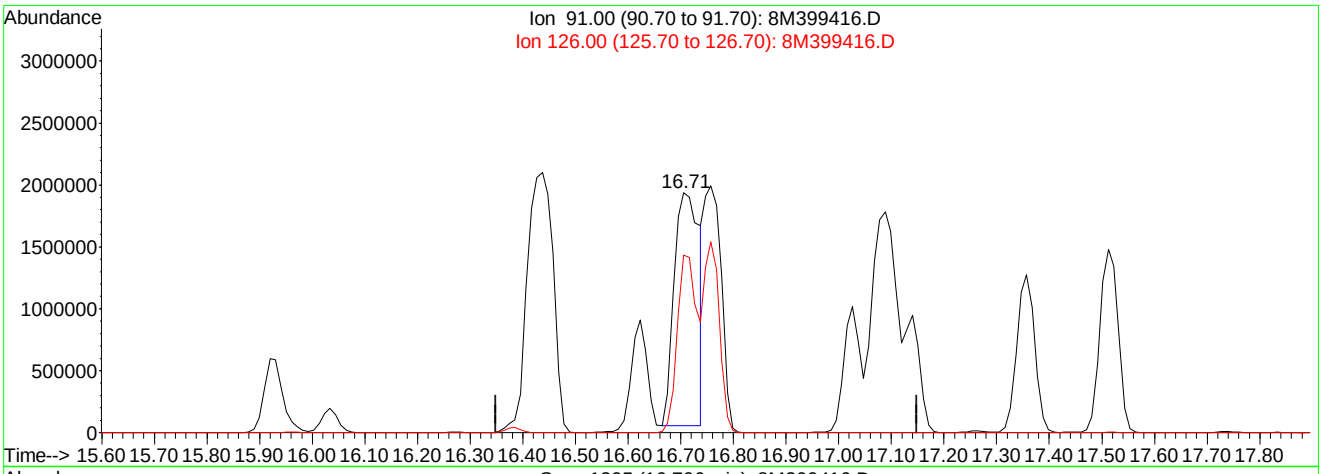


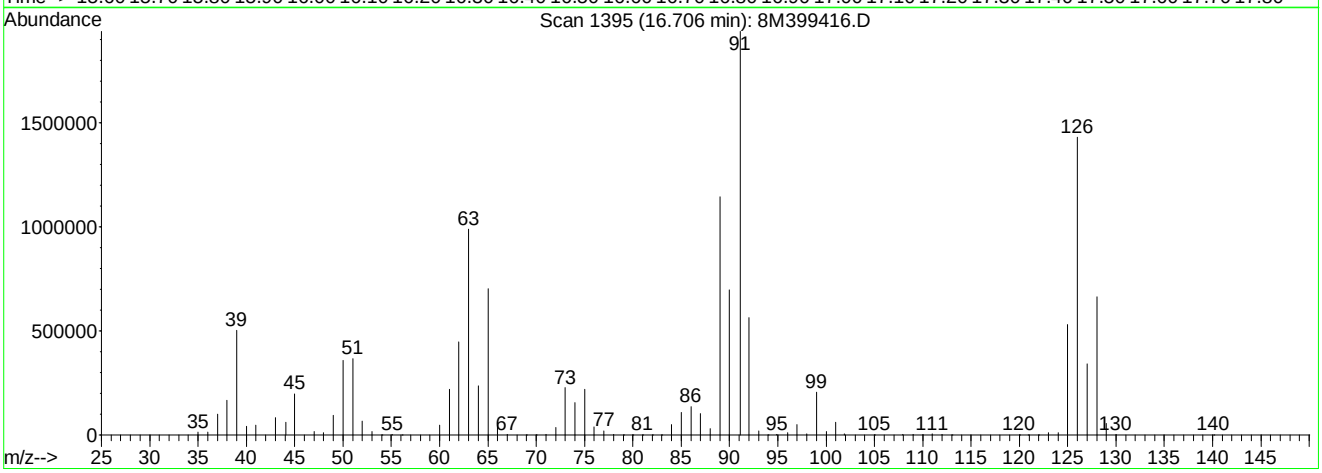
8M399416.D 8260WTR.M Wed Aug 20 13:50:09 2014 Page 3

Quantitation Report (Qedit)

Data File : C:\MSDCHEM\2\DATA\081914\8M399416.D Vial: 12
Acq On : 19 Aug 2014 13:37 Operator: TMB
Sample : WG488700-11 300ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 19 13:59 2014 Quant Results File: temp.res

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-13-14 HPMS 8
Last Update : Tue Aug 19 14:04:05 2014
Response via : Multiple Level Calibration





TIC: 8M399416.D

(87) 4-Chlorotoluene (T)

16.71min 163.84ug/L

response 6208902

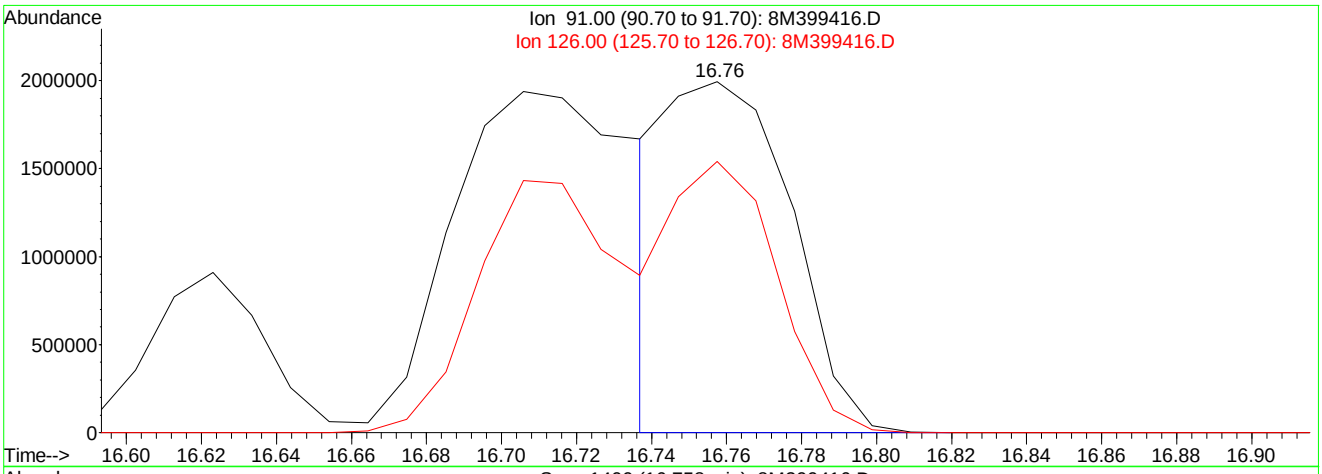
Ion	Exp%	Act%
91.00	100	100
126.00	28.60	61.85#
0.00	0.00	0.00
0.00	0.00	0.00

8M399416.D 8260WTR.M Tue Aug 19 14:06:00 2014

Quantitation Report (Qedit)

Data File : C:\MSDCHEM\2\DATA\081914\8M399416.D Vial: 12
Acq On : 19 Aug 2014 13:37 Operator: TMB
Sample : WG488700-11 300ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 19 14:06 2014 Quant Results File: temp.res

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-13-14 HPMS 8
Last Update : Tue Aug 19 14:04:05 2014
Response via : Multiple Level Calibration



TIC: 8M399416.D

(87) 4-Chlorotoluene (T)

16.76min 120.58ug/L mint

response 4569553

Ion	Exp%	Act%
91.00	100	100
126.00	28.60	84.04#
0.00	0.00	0.00
0.00	0.00	0.00

8M399416.D 8260WTR.M Tue Aug 19 2014

Analyst: 08/20/2014 10:17 Supervisor: 08/20/2014 12:59

#1 - Data system fails to select correct peak

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399419.D Vial: 15
Acq On : 19 Aug 2014 15:09 Operator: TMB
Sample : WG488700-12 50ug/L ALT SRC STD 8260 Inst : HPMS8
Misc : 1,1 STD66007 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50:11 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	10.90	96	938163	25.00	ug/L		0.00
57) Chlorobenzene-d5	14.77	117	670217	25.00	ug/L		0.00
78) 1,4-Dichlorobenzene-d4	17.80	152	327576	25.00	ug/L		0.00
System Monitoring Compounds							
37) Dibromofluoromethane	9.86	111	190427	21.9839	ug/L		0.00
Spiked Amount 25.000	Range 86 - 118		Recovery = 87.92%				
43) 1,2-Dichloroethane-d4	10.49	65	203520	21.2892	ug/L		0.00
Spiked Amount 25.000	Range 80 - 120		Recovery = 85.16%				
58) Toluene-d8	12.88	98	761815	23.1241	ug/L		0.00
Spiked Amount 25.000	Range 88 - 110		Recovery = 92.48%				
80) p-Bromofluorobenzene	16.27	95	294508	22.9935	ug/L		0.00
Spiked Amount 25.000	Range 86 - 115		Recovery = 91.96%				
Target Compounds							Qvalue
2) Dichlorodifluoromethane	3.29	85	412396	51.1281	ug/L		99
3) Chloromethane	3.76	50	949230	45.9025	ug/L		99
4) Vinyl Chloride	3.99	62	699425	42.4147	ug/L		94
5) 1,3-Butadiene	4.03	54	218716	18.2570	ug/L		95
6) Bromomethane	4.91	94	326022	48.0576	ug/L		98
7) Chloroethane	5.06	64	343846	49.4340	ug/L		98
8) Trichlorofluoromethane	5.56	101	671804	51.9323	ug/L		99
9) Diethyl ether	6.09	59	562724	101.2798	ug/L		95
10) Isoprene	6.13	67	751697	56.7828	ug/L		96
11) Acrolein	6.33	56	6048	77.0914	ug/L		98
12) 1,1,2-Trichloro-1,2,2-Trif	6.34	101	397429	51.6117	ug/L		89
13) Acetone	6.43	43	59996	53.7865	ug/L	#	30
14) 1,1-Dichloroethene	6.66	61	662827	46.5795	ug/L		99
15) Tert-Butyl Alcohol	6.77	59	56604	160.5418	ug/L		97
16) Dimethyl Sulfide	6.93	62	435470	46.5158	ug/L		97
17) Iodomethane	7.17	142	479495	58.2825	ug/L		89
18) Methyl acetate	7.18	43	166765	40.6485	ug/L		96
19) Methylene Chloride	7.44	84	439497	46.6123	ug/L		99
20) Carbon Disulfide	7.48	76	1439776	52.5687	ug/L		100
21) Acrylonitrile	7.62	53	97490	56.4920	ug/L		99
22) Methyl Tert Butyl Ether	7.65	73	910581	54.4679	ug/L		95
23) trans-1,2-Dichloroethene	7.90	61	730871	52.1650	ug/L		97
24) n-Hexane	7.97	57	728619	52.8357	ug/L		97
25) Diisopropyl ether	8.31	45	3020752	104.2300	ug/L		94
26) Vinyl Acetate	8.48	43	642313	73.4213	ug/L		100
27) 1,1-Dichloroethane	8.52	63	906360	50.0505	ug/L		99
28) Ethyl-Tert-Butyl ether	8.89	59	2629638	101.6075	ug/L		96
29) 2-Butanone	9.07	43	99404	53.5769	ug/L		97
30) Propionitrile	9.18	54	61101	96.9250	ug/L		99
31) 2,2-Dichloropropane	9.29	77	785535	50.4663	ug/L		99
32) cis-1,2-Dichloroethene	9.36	96	500327	49.7690	ug/L		100
33) Chloroform	9.57	83	880131	51.6140	ug/L		100
34) 1-Bromopropane	9.71	122	89163	50.7092	ug/L		100
35) Bromochloromethane	9.80	130	225596	47.9466	ug/L		90
36) Tetrahydrofuran	9.82	42	121154	99.5769	ug/L		93
38) 1,1,1-Trichloroethane	10.10	97	779011	51.3832	ug/L		100
39) Cyclohexane	10.13	56	923651	53.6331	ug/L		91
40) 1,1-Dichloropropene	10.30	75	679973	50.6816	ug/L		93
41) Tert-Amyl-Methyl ether	10.40	73	2023854	101.4392	ug/L		95
42) Carbon Tetrachloride	10.44	117	605464	52.5417	ug/L		97

(#) = qualifier out of range (m) = manual integration
8M399419.D 8260WTR.M Wed Aug 20 13:50:11 2014 Page 1

Data File : C:\MSDCHEM\2\DATA\081914\8M399419.D Vial: 15
Acq On : 19 Aug 2014 15:09 Operator: TMB
Sample : WG488700-12 50ug/L ALT SRC STD 8260 Inst : HPMS8
Misc : 1,1 STD66007 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50:11 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

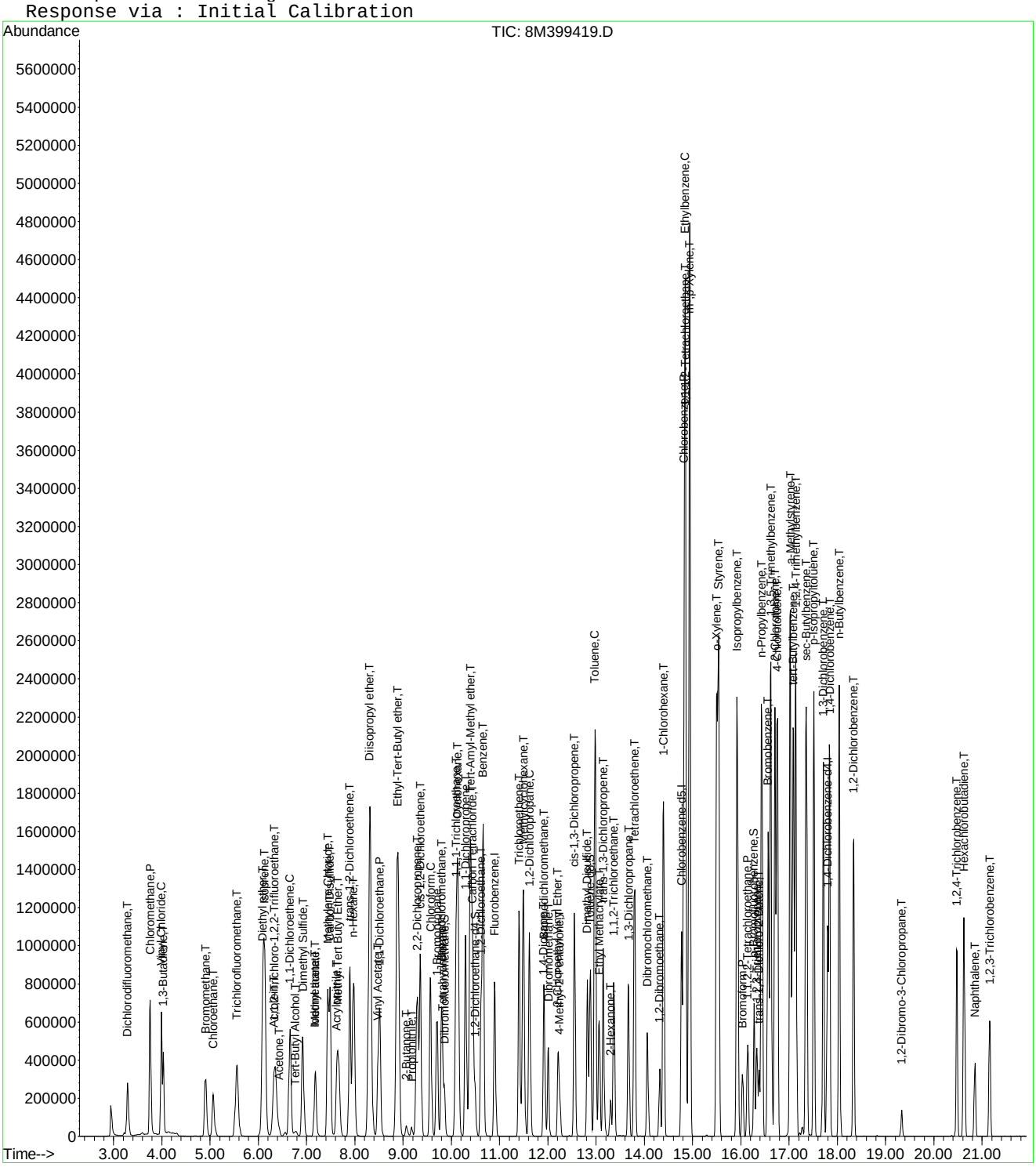
	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45)	1,2-Dichloroethane	10.62	62	595767	49.8101	ug/L	96
46)	Benzene	10.66	78	1871476	50.9406	ug/L	99
47)	Trichloroethene	11.40	130	434817	50.0171	ug/L	93
48)	Methylcyclohexane	11.50	83	797000	53.6396	ug/L	93
49)	1,2-Dichloropropane	11.62	63	529997	50.2058	ug/L	95
50)	Bromodichloromethane	11.92	83	644597	52.8404	ug/L	99
51)	1,4-Dioxane	11.91	88	5963	149.6582	ug/L	89
52)	Dibromomethane	12.01	93	232876	50.0261	ug/L	91
53)	2-Chloroethyl Vinyl Ether	12.21	63	225888	55.1614	ug/L	96
54)	4-Methyl-2-Pentanone	12.24	58	96230	51.6887	ug/L	99
55)	cis-1,3-Dichloropropene	12.55	75	771417	55.2664	ug/L	100
56)	Dimethyl Disulfide	12.82	94	542656	48.6253	ug/L	95
59)	Toluene	12.97	91	2008772	51.0876	ug/L	98
60)	Ethyl Methacrylate	13.07	69	450880	54.6121	ug/L	90
62)	trans-1,3-Dichloropropene	13.15	75	613012	49.4158	ug/L	100
63)	1,1,2-Trichloroethane	13.37	97	303865	50.0466	ug/L	95
64)	2-Hexanone	13.30	58	89254	50.6087	ug/L	92
65)	1,3-Dichloropropane	13.68	76	562578	50.4501	ug/L	93
66)	Tetrachloroethene	13.80	164	342865	47.1905	ug/L	86
67)	Dibromochloromethane	14.06	129	346472	56.6961	ug/L	100
68)	1,2-Dibromoethane	14.32	107	282227	49.3750	ug/L	100
69)	1-Chlorohexane	14.40	91	746540	56.4831	ug/L	93
70)	Chlorobenzene	14.82	112	1220970	50.5747	ug/L	85
71)	1,1,1,2-Tetrachloroethane	14.86	131	457010	48.8845	ug/L	99
72)	Ethylbenzene	14.85	106	772374	52.2951	ug/L	99
73)	m-,p-Xylene	14.94	106	1728837	106.2513	ug/L	93
74)	o-Xylene	15.50	106	798888	48.8118	ug/L	94
75)	Styrene	15.54	104	1431736	56.5266	ug/L	89
76)	Bromoform	16.03	173	182889	47.6969	ug/L	99
77)	Isopropylbenzene	15.92	105	1971982	50.6698	ug/L	100
79)	1,1,2,2-Tetrachloroethane	16.14	83	320769	50.3043	ug/L	99
81)	1,2,3-Trichloropropane	16.33	110	83288	49.7257	ug/L	79
82)	trans-1,4-Dichloro-2-Buten	16.38	53	97491	44.8367	ug/L	95
83)	n-Propylbenzene	16.43	91	2452825	46.6865	ug/L	98
84)	Bromobenzene	16.56	156	488364	50.8017	ug/L	91
85)	1,3,5-Trimethylbenzene	16.62	105	1841861	56.7489	ug/L	99
86)	2-Chlorotoluene	16.71	91	1626446	49.4789	ug/L	87
87)	4-Chlorotoluene	16.76	91	1592113	49.7915	ug/L	94
88)	a-Methylstyrene	17.03	118	1056271	59.8689	ug/L	94
89)	tert-Butylbenzene	17.09	134	345577	48.3604	ug/L	87
90)	1,2,4-Trimethylbenzene	17.14	105	1799602	57.9198	ug/L	100
91)	sec-Butylbenzene	17.36	105	2085816	49.3206	ug/L	99
92)	p-Isopropyltoluene	17.51	119	1638391	52.6186	ug/L	99
93)	1,3-Dichlorobenzene	17.71	146	867565	49.9619	ug/L	95
94)	1,4-Dichlorobenzene	17.84	146	925935	53.1391	ug/L	94
95)	n-Butylbenzene	18.04	91	1729983	56.9062	ug/L	96
96)	1,2-Dichlorobenzene	18.34	146	742316	49.3771	ug/L	96
97)	1,2-Dibromo-3-Chloropropan	19.33	75	46144	46.5189	ug/L	86
98)	1,2,4-Trichlorobenzene	20.48	180	361038	49.0197	ug/L	99
99)	Hexachlorobutadiene	20.63	225	265892	51.5543	ug/L	98
100)	Naphthalene	20.85	128	363539	47.2734	ug/L	98
101)	1,2,3-Trichlorobenzene	21.16	180	217077	47.4265	ug/L	100

(#) = qualifier out of range (m) = manual integration
8M399419.D 8260WTR.M Wed Aug 20 13:50:12 2014 Page 2

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\081914\8M399419.D Vial: 15
Acq On : 19 Aug 2014 15:09 Operator: TMB
Sample : WG488700-12 50ug/L ALT SRC STD 8260 Inst : HPMS8
Misc : 1,1 STD66007 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 20 13:50 2014 Quant Results File: 8260WTR.RES

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration



8M399419.D 8260WTR.M Wed Aug 20 13:50:12 2014 Page 3

Data File : C:\MSDCHEM\2\DATA\081914\8M399419.D Vial: 15
Acq On : 19 Aug 2014 15:09 Operator: TMB
Sample : WG488700-12 50ug/L ALT SRC STD 8260 Inst : HPMS8
Misc : 1,1 STD66007 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-13-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	I	Fluorobenzene	25.0000	25.0000	0.0	98	0.00
2	T	Dichlorodifluoromethane	50.0000	51.1281	-2.3	94	0.00
3	P	Chloromethane	50.0000	45.9025	8.2	89	0.00
4	C	Vinyl Chloride	50.0000	42.4147	15.2	83	0.00
5	T	1,3-Butadiene	50.0000	18.2570	63.5#	38	0.00
6	T	Bromomethane	50.0000	48.0576	3.9	101	0.00
7	T	Chloroethane	50.0000	49.4340	1.1	95	0.00
8	T	Trichlorofluoromethane	50.0000	51.9323	-3.9	100	0.00
9	T	Diethyl ether	100.0000	101.2798	-1.3	97	0.00
10	T	Isoprene	50.0000	56.7828	-13.6	108	0.00
11	T	Acrolein	50.0000	77.0914	-54.2#	164	0.00
12	T	1,1,2-Trichloro-1,2,2-Trifl	50.0000	51.6117	-3.2	97	0.00
13	T	Acetone	50.0000	53.7865	-7.6	104	0.00
14	C	1,1-Dichloroethene	50.0000	46.5795	6.8	88	0.00
15	T	Tert-Butyl Alcohol	200.0000	160.5418	19.7	80	0.00
16	T	Dimethyl Sulfide	50.0000	46.5158	7.0	88	0.00
17	T	Iodomethane	50.0000	58.2826	-16.6	119	0.00
18	T	Methyl acetate	50.0000	40.6486	18.7	79	0.00
19	T	Methylene Chloride	50.0000	46.6123	6.8	93	0.00
20	T	Carbon Disulfide	50.0000	52.5687	-5.1	94	0.00
21	T	Acrylonitrile	50.0000	56.4920	-13.0	99	0.00
22	T	Methyl Tert Butyl Ether	50.0000	54.4679	-8.9	99	0.00
23	T	trans-1,2-Dichloroethene	50.0000	52.1650	-4.3	95	0.00
24	T	n-Hexane	50.0000	52.8357	-5.7	100	0.00
25	T	Diisopropyl ether	100.0000	104.2300	-4.2	100	0.00
26	T	Vinyl Acetate	50.0000	73.4213	-46.8#	136	0.00
27	P	1,1-Dichloroethane	50.0000	50.0505	-0.1	93	0.00
28	T	Ethyl-Tert-Butyl ether	100.0000	101.6075	-1.6	96	0.00
29	T	2-Butanone	50.0000	53.5769	-7.2	100	0.00
30	T	Propionitrile	100.0000	96.9250	3.1	95	0.00
31	T	2,2-Dichloropropane	50.0000	50.4663	-0.9	95	0.00
32	T	cis-1,2-Dichloroethene	50.0000	49.7689	0.5	95	0.00
33	C	Chloroform	50.0000	51.6140	-3.2	96	0.00
34		1-Bromopropane	50.0000	50.7092	-1.4	98	0.00
35	T	Bromochloromethane	50.0000	47.9466	4.1	93	0.00
36	T	Tetrahydrofuran	100.0000	99.5769	0.4	96	0.00
37	S	Dibromofluoromethane	25.0000	21.9839	12.1	85	0.00
38	T	1,1,1-Trichloroethane	50.0000	51.3832	-2.8	97	0.00
39	T	Cyclohexane	50.0000	53.6331	-7.3	102	0.00
40	T	1,1-Dichloropropene	50.0000	50.6816	-1.4	95	0.00
41	T	Tert-Amyl-Methyl ether	100.0000	101.4392	-1.4	97	0.00
42	T	Carbon Tetrachloride	50.0000	52.5417	-5.1	97	0.00
43	S	1,2-Dichloroethane-d4	25.0000	21.2892	14.8	83	0.00
44		Heptane	-1.0000	0.0000	0.0	0	-2.67#
45	T	1,2-Dichloroethane	50.0000	49.8101	0.4	95	0.00
46	T	Benzene	50.0000	50.9406	-1.9	97	0.00
47	T	Trichloroethene	50.0000	50.0171	-0.0	98	0.00
48	T	Methylcyclohexane	50.0000	53.6396	-7.3	104	0.00
49	C	1,2-Dichloropropane	50.0000	50.2058	-0.4	98	0.00
50	T	Bromodichloromethane	50.0000	52.8404	-5.7	98	0.00
51	T	1,4-Dioxane	200.0000	149.6582	25.2#	72	0.00
52	T	Dibromomethane	50.0000	50.0261	-0.1	96	0.00
53	T	2-Chloroethyl Vinyl Ether	50.0000	55.1615	-10.3	103	0.00
54	T	4-Methyl-2-Pentanone	50.0000	51.6887	-3.4	98	0.00

(#) = Out of Range
8M399419.D 8260WTR.M Tue Aug 19 15:33:22 2014 Page 1

Data File : C:\MSDCHEM\2\DATA\081914\8M399419.D Vial: 15
Acq On : 19 Aug 2014 15:09 Operator: TMB
Sample : WG488700-12 50ug/L ALT SRC STD 8260 Inst : HPMS8
Misc : 1,1 STD66007 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-13-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
55	T	cis-1,3-Dichloropropene	50.0000	55.2664	-10.5	101	0.00
56	T	Dimethyl Disulfide	50.0000	48.6253	2.7	103	0.00
57	I	Chlorobenzene-d5	25.0000	25.0000	0.0	102	0.00
58	S	Toluene-d8	25.0000	23.1241	7.5	92	0.00
59	C	Toluene	50.0000	51.0876	-2.2	100	0.00
60	T	Ethyl Methacrylate	50.0000	54.6121	-9.2	100	0.00
61		Paraldehyde	-1.0000	0.0000	0.0	0	-13.27#
62	T	trans-1,3-Dichloropropene	50.0000	49.4158	1.2	93	0.00
63	T	1,1,2-Trichloroethane	50.0000	50.0466	-0.1	99	0.00
64	T	2-Hexanone	50.0000	50.6087	-1.2	97	0.00
65	T	1,3-Dichloropropane	50.0000	50.4501	-0.9	98	0.00
66	T	Tetrachloroethene	50.0000	47.1905	5.6	99	0.00
67	T	Dibromochloromethane	50.0000	56.6961	-13.4	101	0.00
68	T	1,2-Dibromoethane	50.0000	49.3750	1.3	97	0.00
69	T	1-Chlorohexane	50.0000	56.4831	-13.0	110	0.00
70	P	Chlorobenzene	50.0000	50.5747	-1.1	96	0.00
71	T	1,1,1,2-Tetrachloroethane	50.0000	48.8845	2.2	100	0.00
72	C	Ethylbenzene	50.0000	52.2951	-4.6	102	0.00
73	T	m-,p-Xylene	100.0000	106.2513	-6.3	99	0.00
74	T	o-Xylene	50.0000	48.8118	2.4	95	0.00
75	T	Styrene	50.0000	56.5266	-13.1	101	0.00
76	P	Bromoform	50.0000	47.6969	4.6	99	0.00
77	T	Isopropylbenzene	50.0000	50.6698	-1.3	96	0.00
78	I	1,4-Dichlorobenzene-d4	25.0000	25.0000	0.0	100	0.00
79	P	1,1,2,2-Tetrachloroethane	50.0000	50.3043	-0.6	93	0.00
80	S	p-Bromofluorobenzene	25.0000	22.9935	8.0	93	0.00
81	T	1,2,3-Trichloropropane	50.0000	49.7257	0.5	94	0.00
82	T	trans-1,4-Dichloro-2-Butene	50.0000	44.8367	10.3	94	0.00
83	T	n-Propylbenzene	50.0000	46.6865	6.6	96	0.00
84	T	Bromobenzene	50.0000	50.8017	-1.6	100	0.00
85	T	1,3,5-Trimethylbenzene	50.0000	56.7489	-13.5	105	0.00
86	T	2-Chlorotoluene	50.0000	49.4789	1.0	95	0.00
87	T	4-Chlorotoluene	50.0000	49.7915	0.4	97	0.00
88	T	a-Methylstyrene	50.0000	59.8689	-19.7	106	0.00
89	T	tert-Butylbenzene	50.0000	48.3604	3.3	97	0.00
90	T	1,2,4-Trimethylbenzene	50.0000	57.9198	-15.8	103	0.00
91	T	sec-Butylbenzene	50.0000	49.3206	1.4	98	0.00
92	T	p-Isopropyltoluene	50.0000	52.6185	-5.2	97	0.00
93	T	1,3-Dichlorobenzene	50.0000	49.9619	0.1	94	0.00
94	T	1,4-Dichlorobenzene	50.0000	53.1391	-6.3	101	0.00
95	T	n-Butylbenzene	50.0000	56.9062	-13.8	105	0.00
96	T	1,2-Dichlorobenzene	50.0000	49.3771	1.2	93	0.00
97	T	1,2-Dibromo-3-Chloropropane	50.0000	46.5189	7.0	90	0.00
98	T	1,2,4-Trichlorobenzene	50.0000	49.0197	2.0	97	0.00
99	T	Hexachlorobutadiene	50.0000	51.5543	-3.1	105	0.00
100	T	Naphthalene	50.0000	47.2734	5.5	92	0.00
101	T	1,2,3-Trichlorobenzene	50.0000	47.4265	5.1	93	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
8M399419.D 8260WTR.M Tue Aug 19 15:33:22 2014 Page 2

Quantitation Report (Not Reviewed)

Data File : C:\MSDchem\2\data\082814\8M399619.D Vial: 2
Acq On : 28 Aug 2014 16:18 Operator: ADC
Sample : WG490299-02 50ug/L CCV STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 28 16:40:06 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	10.90	96	854316	25.00	ug/L		0.00
57) Chlorobenzene-d5	14.77	117	567833	25.00	ug/L		0.00
78) 1,4-Dichlorobenzene-d4	17.80	152	271905	25.00	ug/L		0.00
System Monitoring Compounds							
37) Dibromofluoromethane	9.85	111	182640	23.1543	ug/L		0.00
Spiked Amount 25.000	Range 86 - 118		Recovery = 92.60%				
43) 1,2-Dichloroethane-d4	10.50	65	183361	21.0630	ug/L		0.00
Spiked Amount 25.000	Range 80 - 120		Recovery = 84.24%				
58) Toluene-d8	12.87	98	706585	25.3148	ug/L		0.00
Spiked Amount 25.000	Range 88 - 110		Recovery = 101.24%				
80) p-Bromofluorobenzene	16.28	95	262883	24.7266	ug/L		0.00
Spiked Amount 25.000	Range 86 - 115		Recovery = 98.92%				
Target Compounds							Qvalue
2) Dichlorodifluoromethane	3.29	85	354711	48.2925	ug/L		99
3) Chloromethane	3.75	50	789722	41.9371	ug/L		100
4) Vinyl Chloride	3.99	62	634206	42.2196	ug/L		95
5) 1,3-Butadiene	4.04	54	403633	41.0330	ug/L		99
6) Bromomethane	4.91	94	247298	40.0309	ug/L		100
7) Chloroethane	5.07	64	318842	50.3381	ug/L		99
8) Trichlorofluoromethane	5.55	101	613930	52.1163	ug/L		99
9) Diethyl ether	6.08	59	479181	94.7080	ug/L		95
10) Isoprene	6.13	67	620948	51.5097	ug/L		94
12) 1,1,2-Trichloro-1,2,2-Trif	6.35	101	375145	53.4992	ug/L		95
13) Acetone	6.42	43	53413	52.5845	ug/L	#	26
14) 1,1-Dichloroethene	6.66	61	668969	51.6250	ug/L		95
15) Tert-Butyl Alcohol	6.76	59	43570	135.7027	ug/L		98
16) Dimethyl Sulfide	6.92	62	414045	48.5679	ug/L		100
17) Iodomethane	7.18	142	278821	37.7277	ug/L		90
18) Methyl acetate	7.18	43	153986	41.2175	ug/L		95
19) Methylene Chloride	7.45	84	415634	48.4078	ug/L		91
20) Carbon Disulfide	7.49	76	1396665	55.9996	ug/L		99
21) Acrylonitrile	7.62	53	77796	49.5044	ug/L		100
22) Methyl Tert Butyl Ether	7.65	73	727675	47.7991	ug/L		95
23) trans-1,2-Dichloroethene	7.89	61	677990	53.1400	ug/L		94
24) n-Hexane	7.97	57	615470	49.0110	ug/L		98
25) Diisopropyl ether	8.31	45	2586314	97.9983	ug/L		94
26) Vinyl Acetate	8.48	43	428824	53.8287	ug/L		98
27) 1,1-Dichloroethane	8.51	63	860164	52.1614	ug/L		97
28) Ethyl-Tert-Butyl ether	8.88	59	2272024	96.4057	ug/L		96
29) 2-Butanone	9.07	43	81776	48.4015	ug/L		93
30) Propionitrile	9.17	54	49354	85.9745	ug/L		98
31) 2,2-Dichloropropane	9.30	77	728849	51.4201	ug/L		100
32) cis-1,2-Dichloroethene	9.36	96	481105	52.5538	ug/L		93
33) Chloroform	9.57	83	810531	52.1975	ug/L		99
34) 1-Bromopropane	9.70	122	88667	55.3763	ug/L		98
35) Bromochloromethane	9.80	130	216929	50.6295	ug/L		97
36) Tetrahydrofuran	9.82	42	106293	95.9368	ug/L		91
38) 1,1,1-Trichloroethane	10.10	97	743682	53.8672	ug/L		99
39) Cyclohexane	10.13	56	805200	51.3439	ug/L		89
40) 1,1-Dichloropropene	10.30	75	637571	52.1852	ug/L		96
41) Tert-Amyl-Methyl ether	10.39	73	1736014	95.5519	ug/L		94
42) Carbon Tetrachloride	10.44	117	598852	57.0683	ug/L		98
45) 1,2-Dichloroethane	10.61	62	518297	47.5861	ug/L		97

(#) = qualifier out of range (m) = manual integration
8M399619.D 8260WTR.M Thu Aug 28 16:40:06 2014 Page 1

Data File : C:\MSDchem\2\data\082814\8M399619.D Vial: 2
Acq On : 28 Aug 2014 16:18 Operator: ADC
Sample : WG490299-02 50ug/L CCV STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 28 16:40:06 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

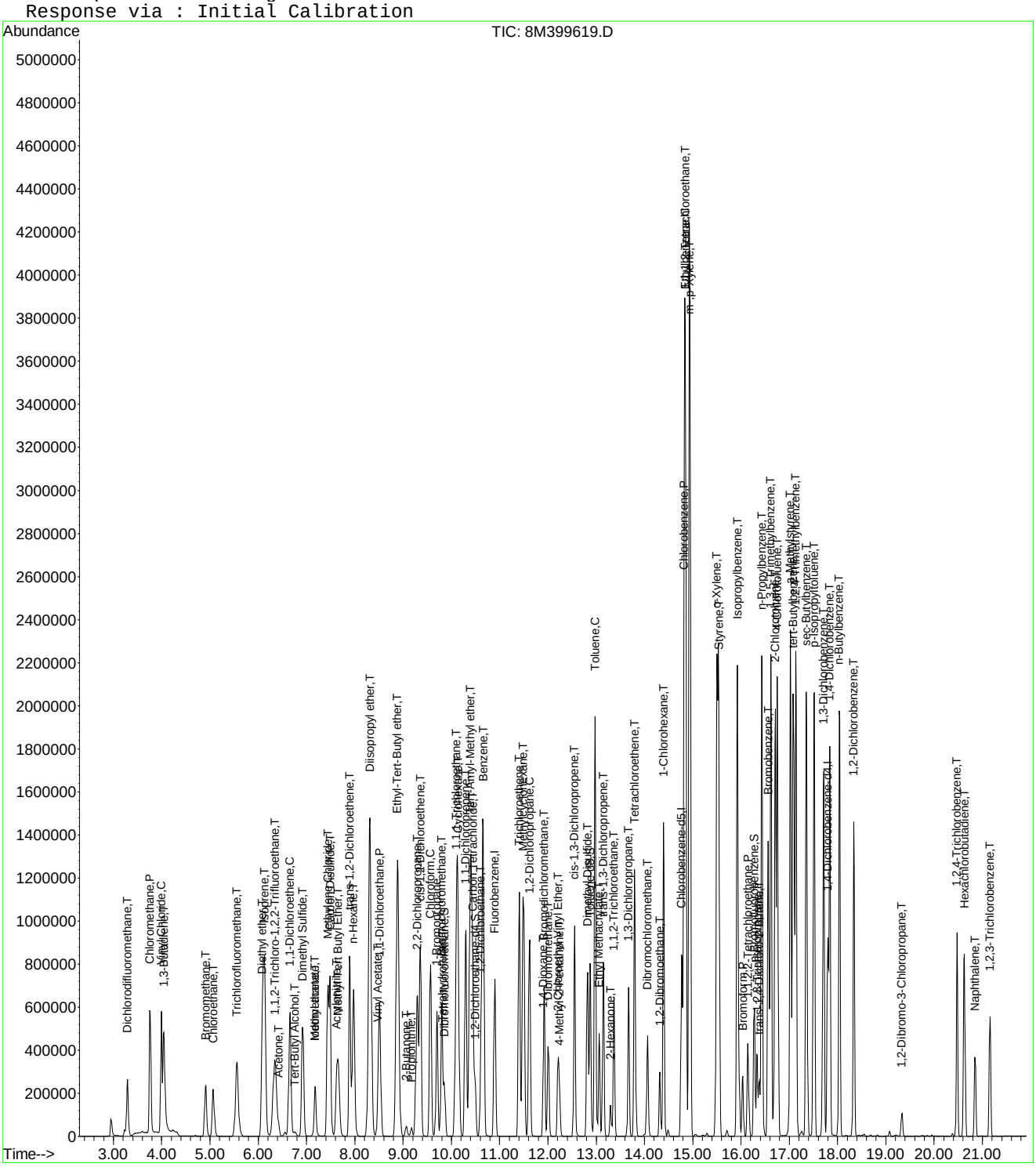
	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
46)	Benzene	10.66	78	1748943	52.2776	ug/L	97
47)	Trichloroethene	11.41	130	423936	53.5515	ug/L	94
48)	Methylcyclohexane	11.49	83	698779	51.6449	ug/L	90
49)	1,2-Dichloropropane	11.62	63	476154	49.5322	ug/L	97
50)	Bromodichloromethane	11.92	83	575221	51.7812	ug/L	99
51)	1,4-Dioxane	11.90	88	4873	134.3049	ug/L	95
52)	Dibromomethane	12.01	93	206047	48.6069	ug/L	92
53)	2-Chloroethyl Vinyl Ether	12.21	63	182725	49.0005	ug/L	97
54)	4-Methyl-2-Pentanone	12.24	58	77870	45.9320	ug/L	96
55)	cis-1,3-Dichloropropene	12.55	75	663533	52.2028	ug/L	100
56)	Dimethyl Disulfide	12.82	94	560710	54.7488	ug/L	97
59)	Toluene	12.98	91	1832603	55.0108	ug/L	98
60)	Ethyl Methacrylate	13.06	69	339906	48.5939	ug/L	90
62)	trans-1,3-Dichloropropene	13.15	75	542174	51.5859	ug/L	99
63)	1,1,2-Trichloroethane	13.37	97	259649	50.4748	ug/L	98
64)	2-Hexanone	13.30	58	69836	46.7381	ug/L	94
65)	1,3-Dichloropropane	13.67	76	474220	50.1942	ug/L	90
66)	Tetrachloroethene	13.79	164	330019	53.6124	ug/L	90
67)	Dibromochloromethane	14.06	129	302825	58.4886	ug/L	99
68)	1,2-Dibromoethane	14.32	107	248467	51.3064	ug/L	99
69)	1-Chlorohexane	14.39	91	625481	55.8566	ug/L	89
70)	Chlorobenzene	14.82	112	1146816	56.0682	ug/L	88
71)	1,1,1,2-Tetrachloroethane	14.85	131	408820	51.3258	ug/L	99
72)	Ethylbenzene	14.85	106	687770	54.9631	ug/L	99
73)	m-,p-Xylene	14.93	106	1581387	114.7132	ug/L	94
74)	o-Xylene	15.50	106	769256	55.4759	ug/L	96
75)	Styrene	15.54	104	1263573	58.8824	ug/L	91
76)	Bromoform	16.04	173	164695	50.5411	ug/L	99
77)	Isopropylbenzene	15.92	105	1874988	56.8643	ug/L	99
79)	1,1,2,2-Tetrachloroethane	16.14	83	266475	50.3459	ug/L	97
81)	1,2,3-Trichloropropane	16.34	110	70054	50.3879	ug/L	79
82)	trans-1,4-Dichloro-2-Buten	16.38	53	69012	38.3520	ug/L	83
83)	n-Propylbenzene	16.43	91	2350357	53.8956	ug/L	99
84)	Bromobenzene	16.57	156	433169	54.2859	ug/L	97
85)	1,3,5-Trimethylbenzene	16.62	105	1622351	60.2200	ug/L	98
86)	2-Chlorotoluene	16.71	91	1589424	58.2525	ug/L	88
87)	4-Chlorotoluene	16.75	91	1413975	53.2743	ug/L	93
88)	a-Methylstyrene	17.02	118	877313	59.9066	ug/L	96
89)	tert-Butylbenzene	17.08	134	326947	55.1211	ug/L	90
90)	1,2,4-Trimethylbenzene	17.13	105	1624774	62.9997	ug/L	100
91)	sec-Butylbenzene	17.35	105	1955629	55.7100	ug/L	100
92)	p-Isopropyltoluene	17.52	119	1573657	60.8872	ug/L	100
93)	1,3-Dichlorobenzene	17.71	146	818002	56.7527	ug/L	96
94)	1,4-Dichlorobenzene	17.84	146	806402	55.7545	ug/L	95
95)	n-Butylbenzene	18.03	91	1551630	61.4895	ug/L	96
96)	1,2-Dichlorobenzene	18.33	146	684176	54.8276	ug/L	96
97)	1,2-Dibromo-3-Chloropropan	19.33	75	38273	46.4843	ug/L	88
98)	1,2,4-Trichlorobenzene	20.47	180	334951	54.4342	ug/L	99
99)	Hexachlorobutadiene	20.63	225	215405	50.3165	ug/L	98
100)	Naphthalene	20.85	128	348386	54.1485	ug/L	99
101)	1,2,3-Trichlorobenzene	21.16	180	199972	52.3997	ug/L	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Data File : C:\MSDchem\2\data\082814\8M399619.D Vial: 2
Acq On : 28 Aug 2014 16:18 Operator: ADC
Sample : WG490299-02 50ug/L CCV STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 28 16:40 2014 Quant Results File: 8260WTR.RES

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration



Continuing Calibration Area and RT check

Instrument: HPMS8
Initial cal date: 19 Aug 2014 12:11
CCV date: 28 Aug 2014 16:18
CCV Filename: 8M399619.D

	Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
	Amount	RT	Amount	RT	Amount	RT
InitCal	958223	10.90	657389	14.77	327810	17.79
CCV	854316	10.90	567833	14.77	271905	17.80

Evaluate Continuing Calibration Report

Data File : C:\MSDCHEM\2\DATA\082814\8M399619.D Vial: 2
Acq On : 28 Aug 2014 16:18 Operator: ADC
Sample : WG490299-02 50ug/L CCV STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Fluorobenzene	1.0000	1.0000	0.0	89	0.00
2	T	Dichlorodifluoromethane	0.2149	0.2076	3.4	81	0.00
3	P	Chloromethane	0.5511	0.4622	16.1	74	0.00
4	C	Vinyl Chloride	0.4802	0.3712	22.7#	75	0.00
5	T	1,3-Butadiene	0.3471	0.2362	31.9#	71	0.01
6	T	Bromomethane	0.1808	0.1447	19.9	76	0.00
7	T	Chloroethane	0.1853	0.1866	-0.7	88	0.00
8	T	Trichlorofluoromethane	0.3447	0.3593	-4.2	92	0.00
9	T	Diethyl ether	0.1481	0.1402	5.3	82	0.00
10	T	Isoprene	0.3528	0.3634	-3.0	90	0.00
11	T	Acrolein	0.0016	0.0000	100.0#	0#	-6.34#
12	T	1,1,2-Trichloro-1,2,2-Trifl	0.2052	0.2196	-7.0	92	0.00
13	T	Acetone	0.0297	0.0313	-5.2	92	0.00
14	C	1,1-Dichloroethene	0.3792	0.3915	-3.2	89	0.00
15	T	Tert-Butyl Alcohol	0.0094	0.0064	32.2#	62	-0.02
16	T	Dimethyl Sulfide	0.2495	0.2423	2.9	84	0.00
17	T	Iodomethane	0.1770	0.1632	7.8	69	0.00
18	T	Methyl acetate	0.1093	0.0901	17.6	73	0.00
19	T	Methylene Chloride	0.2513	0.2433	3.2	88	0.00
20	T	Carbon Disulfide	0.7298	0.8174	-12.0	92	0.00
21	T	Acrylonitrile	0.0460	0.0455	1.0	79	0.00
22	T	Methyl Tert Butyl Ether	0.4455	0.4259	4.4	79	0.00
23	T	trans-1,2-Dichloroethene	0.3734	0.3968	-6.3	88	0.00
24	T	n-Hexane	0.3675	0.3602	2.0	85	0.00
25	T	Diisopropyl ether	0.7723	0.7568	2.0	85	0.00
26	T	Vinyl Acetate	0.2331	0.2510	-7.7	91	0.00
27	P	1,1-Dichloroethane	0.4826	0.5034	-4.3	89	0.00
28	T	Ethyl-Tert-Butyl ether	0.6896	0.6649	3.6	83	0.00
29	T	2-Butanone	0.0494	0.0479	3.2	82	0.00
30	T	Propionitrile	0.0168	0.0144	14.0	77	0.00
31	T	2,2-Dichloropropane	0.4148	0.4266	-2.8	88	0.00
32	T	cis-1,2-Dichloroethene	0.2679	0.2816	-5.1	91	0.00
33	C	Chloroform	0.4544	0.4744	-4.4	89	0.00
34		1-Bromopropane	0.0469	0.0519	-10.7	97	0.00
35	T	Bromochloromethane	0.1254	0.1270	-1.3	89	0.00
36	T	Tetrahydrofuran	0.0324	0.0311	4.1	84	0.00
37	S	Dibromofluoromethane	0.2308	0.2138	7.4	82	0.00
38	T	1,1,1-Trichloroethane	0.4040	0.4353	-7.7	93	0.00
39	T	Cyclohexane	0.4589	0.4713	-2.7	89	0.00
40	T	1,1-Dichloropropene	0.3575	0.3731	-4.4	89	0.00
41	T	Tert-Amyl-Methyl ether	0.5317	0.5080	4.4	84	0.00
42	T	Carbon Tetrachloride	0.3071	0.3505	-14.1	96	0.00
43	S	1,2-Dichloroethane-d4	0.2547	0.2146	15.7	75	0.00
44		Heptane	0.0000	0.0000	0.0	0#	-2.67#
45	T	1,2-Dichloroethane	0.3187	0.3033	4.8	82	0.00
46	T	Benzene	0.9790	1.0236	-4.6	91	0.00
47	T	Trichloroethene	0.2317	0.2481	-7.1	95	0.00
48	T	Methylcyclohexane	0.3959	0.4090	-3.3	91	0.00
49	C	1,2-Dichloropropane	0.2813	0.2787	0.9	88	0.00
50	T	Bromodichloromethane	0.3251	0.3367	-3.6	88	0.00
51	T	1,4-Dioxane	0.0011	0.0007	33.0#	59	0.00
52	T	Dibromomethane	0.1240	0.1206	2.8	85	0.00
53	T	2-Chloroethyl Vinyl Ether	0.1091	0.1069	2.0	84	0.00
54	T	4-Methyl-2-Pentanone	0.0496	0.0456	8.1	79	0.00

(#) = Out of Range
8M399619.D 8260WTR.M Fri Aug 29 08:51:05 2014 Page 1

Data File : C:\MSDCHEM\2\DATA\082814\8M399619.D Vial: 2
Acq On : 28 Aug 2014 16:18 Operator: ADC
Sample : WG490299-02 50ug/L CCV STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
55	T	cis-1,3-Dichloropropene	0.3720	0.3883	-4.4	86	0.00
56	T	Dimethyl Disulfide	0.2551	0.3282	-28.6#	107	0.00
57	I	Chlorobenzene-d5	1.0000	1.0000	0.0	86	0.00
58	S	Toluene-d8	1.2289	1.2444	-1.3	85	0.00
59	C	Toluene	1.4667	1.6137	-10.0	91	0.00
60	T	Ethyl Methacrylate	0.3080	0.2993	2.8	76	0.00
61		Paraldehyde	0.0000	0.0000	0.0	0#	-13.27#
62	T	trans-1,3-Dichloropropene	0.4627	0.4774	-3.2	82	0.00
63	T	1,1,2-Trichloroethane	0.2265	0.2286	-0.9	84	0.00
64	T	2-Hexanone	0.0658	0.0615	6.5	76	0.00
65	T	1,3-Dichloropropane	0.4159	0.4176	-0.4	82	0.00
66	T	Tetrachloroethene	0.2710	0.2906	-7.2	96	0.00
67	T	Dibromochloromethane	0.2280	0.2667	-17.0	89	0.00
68	T	1,2-Dibromoethane	0.2132	0.2188	-2.6	85	0.00
69	T	1-Chlorohexane	0.4930	0.5508	-11.7	92	0.00
70	P	Chlorobenzene	0.9005	1.0098	-12.1	90	0.00
71	T	1,1,1,2-Tetrachloroethane	0.3244	0.3600	-11.0	90	0.00
72	C	Ethylbenzene	0.5509	0.6056	-9.9	91	0.00
73	T	m-,p-Xylene	0.6069	0.6962	-14.7	91	0.00
74	T	o-Xylene	0.6105	0.6774	-11.0	91	0.00
75	T	Styrene	0.9448	1.1126	-17.8	89	0.00
76	P	Bromoform	0.1292	0.1450	-12.2	89	0.00
77	T	Isopropylbenzene	1.4517	1.6510	-13.7	92	0.00
78	I	1,4-Dichlorobenzene-d4	1.0000	1.0000	0.0	83	0.00
79	P	1,1,2,2-Tetrachloroethane	0.4867	0.4900	-0.7	77	0.00
80	S	p-Bromofluorobenzene	0.9775	0.9668	1.1	83	0.00
81	T	1,2,3-Trichloropropane	0.1278	0.1288	-0.8	79	0.00
82	T	trans-1,4-Dichloro-2-Butene	0.1395	0.1269	9.0	66	0.00
83	T	n-Propylbenzene	4.0096	4.3220	-7.8	92	0.00
84	T	Bromobenzene	0.7337	0.7965	-8.6	89	0.00
85	T	1,3,5-Trimethylbenzene	2.4770	2.9833	-20.4	93	0.00
86	T	2-Chlorotoluene	2.5087	2.9228	-16.5	93	0.00
87	T	4-Chlorotoluene	2.4403	2.6001	-6.5	86	0.00
88	T	a-Methylstyrene	1.3465	1.6133	-19.8	88	0.00
89	T	tert-Butylbenzene	0.5454	0.6012	-10.2	91	0.00
90	T	1,2,4-Trimethylbenzene	2.3712	2.9878	-26.0#	93	0.00
91	T	sec-Butylbenzene	3.2276	3.5962	-11.4	92	0.00
92	T	p-Isopropyltoluene	2.3763	2.8938	-21.8	93	0.00
93	T	1,3-Dichlorobenzene	1.3252	1.5042	-13.5	89	0.00
94	T	1,4-Dichlorobenzene	1.3298	1.4829	-11.5	88	0.00
95	T	n-Butylbenzene	2.3201	2.8533	-23.0	94	0.00
96	T	1,2-Dichlorobenzene	1.1473	1.2581	-9.7	86	0.00
97	T	1,2-Dibromo-3-Chloropropane	0.0714	0.0704	1.4	75	0.00
98	T	1,2,4-Trichlorobenzene	0.5104	0.6159	-20.7	90	0.00
99	T	Hexachlorobutadiene	0.3936	0.3961	-0.6	85	0.00
100	T	Naphthalene	0.5110	0.6406	-25.4#	89	0.00
101	T	1,2,3-Trichlorobenzene	0.2997	0.3677	-22.7	86	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 1
8M399619.D 8260WTR.M Fri Aug 29 08:51:06 2014 Page 2

Evaluate Continuing Calibration Report

Data File : C:\MSDCHEM\2\DATA\082814\8M399619.D Vial: 2
Acq On : 28 Aug 2014 16:18 Operator: ADC
Sample : WG490299-02 50ug/L CCV STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	I	Fluorobenzene	25.0000	25.0000	0.0	89	0.00
2	T	Dichlorodifluoromethane	50.0000	48.2925	3.4	81	0.00
3	P	Chloromethane	50.0000	41.9371	16.1	74	0.00
4	C	Vinyl Chloride	50.0000	42.2196	15.6	75	0.00
5	T	1,3-Butadiene	50.0000	41.0330	17.9	71	0.01
6	T	Bromomethane	50.0000	40.0309	19.9	76	0.00
7	T	Chloroethane	50.0000	50.3381	-0.7	88	0.00
8	T	Trichlorofluoromethane	50.0000	52.1163	-4.2	92	0.00
9	T	Diethyl ether	100.0000	94.7080	5.3	82	0.00
10	T	Isoprene	50.0000	51.5097	-3.0	90	0.00
11	T	Acrolein	50.0000	0.0000	100.0#	0	-6.34#
12	T	1,1,2-Trichloro-1,2,2-Trifl	50.0000	53.4992	-7.0	92	0.00
13	T	Acetone	50.0000	52.5845	-5.2	92	0.00
14	C	1,1-Dichloroethene	50.0000	51.6250	-3.3	89	0.00
15	T	Tert-Butyl Alcohol	200.0000	135.7027	32.1#	62	-0.02
16	T	Dimethyl Sulfide	50.0000	48.5679	2.9	84	0.00
17	T	Iodomethane	50.0000	37.7277	24.5	69	0.00
18	T	Methyl acetate	50.0000	41.2174	17.6	73	0.00
19	T	Methylene Chloride	50.0000	48.4078	3.2	88	0.00
20	T	Carbon Disulfide	50.0000	55.9996	-12.0	92	0.00
21	T	Acrylonitrile	50.0000	49.5044	1.0	79	0.00
22	T	Methyl Tert Butyl Ether	50.0000	47.7991	4.4	79	0.00
23	T	trans-1,2-Dichloroethene	50.0000	53.1400	-6.3	88	0.00
24	T	n-Hexane	50.0000	49.0110	2.0	85	0.00
25	T	Diisopropyl ether	100.0000	97.9983	2.0	85	0.00
26	T	Vinyl Acetate	50.0000	53.8287	-7.7	91	0.00
27	P	1,1-Dichloroethane	50.0000	52.1613	-4.3	89	0.00
28	T	Ethyl-Tert-Butyl ether	100.0000	96.4057	3.6	83	0.00
29	T	2-Butanone	50.0000	48.4016	3.2	82	0.00
30	T	Propionitrile	100.0000	85.9745	14.0	77	0.00
31	T	2,2-Dichloropropane	50.0000	51.4201	-2.8	88	0.00
32	T	cis-1,2-Dichloroethene	50.0000	52.5538	-5.1	91	0.00
33	C	Chloroform	50.0000	52.1975	-4.4	89	0.00
34		1-Bromopropane	50.0000	55.3763	-10.8	97	0.00
35	T	Bromochloromethane	50.0000	50.6295	-1.3	89	0.00
36	T	Tetrahydrofuran	100.0000	95.9368	4.1	84	0.00
37	S	Dibromofluoromethane	25.0000	23.1543	7.4	82	0.00
38	T	1,1,1-Trichloroethane	50.0000	53.8672	-7.7	93	0.00
39	T	Cyclohexane	50.0000	51.3439	-2.7	89	0.00
40	T	1,1-Dichloropropene	50.0000	52.1852	-4.4	89	0.00
41	T	Tert-Amyl-Methyl ether	100.0000	95.5519	4.4	84	0.00
42	T	Carbon Tetrachloride	50.0000	57.0683	-14.1	96	0.00
43	S	1,2-Dichloroethane-d4	25.0000	21.0630	15.7	75	0.00
44		Heptane	-1.0000	0.0000	0.0	0	-2.67#
45	T	1,2-Dichloroethane	50.0000	47.5861	4.8	82	0.00
46	T	Benzene	50.0000	52.2775	-4.6	91	0.00
47	T	Trichloroethene	50.0000	53.5515	-7.1	95	0.00
48	T	Methylcyclohexane	50.0000	51.6448	-3.3	91	0.00
49	C	1,2-Dichloropropane	50.0000	49.5322	0.9	88	0.00
50	T	Bromodichloromethane	50.0000	51.7812	-3.6	88	0.00
51	T	1,4-Dioxane	200.0000	134.3049	32.8#	59	0.00
52	T	Dibromomethane	50.0000	48.6069	2.8	85	0.00
53	T	2-Chloroethyl Vinyl Ether	50.0000	49.0005	2.0	84	0.00
54	T	4-Methyl-2-Pentanone	50.0000	45.9320	8.1	79	0.00

(#) = Out of Range

Data File : C:\MSDCHEM\2\DATA\082814\8M399619.D Vial: 2
Acq On : 28 Aug 2014 16:18 Operator: ADC
Sample : WG490299-02 50ug/L CCV STD 8260 Inst : HPMS8
Misc : 1,1 STD66052 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

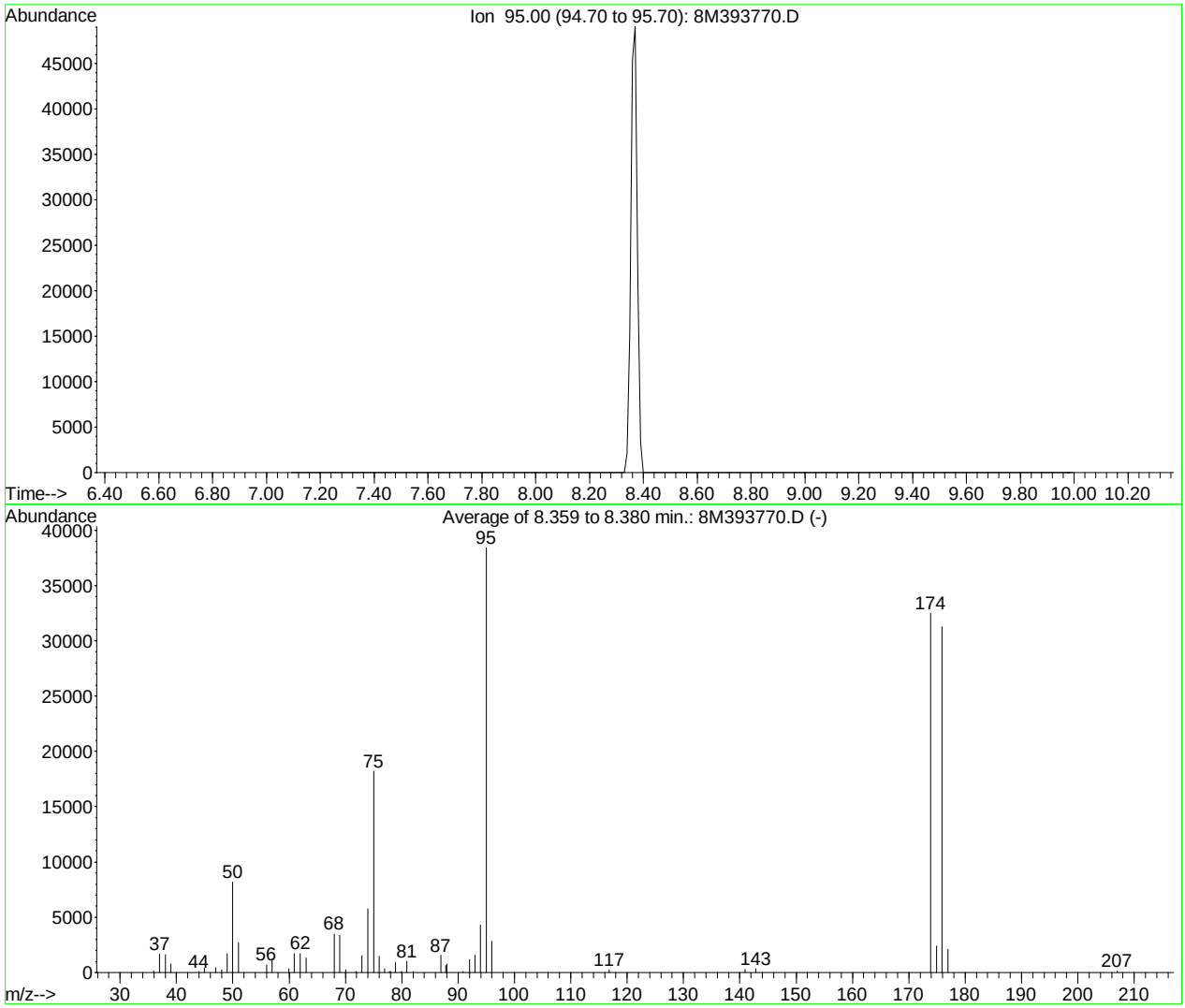
		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
55	T	cis-1,3-Dichloropropene	50.0000	52.2028	-4.4	86	0.00
56	T	Dimethyl Disulfide	50.0000	54.7488	-9.5	107	0.00
57	I	Chlorobenzene-d5	25.0000	25.0000	0.0	86	0.00
58	S	Toluene-d8	25.0000	25.3148	-1.3	85	0.00
59	C	Toluene	50.0000	55.0108	-10.0	91	0.00
60	T	Ethyl Methacrylate	50.0000	48.5939	2.8	76	0.00
61		Paraldehyde	-1.0000	0.0000	0.0	0	-13.27#
62	T	trans-1,3-Dichloropropene	50.0000	51.5859	-3.2	82	0.00
63	T	1,1,2-Trichloroethane	50.0000	50.4749	-0.9	84	0.00
64	T	2-Hexanone	50.0000	46.7381	6.5	76	0.00
65	T	1,3-Dichloropropane	50.0000	50.1942	-0.4	82	0.00
66	T	Tetrachloroethene	50.0000	53.6124	-7.2	96	0.00
67	T	Dibromochloromethane	50.0000	58.4886	-17.0	89	0.00
68	T	1,2-Dibromoethane	50.0000	51.3064	-2.6	85	0.00
69	T	1-Chlorohexane	50.0000	55.8566	-11.7	92	0.00
70	P	Chlorobenzene	50.0000	56.0682	-12.1	90	0.00
71	T	1,1,1,2-Tetrachloroethane	50.0000	51.3258	-2.7	90	0.00
72	C	Ethylbenzene	50.0000	54.9631	-9.9	91	0.00
73	T	m-,p-Xylene	100.0000	114.7132	-14.7	91	0.00
74	T	o-Xylene	50.0000	55.4759	-11.0	91	0.00
75	T	Styrene	50.0000	58.8824	-17.8	89	0.00
76	P	Bromoform	50.0000	50.5410	-1.1	89	0.00
77	T	Isopropylbenzene	50.0000	56.8643	-13.7	92	0.00
78	I	1,4-Dichlorobenzene-d4	25.0000	25.0000	0.0	83	0.00
79	P	1,1,2,2-Tetrachloroethane	50.0000	50.3459	-0.7	77	0.00
80	S	p-Bromofluorobenzene	25.0000	24.7266	1.1	83	0.00
81	T	1,2,3-Trichloropropane	50.0000	50.3879	-0.8	79	0.00
82	T	trans-1,4-Dichloro-2-Butene	50.0000	38.3520	23.3	66	0.00
83	T	n-Propylbenzene	50.0000	53.8956	-7.8	92	0.00
84	T	Bromobenzene	50.0000	54.2859	-8.6	89	0.00
85	T	1,3,5-Trimethylbenzene	50.0000	60.2200	-20.4	93	0.00
86	T	2-Chlorotoluene	50.0000	58.2525	-16.5	93	0.00
87	T	4-Chlorotoluene	50.0000	53.2743	-6.5	86	0.00
88	T	a-Methylstyrene	50.0000	59.9066	-19.8	88	0.00
89	T	tert-Butylbenzene	50.0000	55.1211	-10.2	91	0.00
90	T	1,2,4-Trimethylbenzene	50.0000	62.9997	-26.0#	93	0.00
91	T	sec-Butylbenzene	50.0000	55.7100	-11.4	92	0.00
92	T	p-Isopropyltoluene	50.0000	60.8872	-21.8	93	0.00
93	T	1,3-Dichlorobenzene	50.0000	56.7527	-13.5	89	0.00
94	T	1,4-Dichlorobenzene	50.0000	55.7546	-11.5	88	0.00
95	T	n-Butylbenzene	50.0000	61.4895	-23.0	94	0.00
96	T	1,2-Dichlorobenzene	50.0000	54.8276	-9.7	86	0.00
97	T	1,2-Dibromo-3-Chloropropane	50.0000	46.4843	7.0	75	0.00
98	T	1,2,4-Trichlorobenzene	50.0000	54.4342	-8.9	90	0.00
99	T	Hexachlorobutadiene	50.0000	50.3165	-0.6	85	0.00
100	T	Naphthalene	50.0000	54.1484	-8.3	89	0.00
101	T	1,2,3-Trichlorobenzene	50.0000	52.3997	-4.8	86	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
8M399619.D 8260WTR.M Fri Aug 29 08:51:07 2014 Page 2

2.1.1.5 Raw QC Data

BFB

Data File : C:\MSDCHEM\2\DATA\010614\8M393770.D Vial: 1
Acq On : 6 Jan 2014 9:59 Operator: MES
Sample : WG458457-01 50NG BFB STD 8260 Inst : HPMS8
Misc : 1,1 STD62146 Multiplr: 1.00
MS Integration Params: rteint.p
Method : C:\MSDCHEM\2\METHODS\BFB.M (RTE Integrator)
Title : SOP:OVL MSV01



AutoFind: Scans 125, 126, 127; Background Corrected with Scan 120

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	21.3	8179	PASS
75	95	30	60	47.4	18190	PASS
95	95	100	100	100.0	38400	PASS
96	95	5	9	7.4	2855	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	84.6	32501	PASS
175	174	5	9	7.3	2380	PASS
176	174	95	101	96.2	31274	PASS
177	176	5	9	6.7	2096	PASS

8M393770.D BFB.M Mon Jan 06 10:13:00 2014

BFB

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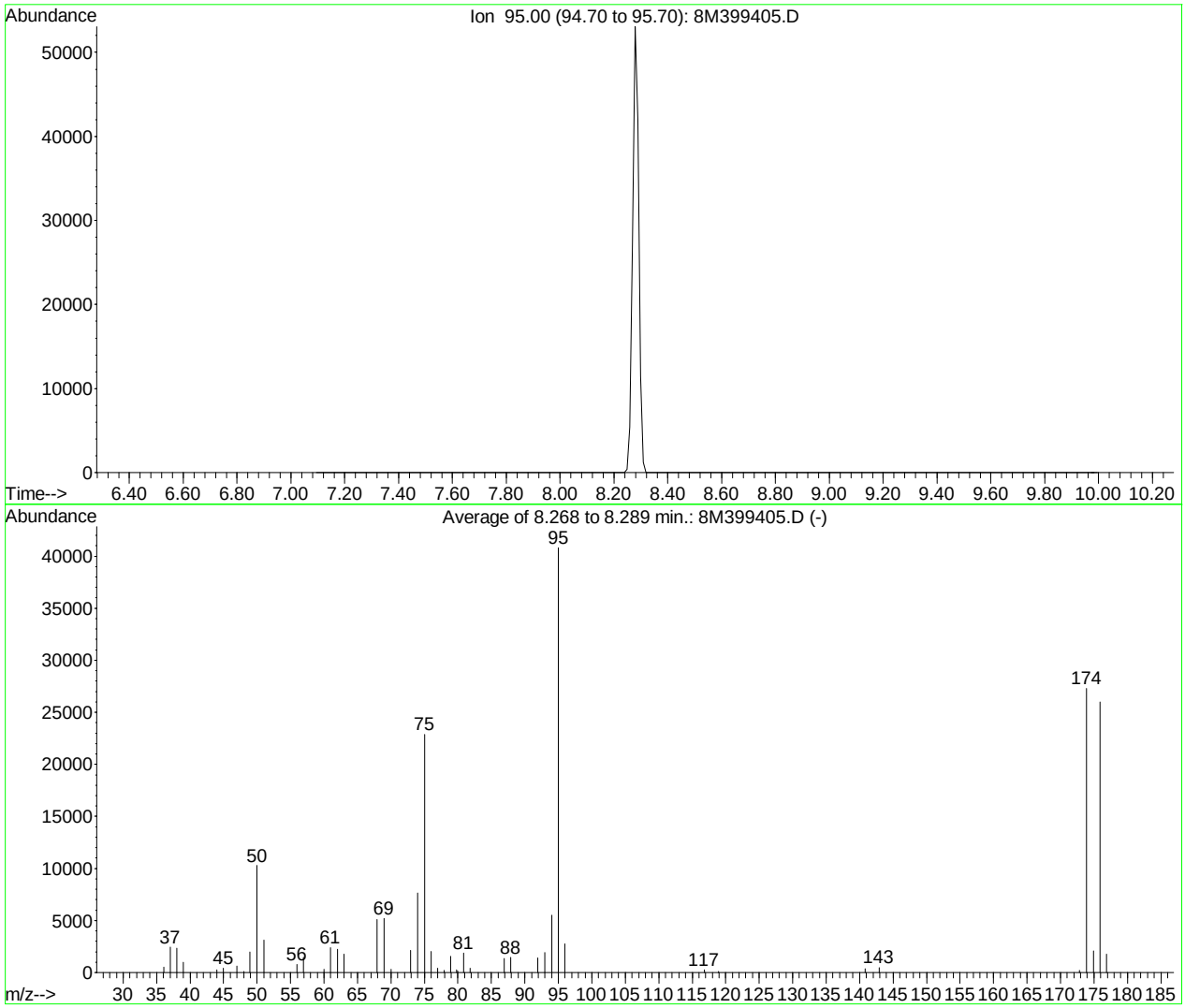
Data File : C:\MSDCHEM\2\DATA\081914\8M399405.D          Vial: 1
Acq On    : 19 Aug 2014   8:24                    Operator: TMB
Sample    : WG488700-01 50ng BFB STD 8260         Inst    : HPMS8
Misc      : 1,1 STD65934                          Multiplr: 1.00
MS Integration Params: rteint.p
Method    : C:\MSDCHEM\2\METHODS\BFB.M (RTE Integrator)
Title     : SOP:OVL MSV01
```



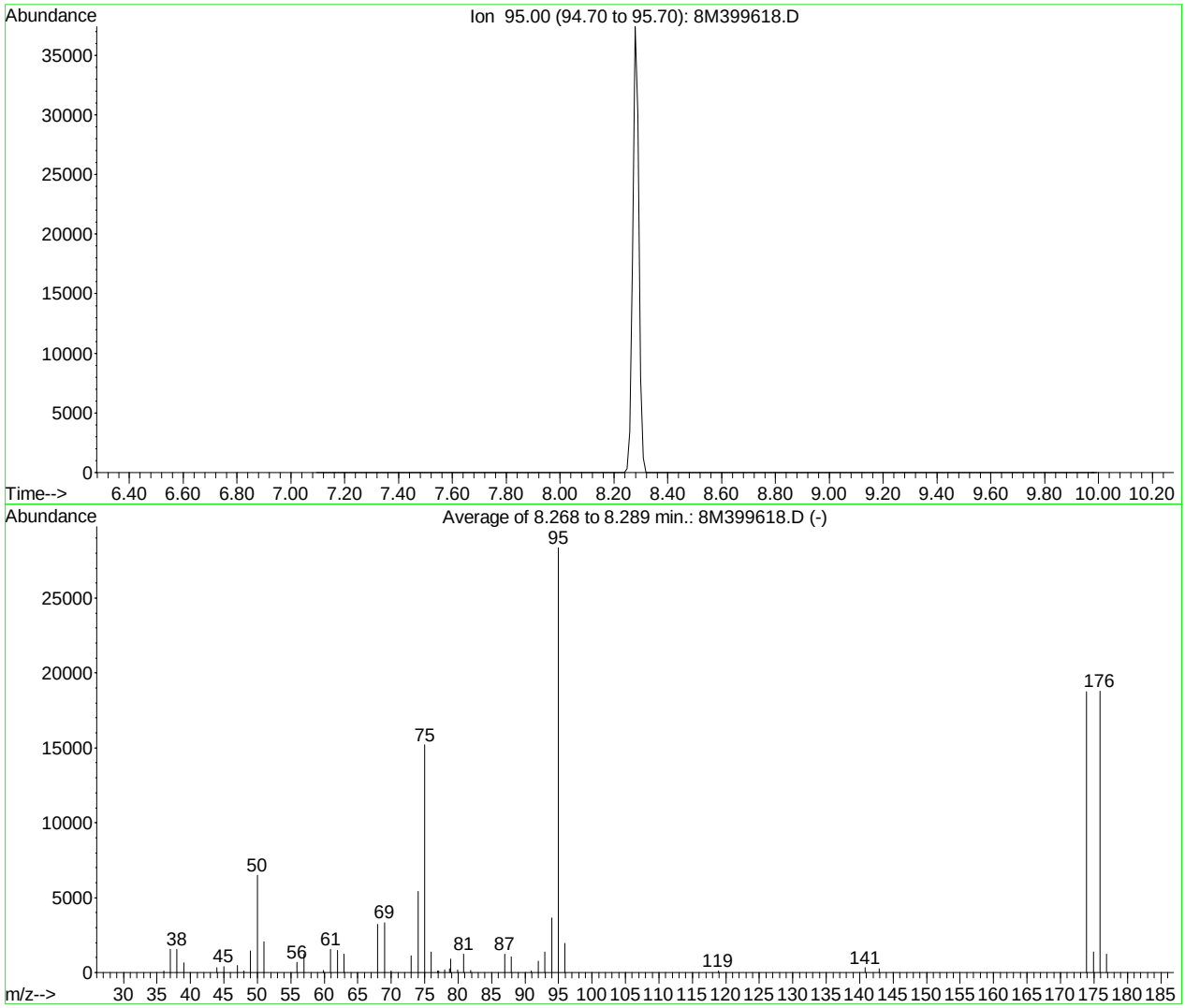
AutoFind: Scans 116, 117, 118; Background Corrected with Scan 111

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	25.2	10279	PASS
75	95	30	60	56.1	22874	PASS
95	95	100	100	100.0	40794	PASS
96	95	5	9	6.7	2733	PASS
173	174	0.00	2	0.8	224	PASS
174	95	50	100	66.9	27293	PASS
175	174	5	9	7.5	2059	PASS
176	174	95	101	95.3	26014	PASS
177	176	5	9	6.7	1744	PASS

8M399405.D BFB.M Tue Aug 19 08:39:05 2014

BFB

Data File : C:\MSDCHEM\2\DATA\082814\8M399618.D Vial: 5
Acq On : 28 Aug 2014 15:55 Operator: ADC
Sample : WG490299-01 50ng BFB STD 8260 Inst : HPMS8
Misc : 1,1 STD65934 Multiplr: 1.00
MS Integration Params: RTEINT.P
Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8



AutoFind: Scans 116, 117, 118; Background Corrected with Scan 111

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	22.9	6489	PASS
75	95	30	60	53.6	15204	PASS
95	95	100	100	100.0	28349	PASS
96	95	5	9	6.8	1940	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	66.1	18739	PASS
175	174	5	9	7.3	1359	PASS
176	174	95	101	100.3	18801	PASS
177	176	5	9	6.5	1214	PASS

8M399618.D 8260WTR.M Fri Aug 29 08:50:57 2014

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\082814\8M399621.D Vial: 4
Acq On : 28 Aug 2014 17:29 Operator: ADC
Sample : WG490300-01 BLK08/27 8260 Inst : HPMS8
Misc : 1,1 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 02 09:33:59 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

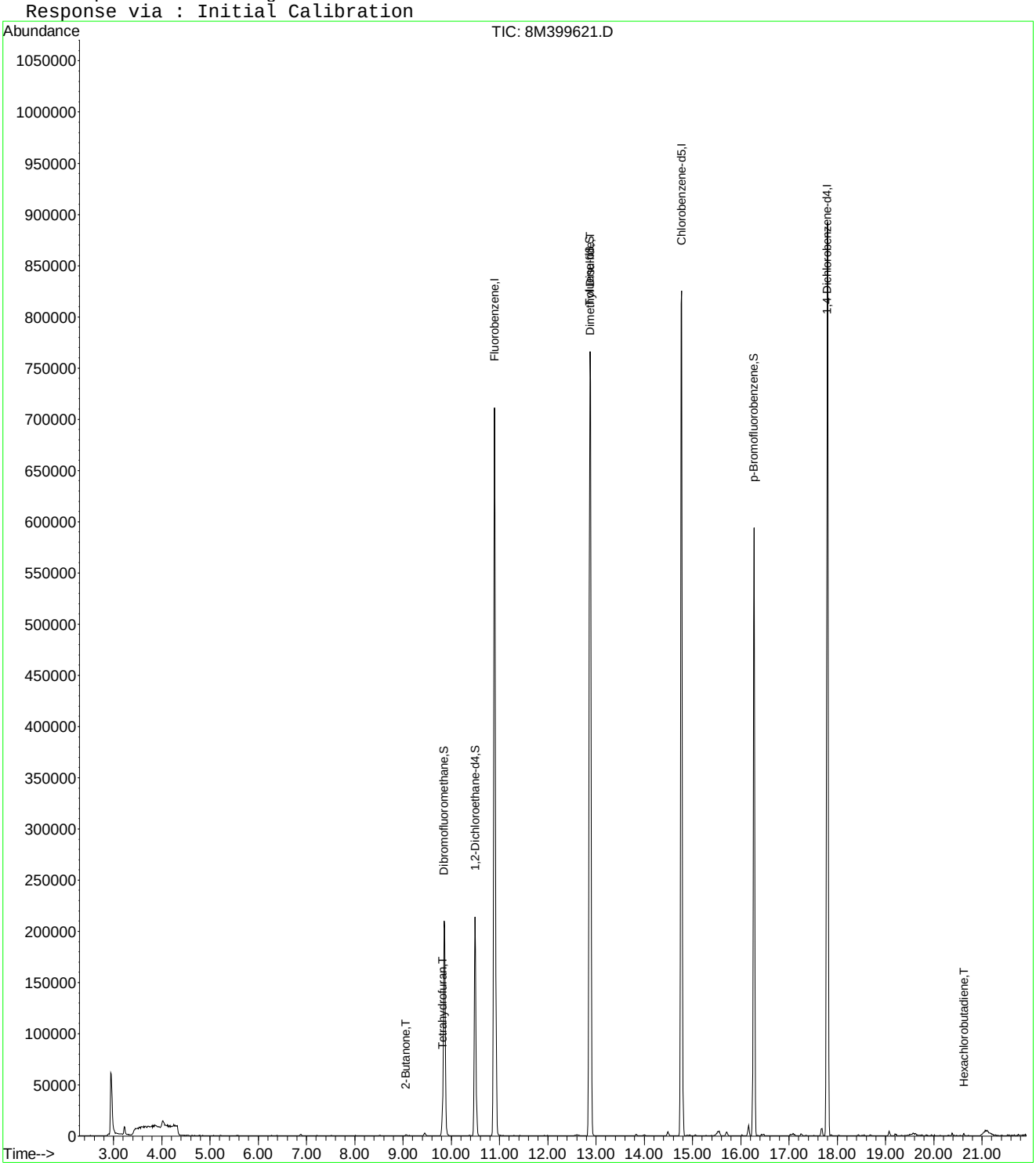
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.90	96	823659	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.77	117	562748	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.79	152	258996	25.00	ug/L	0.00
System Monitoring Compounds						
37) Dibromofluoromethane	9.85	111	176745	23.2409	ug/L	0.00
Spiked Amount 25.000	Range 86 - 118		Recovery = 92.96%			
43) 1,2-Dichloroethane-d4	10.49	65	189410	22.5677	ug/L	0.00
Spiked Amount 25.000	Range 80 - 120		Recovery = 90.28%			
58) Toluene-d8	12.87	98	686622	24.8219	ug/L	0.00
Spiked Amount 25.000	Range 88 - 110		Recovery = 99.28%			
80) p-Bromofluorobenzene	16.27	95	259431	25.6182	ug/L	0.00
Spiked Amount 25.000	Range 86 - 115		Recovery = 102.48%			
Target Compounds						Qvalue
29) 2-Butanone	9.06	43	2072	1.2720	ug/L #	55
36) Tetrahydrofuran	9.82	42	8495	7.9527	ug/L	95
56) Dimethyl Disulfide	12.88	94	20466	3.8866	ug/L #	26
99) Hexachlorobutadiene	20.63	225	1106	0.2712	ug/L	83

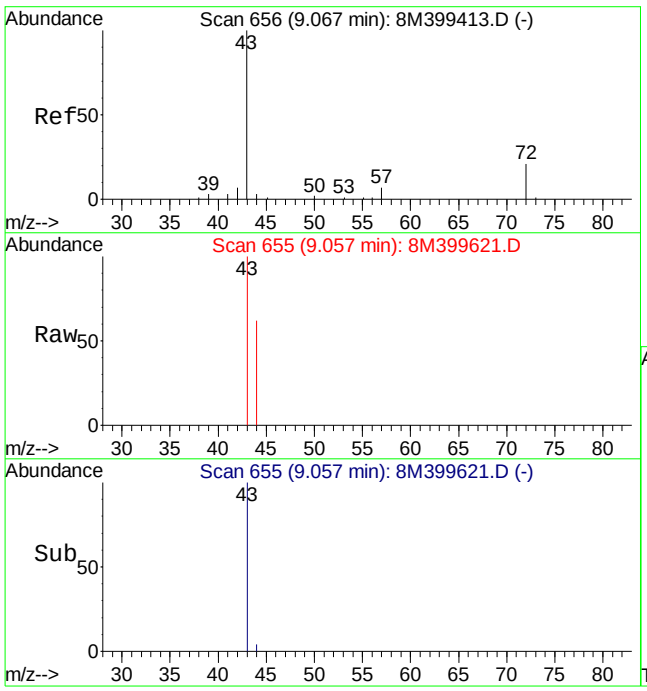
(#) = qualifier out of range (m) = manual integration
8M399621.D 8260WTR.M Tue Sep 02 09:34:00 2014 Page 1

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\2\DATA\082814\8M399621.D Vial: 4
Acq On : 28 Aug 2014 17:29 Operator: ADC
Sample : WG490300-01 BLK08/27 8260 Inst : HPMS8
Misc : 1,1 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 2 9:33 2014 Quant Results File: 8260WTR.RES

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration

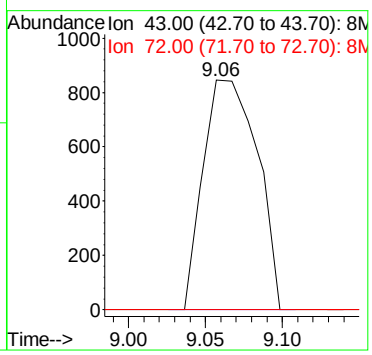


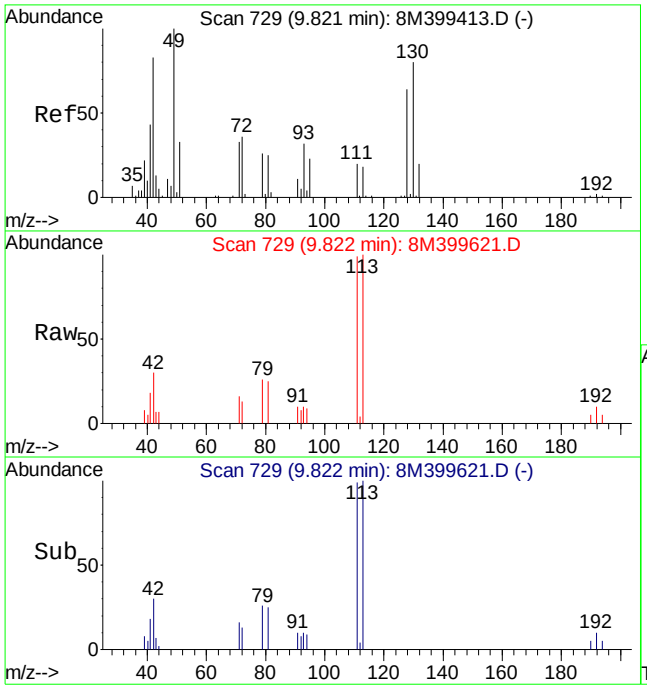


#29
2-Butanone
Concen: 1.27 ug/L
RT: 9.06 min Scan# 655
Delta R.T. -0.01 min
Lab File: 8M399621.D
Acq: 28 Aug 2014 17:29

Tgt Ion: 43 Resp: 2072

Ion	Ratio	Lower	Upper
43	100		
72	0.0	12.7	29.5#

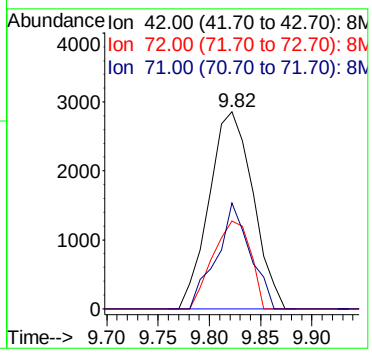


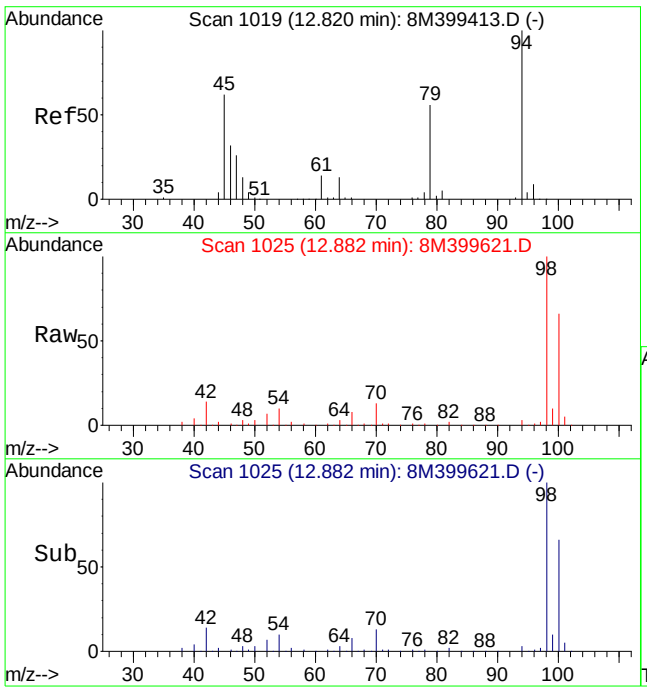


#36
Tetrahydrofuran
Concen: 7.95 ug/L
RT: 9.82 min Scan# 729
Delta R.T. 0.00 min
Lab File: 8M399621.D
Acq: 28 Aug 2014 17:29

Tgt Ion: 42 Resp: 8495

Ion	Ratio	Lower	Upper
42	100		
72	38.2	23.2	54.0
71	41.2	21.4	50.0

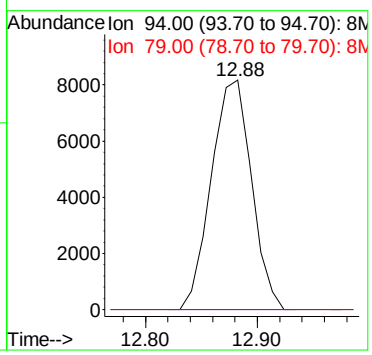


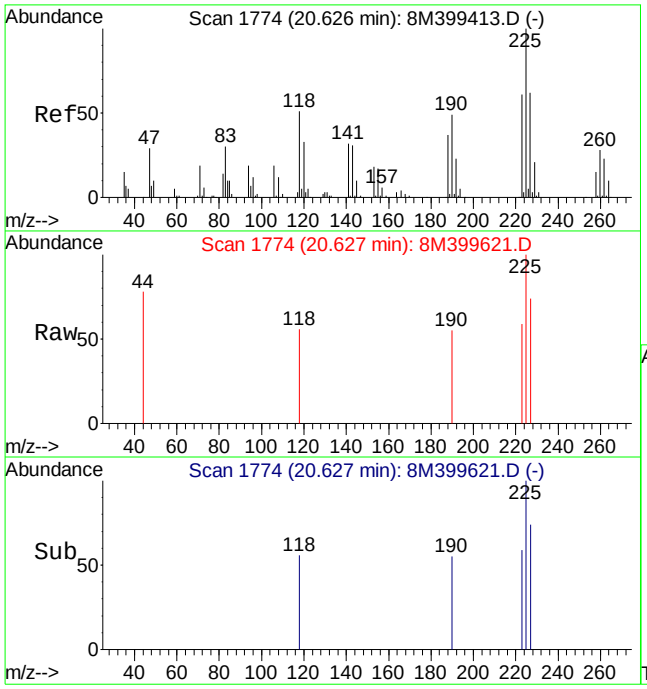


#56
Dimethyl Disulfide
Concen: 3.89 ug/L
RT: 12.88 min Scan# 1025
Delta R.T. 0.06 min
Lab File: 8M399621.D
Acq: 28 Aug 2014 17:29

Tgt Ion: 94 Resp: 20466

Ion	Ratio	Lower	Upper
94	100		
79	0.0	31.3	72.9#

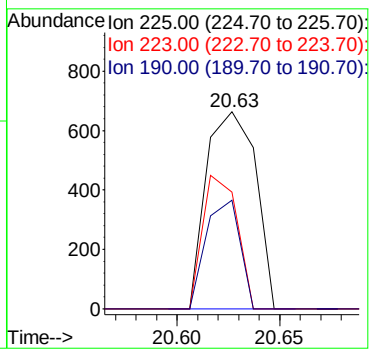




#99
Hexachlorobutadiene
Concen: 0.27 ug/L
RT: 20.63 min Scan# 1774
Delta R.T. 0.00 min
Lab File: 8M399621.D
Acq: 28 Aug 2014 17:29

Tgt Ion:225 Resp: 1106

Ion	Ratio	Lower	Upper
225	100		
223	47.2	38.0	88.6
190	38.0	27.4	63.8



Quantitation Report (Not Reviewed)

Data File : C:\MSDchem\2\data\082814\8M399622.D Vial: 5
Acq On : 28 Aug 2014 17:57 Operator: ADC
Sample : WG490300-02 20ug/L LCS STD 8260 Inst : HPMS8
Misc : 1,1 STD66007 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 28 18:19:28 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	10.90	96	849139	25.00 ug/L	0.00
57) Chlorobenzene-d5	14.77	117	573990	25.00 ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.79	152	276742	25.00 ug/L	0.00
System Monitoring Compounds					
37) Dibromofluoromethane	9.85	111	184572	23.5419 ug/L	0.00
Spiked Amount 25.000	Range 86 - 118		Recovery = 94.16%		
43) 1,2-Dichloroethane-d4	10.49	65	193012	22.3068 ug/L	0.00
Spiked Amount 25.000	Range 80 - 120		Recovery = 89.24%		
58) Toluene-d8	12.88	98	705965	25.0213 ug/L	0.00
Spiked Amount 25.000	Range 88 - 110		Recovery = 100.08%		
80) p-Bromofluorobenzene	16.27	95	266562	24.6345 ug/L	0.00
Spiked Amount 25.000	Range 86 - 115		Recovery = 98.52%		
Target Compounds					Qvalue
2) Dichlorodifluoromethane	3.29	85	216053	29.5941 ug/L	99
3) Chloromethane	3.76	50	378488	20.2216 ug/L	100
4) Vinyl Chloride	3.99	62	278971	17.8434 ug/L	97
5) 1,3-Butadiene	4.04	54	88671	7.3543 ug/L	98
6) Bromomethane	4.91	94	102318	16.6635 ug/L	99
7) Chloroethane	5.07	64	127460	20.2458 ug/L	98
8) Trichlorofluoromethane	5.56	101	254364	21.7245 ug/L	98
9) Diethyl ether	6.09	59	479617	95.3721 ug/L	96
10) Isoprene	6.13	67	212047	17.6973 ug/L	94
12) 1,1,2-Trichloro-1,2,2-Trif	6.35	101	140033	20.0918 ug/L	90
13) Acetone	6.42	43	19902	19.7127 ug/L #	30
14) 1,1-Dichloroethene	6.66	61	239497	18.5949 ug/L	95
15) Tert-Butyl Alcohol	6.76	59	40115	125.7035 ug/L	96
16) Dimethyl Sulfide	6.92	62	137597	16.2387 ug/L	99
17) Iodomethane	7.18	142	88891	12.8163 ug/L	89
18) Methyl acetate	7.18	43	55225	14.8722 ug/L	96
19) Methylene Chloride	7.44	84	162265	19.0138 ug/L	91
20) Carbon Disulfide	7.48	76	439917	17.7461 ug/L	100
21) Acrylonitrile	7.62	53	30618	19.6021 ug/L	100
22) Methyl Tert Butyl Ether	7.65	73	307490	20.3214 ug/L	93
23) trans-1,2-Dichloroethene	7.90	61	255280	20.1305 ug/L	95
24) n-Hexane	7.97	57	201422	16.1374 ug/L	100
25) Diisopropyl ether	8.31	45	2512502	95.7819 ug/L	94
26) Vinyl Acetate	8.48	43	177147	22.3722 ug/L	99
27) 1,1-Dichloroethane	8.52	63	318653	19.4413 ug/L	98
28) Ethyl-Tert-Butyl ether	8.89	59	2264099	96.6551 ug/L	96
29) 2-Butanone	9.07	43	34749	20.6926 ug/L	99
30) Propionitrile	9.17	54	49757	87.2050 ug/L	100
31) 2,2-Dichloropropane	9.29	77	254538	18.0671 ug/L	100
32) cis-1,2-Dichloroethene	9.36	96	183437	20.1600 ug/L	91
33) Chloroform	9.56	83	308411	19.9825 ug/L	99
34) 1-Bromopropane	9.71	122	28600	17.9708 ug/L	100
35) Bromochloromethane	9.80	130	83095	19.5120 ug/L	95
36) Tetrahydrofuran	9.82	42	107742	97.8375 ug/L	89
38) 1,1,1-Trichloroethane	10.10	97	271647	19.7962 ug/L	99
39) Cyclohexane	10.13	56	282542	18.1262 ug/L	89
40) 1,1-Dichloropropene	10.30	75	239251	19.7021 ug/L	95
41) Tert-Amyl-Methyl ether	10.40	73	1771339	98.0907 ug/L	94
42) Carbon Tetrachloride	10.44	117	218168	20.9173 ug/L	98
45) 1,2-Dichloroethane	10.62	62	211147	19.5041 ug/L	99

(#) = qualifier out of range (m) = manual integration
8M399622.D 8260WTR.M Thu Aug 28 18:19:28 2014 Page 1

Data File : C:\MSDchem\2\data\082814\8M399622.D Vial: 5
Acq On : 28 Aug 2014 17:57 Operator: ADC
Sample : WG490300-02 20ug/L LCS STD 8260 Inst : HPMS8
Misc : 1,1 STD66007 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 28 18:19:28 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

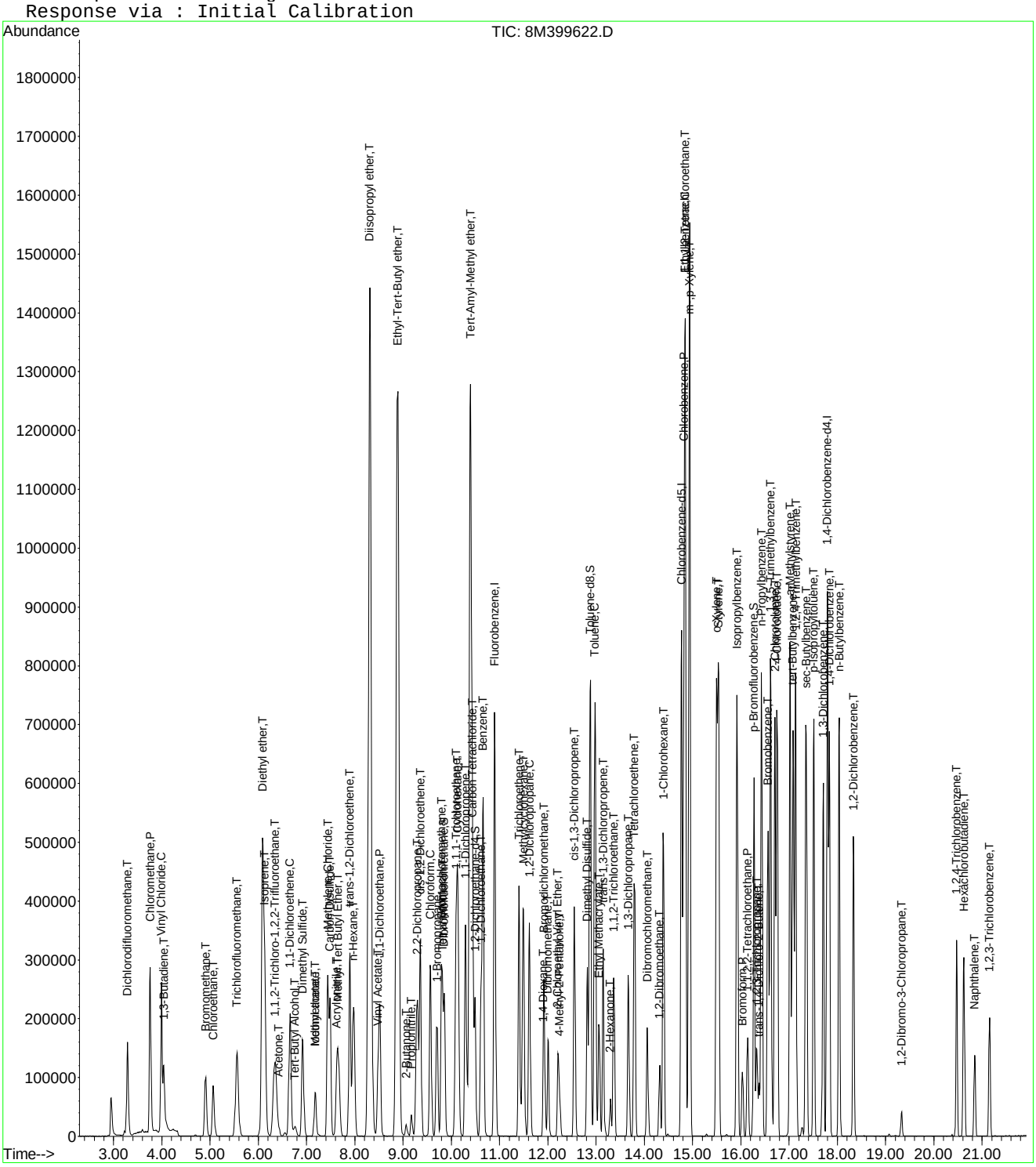
	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
46)	Benzene	10.66	78	692166	20.8156	ug/L	95
47)	Trichloroethene	11.40	130	162107	20.6022	ug/L	94
48)	Methylcyclohexane	11.50	83	250005	18.5898	ug/L	91
49)	1,2-Dichloropropane	11.62	63	184642	19.3246	ug/L	95
50)	Bromodichloromethane	11.92	83	221333	20.0458	ug/L	99
51)	1,4-Dioxane	11.90	88	2736	75.8667	ug/L	88
52)	Dibromomethane	12.00	93	84577	20.0735	ug/L	92
53)	2-Chloroethyl Vinyl Ether	12.21	63	71115	19.1868	ug/L	99
54)	4-Methyl-2-Pentanone	12.24	58	32839	19.4883	ug/L	97
55)	cis-1,3-Dichloropropene	12.55	75	267073	21.1398	ug/L	100
56)	Dimethyl Disulfide	12.82	94	218180	22.9147	ug/L	98
59)	Toluene	12.97	91	725609	21.5476	ug/L	99
60)	Ethyl Methacrylate	13.06	69	147651	20.8822	ug/L	86
62)	trans-1,3-Dichloropropene	13.15	75	205041	19.2996	ug/L	100
63)	1,1,2-Trichloroethane	13.37	97	108175	20.8033	ug/L	98
64)	2-Hexanone	13.30	58	29251	19.3664	ug/L	97
65)	1,3-Dichloropropane	13.67	76	197728	20.7042	ug/L	88
66)	Tetrachloroethene	13.79	164	118630	19.0650	ug/L	89
67)	Dibromochloromethane	14.06	129	120970	23.1139	ug/L	100
68)	1,2-Dibromoethane	14.32	107	100565	20.5431	ug/L	99
69)	1-Chlorohexane	14.40	91	230811	20.3907	ug/L	90
70)	Chlorobenzene	14.83	112	406085	19.6407	ug/L	87
71)	1,1,1,2-Tetrachloroethane	14.85	131	146495	19.6687	ug/L	99
72)	Ethylbenzene	14.85	106	244206	19.3064	ug/L	86
73)	m-,p-Xylene	14.94	106	574730	41.2435	ug/L	91
74)	o-Xylene	15.50	106	266017	18.9784	ug/L	89
75)	Styrene	15.54	104	473662	21.8358	ug/L	94
76)	Bromoform	16.04	173	65452	20.7445	ug/L	99
77)	Isopropylbenzene	15.92	105	672370	20.1728	ug/L	97
79)	1,1,2,2-Tetrachloroethane	16.14	83	107028	19.8677	ug/L	99
81)	1,2,3-Trichloropropane	16.34	110	29245	20.6675	ug/L	94
82)	trans-1,4-Dichloro-2-Buten	16.38	53	26679	15.0499	ug/L	85
83)	n-Propylbenzene	16.43	91	868630	19.5703	ug/L	94
84)	Bromobenzene	16.56	156	166720	20.5286	ug/L	96
85)	1,3,5-Trimethylbenzene	16.61	105	625413	22.8089	ug/L	96
86)	2-Chlorotoluene	16.71	91	572043	20.5990	ug/L	86
87)	4-Chlorotoluene	16.75	91	526662	19.4962	ug/L	96
88)	a-Methylstyrene	17.02	118	332994	22.3408	ug/L	98
89)	tert-Butylbenzene	17.08	134	109529	18.1431	ug/L	82
90)	1,2,4-Trimethylbenzene	17.14	105	614836	23.4233	ug/L	96
91)	sec-Butylbenzene	17.36	105	700347	19.6021	ug/L	97
92)	p-Isopropyltoluene	17.51	119	541268	20.5765	ug/L	98
93)	1,3-Dichlorobenzene	17.71	146	290096	19.7750	ug/L	96
94)	1,4-Dichlorobenzene	17.83	146	309504	21.0251	ug/L	95
95)	n-Butylbenzene	18.04	91	569395	22.1701	ug/L	94
96)	1,2-Dichlorobenzene	18.34	146	249933	19.6787	ug/L	97
97)	1,2-Dibromo-3-Chloropropan	19.33	75	15551	18.9301	ug/L	86
98)	1,2,4-Trichlorobenzene	20.47	180	122687	20.4848	ug/L	99
99)	Hexachlorobutadiene	20.63	225	76837	17.6347	ug/L	98
100)	Naphthalene	20.84	128	131232	20.9223	ug/L	99
101)	1,2,3-Trichlorobenzene	21.15	180	71878	19.1394	ug/L	99

(#) = qualifier out of range (m) = manual integration
8M399622.D 8260WTR.M Thu Aug 28 18:19:28 2014 Page 2

Quantitation Report (Not Reviewed)

Data File : C:\MSDchem\2\data\082814\8M399622.D Vial: 5
Acq On : 28 Aug 2014 17:57 Operator: ADC
Sample : WG490300-02 20ug/L LCS STD 8260 Inst : HPMS8
Misc : 1,1 STD66007 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 28 18:19 2014 Quant Results File: 8260WTR.RES

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration



Data File : C:\MSDchem\2\data\082814\8M399623.D Vial: 6
Acq On : 28 Aug 2014 18:25 Operator: ADC
Sample : WG490300-03 20ug/L LCS DUP STD 8260 Inst : HPMS8
Misc : 1,1 STD66007 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 28 18:47:47 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	10.90	96	852427	25.00	ug/L		0.00
57) Chlorobenzene-d5	14.77	117	579031	25.00	ug/L		0.00
78) 1,4-Dichlorobenzene-d4	17.79	152	272713	25.00	ug/L		0.00
System Monitoring Compounds							
37) Dibromofluoromethane	9.85	111	184376	23.4262	ug/L		0.00
Spiked Amount 25.000	Range 86 - 118		Recovery = 93.72%				
43) 1,2-Dichloroethane-d4	10.49	65	193950	22.3287	ug/L		0.00
Spiked Amount 25.000	Range 80 - 120		Recovery = 89.32%				
58) Toluene-d8	12.88	98	709149	24.9153	ug/L		0.00
Spiked Amount 25.000	Range 88 - 110		Recovery = 99.68%				
80) p-Bromofluorobenzene	16.27	95	265429	24.8921	ug/L		0.00
Spiked Amount 25.000	Range 86 - 115		Recovery = 99.56%				
Target Compounds							Qvalue
2) Dichlorodifluoromethane	3.29	85	232120	31.6723	ug/L		100
3) Chloromethane	3.75	50	410253	21.8342	ug/L		100
4) Vinyl Chloride	3.99	62	294509	18.8036	ug/L		96
5) 1,3-Butadiene	4.03	54	62325	4.8135	ug/L		96
6) Bromomethane	4.90	94	106264	17.2394	ug/L		99
7) Chloroethane	5.07	64	135276	21.4044	ug/L		99
8) Trichlorofluoromethane	5.56	101	272919	23.2193	ug/L		100
9) Diethyl ether	6.09	59	481615	95.4000	ug/L		95
10) Isoprene	6.13	67	235515	19.5801	ug/L		93
12) 1,1,2-Trichloro-1,2,2-Trif	6.34	101	151904	21.7109	ug/L		90
13) Acetone	6.43	43	20936	20.6569	ug/L	#	28
14) 1,1-Dichloroethene	6.66	61	255293	19.7449	ug/L		96
15) Tert-Butyl Alcohol	6.76	59	51937	162.1209	ug/L		97
16) Dimethyl Sulfide	6.92	62	144151	16.9465	ug/L		99
17) Iodomethane	7.17	142	103527	14.7099	ug/L		92
18) Methyl acetate	7.19	43	55304	14.8360	ug/L		94
19) Methylene Chloride	7.44	84	165454	19.3127	ug/L		93
20) Carbon Disulfide	7.48	76	476677	19.1548	ug/L		100
21) Acrylonitrile	7.62	53	32249	20.5667	ug/L		95
22) Methyl Tert Butyl Ether	7.65	73	317708	20.9156	ug/L		93
23) trans-1,2-Dichloroethene	7.89	61	270224	21.2267	ug/L		94
24) n-Hexane	7.97	57	234923	18.7488	ug/L		99
25) Diisopropyl ether	8.31	45	2580294	97.9869	ug/L		94
26) Vinyl Acetate	8.48	43	201012	25.2882	ug/L		99
27) 1,1-Dichloroethane	8.52	63	337157	20.4909	ug/L		98
28) Ethyl-Tert-Butyl ether	8.88	59	2310553	98.2578	ug/L		96
29) 2-Butanone	9.07	43	35111	20.8275	ug/L		95
30) Propionitrile	9.17	54	51903	90.6152	ug/L		99
31) 2,2-Dichloropropane	9.29	77	283040	20.0127	ug/L		98
32) cis-1,2-Dichloroethene	9.36	96	190355	20.8396	ug/L		93
33) Chloroform	9.56	83	325493	21.0079	ug/L		100
34) 1-Bromopropane	9.71	122	30773	19.2616	ug/L		99
35) Bromochloromethane	9.80	130	86686	20.2767	ug/L		98
36) Tetrahydrofuran	9.82	42	107747	97.4646	ug/L		89
38) 1,1,1-Trichloroethane	10.10	97	289002	20.9797	ug/L		99
39) Cyclohexane	10.13	56	308385	19.7079	ug/L		89
40) 1,1-Dichloropropene	10.30	75	257394	21.1144	ug/L		94
41) Tert-Amyl-Methyl ether	10.40	73	1811249	99.9139	ug/L		94
42) Carbon Tetrachloride	10.44	117	230874	22.0502	ug/L		98
45) 1,2-Dichloroethane	10.62	62	215302	19.8112	ug/L		97

(#) = qualifier out of range (m) = manual integration
8M399623.D 8260WTR.M Thu Aug 28 18:47:48 2014 Page 1

Data File : C:\MSDchem\2\data\082814\8M399623.D Vial: 6
Acq On : 28 Aug 2014 18:25 Operator: ADC
Sample : WG490300-03 20ug/L LCS DUP STD 8260 Inst : HPMS8
Misc : 1,1 STD66007 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 28 18:47:47 2014 Quant Results File: 8260WTR.RES

Quant Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration
DataAcq Meth : 8260WTR

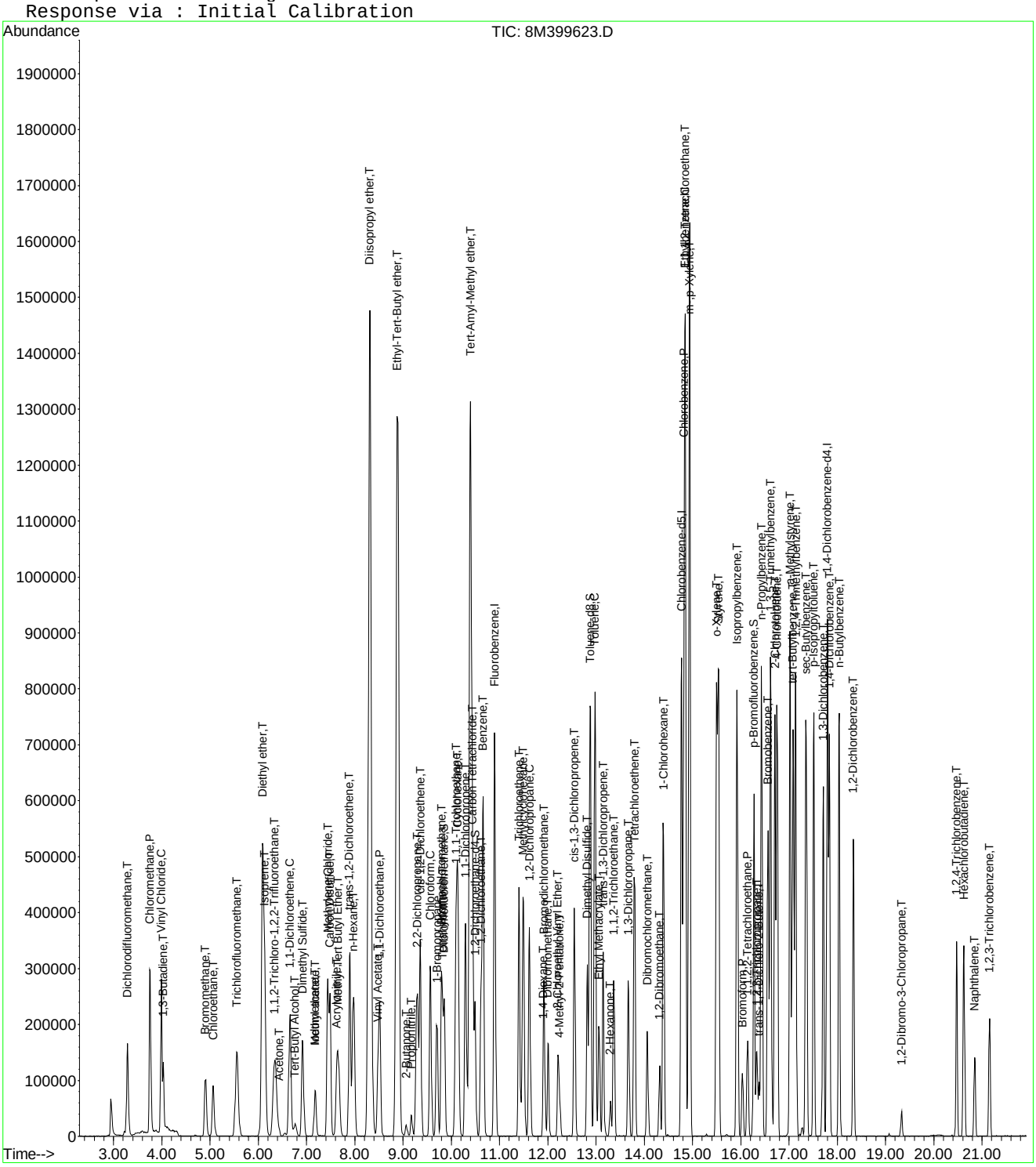
	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
46)	Benzene	10.66	78	726526	21.7647 ug/L	95
47)	Trichloroethene	11.40	130	168296	21.3062 ug/L	93
48)	Methylcyclohexane	11.50	83	278082	20.5978 ug/L	90
49)	1,2-Dichloropropane	11.62	63	190632	19.8746 ug/L	96
50)	Bromodichloromethane	11.92	83	231186	20.8574 ug/L	99
51)	1,4-Dioxane	11.90	88	5876	162.3075 ug/L	93
52)	Dibromomethane	12.00	93	86096	20.3552 ug/L	91
53)	2-Chloroethyl Vinyl Ether	12.21	63	74371	19.9879 ug/L	96
54)	4-Methyl-2-Pentanone	12.24	58	33381	19.7336 ug/L	96
55)	cis-1,3-Dichloropropene	12.55	75	276535	21.8043 ug/L	100
56)	Dimethyl Disulfide	12.82	94	229507	23.9116 ug/L	98
59)	Toluene	12.98	91	763078	22.4630 ug/L	99
60)	Ethyl Methacrylate	13.06	69	156169	21.8946 ug/L	84
62)	trans-1,3-Dichloropropene	13.15	75	212639	19.8406 ug/L	100
63)	1,1,2-Trichloroethane	13.37	97	109028	20.7848 ug/L	97
64)	2-Hexanone	13.30	58	30333	19.9079 ug/L	98
65)	1,3-Dichloropropane	13.67	76	202515	21.0208 ug/L	89
66)	Tetrachloroethene	13.80	164	128424	20.4593 ug/L	89
67)	Dibromochloromethane	14.06	129	122254	23.1559 ug/L	99
68)	1,2-Dibromoethane	14.32	107	102317	20.7190 ug/L	100
69)	1-Chlorohexane	14.40	91	252506	22.1132 ug/L	91
70)	Chlorobenzene	14.83	112	426743	20.4601 ug/L	88
71)	1,1,1,2-Tetrachloroethane	14.85	131	154606	20.5282 ug/L	98
72)	Ethylbenzene	14.85	106	259657	20.3492 ug/L	87
73)	m-,p-Xylene	14.94	106	607665	43.2273 ug/L	92
74)	o-Xylene	15.50	106	277731	19.6416 ug/L	90
75)	Styrene	15.54	104	492823	22.5214 ug/L	93
76)	Bromoform	16.04	173	65976	20.7293 ug/L	99
77)	Isopropylbenzene	15.92	105	716293	21.3035 ug/L	98
79)	1,1,2,2-Tetrachloroethane	16.14	83	111816	21.0631 ug/L	99
81)	1,2,3-Trichloropropane	16.34	110	29185	20.9298 ug/L	89
82)	trans-1,4-Dichloro-2-Buten	16.38	53	27153	15.5181 ug/L	82
83)	n-Propylbenzene	16.43	91	920672	21.0492 ug/L	94
84)	Bromobenzene	16.56	156	170531	21.3081 ug/L	96
85)	1,3,5-Trimethylbenzene	16.61	105	656237	24.2867 ug/L	96
86)	2-Chlorotoluene	16.71	91	593252	21.6783 ug/L	86
87)	4-Chlorotoluene	16.75	91	547044	20.5499 ug/L	95
88)	a-Methylstyrene	17.02	118	351051	23.9002 ug/L	98
89)	tert-Butylbenzene	17.08	134	114624	19.2676 ug/L	82
90)	1,2,4-Trimethylbenzene	17.14	105	641123	24.7855 ug/L	97
91)	sec-Butylbenzene	17.35	105	741096	21.0491 ug/L	97
92)	p-Isopropyltoluene	17.51	119	572211	22.0741 ug/L	98
93)	1,3-Dichlorobenzene	17.71	146	302305	20.9117 ug/L	97
94)	1,4-Dichlorobenzene	17.83	146	322591	22.2378 ug/L	95
95)	n-Butylbenzene	18.04	91	605564	23.9268 ug/L	94
96)	1,2-Dichlorobenzene	18.33	146	257262	20.5551 ug/L	96
97)	1,2-Dibromo-3-Chloropropan	19.33	75	16001	19.7383 ug/L	88
98)	1,2,4-Trichlorobenzene	20.47	180	125842	21.2944 ug/L	99
99)	Hexachlorobutadiene	20.63	225	83580	19.4656 ug/L	98
100)	Naphthalene	20.84	128	136082	21.9776 ug/L	100
101)	1,2,3-Trichlorobenzene	21.15	180	77605	20.9217 ug/L	98

(#) = qualifier out of range (m) = manual integration
8M399623.D 8260WTR.M Thu Aug 28 18:47:48 2014 Page 2

Quantitation Report (Not Reviewed)

Data File : C:\MSDchem\2\data\082814\8M399623.D Vial: 6
Acq On : 28 Aug 2014 18:25 Operator: ADC
Sample : WG490300-03 20ug/L LCS DUP STD 8260 Inst : HPMS8
Misc : 1,1 STD66007 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 28 18:47 2014 Quant Results File: 8260WTR.RES

Method : C:\MSDCHEM\2\METHODS\8260WTR.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 08-19-14 HPMS 8
Last Update : Tue Aug 19 14:45:59 2014
Response via : Initial Calibration



2.2 General Chromatography Data

2.2.1 6850 LC/MS Data

2.2.1.1 Summary Data

Microbac

Lab Report #: L14081444
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Kathy Albertson

Certificate of Analysis

Sample #:	L14081444-01	**PrePrep Method:**	N/A	**Instrument:**	LCMS1
Client ID:	PW134-082414	**Prep Method:**	6850	**Prep Date:**	08/29/2014 13:00
Matrix:	Water	**Analytical Method:**	6850	**Cal Date:**	07/07/2014 17:24
Workgroup #:	WG490445	**Analyst:**	JWR	**Run Date:**	08/29/2014 23:01
Collect Date:	08/24/2014 14:55	**Dilution:**	1	**File ID:**	1LM.LM26650
Sample Tag:	01	**Units:**	ug/L		

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Perchlorate	14797-73-0	0.845		0.400	0.200	0.100

2.2.1.2 QC Summary Data

Example Calculation 6850 - Perchlorate

Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of internal standard (IS) = Rx/Ristd

x = amount ratio = concentration analyte/concentration internal standard (IS) = Cx / Cistd

m = slope from curve (1.45)

b = intercept from curve (-0.00242)

y = 1.45x + -0.00242

Step 2: Substitute the value for y

where y = 12600/226000 = 0.055752

Step 3: Solve for x

x = (y - b)/m = 0.0040119

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(x) = (5 ug/L)(0.040119) = 0.200594 ug/L

Example Calculation - Water:

Slope from curve, m:	1.45
Intercept from curve, b:	-0.00242
Response of analyte, Rx:	12600
Response of Internal Standard , Ristd:	226000
Concentration of IS, Cistd (ug/L):	5.00
Response Ratio:	0.05575
Amount Ratio:	0.04012
Analyte Concentration, Cx (ug/L) :	0.200594

Example Calculation - Soil:

Analyte Concentration, Cx (ug/L):	0.20059
Amount of soil extracted (g):	5.00
Final volume of extract (mL):	50.00
Percent solids (Pct wt.)	100
Concentration in soil (ug/kg):	2.005938

Perchlorate Conductivity Check
(perchlorate1)

Conductivity Probe Calibration Check: 1398 /1410 µs/cm

Working MCT Level: 10,000 µs/cm

Sample	Conductivity (µs/cm)	Pretreatment or Dilution Needed
WG490445-01 MCT	9,880.0	
-02 Blank	0.0	
-03 LCS	0.0	
-04 LCS2	0.0	
L14081365-01	1827.0	
-02	1014.0	
-03	1016.0	
-04	1239.0	
-05	3910.0	
L14081416-01	3550.0	
-02	3470.0	
L14081417-01	3560.0	
L14081428-01	1154.0	
-02	1151.0	
-03	2050.0	
-04	3510.0	
L14081432-01	609.0	
L14081435-01	622.0	
L14081443-01	2260.0	
-02	2240.0	
-03	2110.0	
-04	1721.0	
-05	4960.0	
L14081444-01	98.6	

Analyst: John Richards

Date/Time: 09/02/14 / 15:30

DCN#104945

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 070714_JWR.TXT

Analyst1: JWR Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 130818254-1

Eluent ID#:

Workgroups: Column 1 ID: KP-RPPX250 Column 2 ID: NA

Analytical WG483063 (waters)

Internal STD: COA17578 Surrogate STD: NA Calibration STD STD65194 (07/07/2014)

CCV STD: STD65194 LCS STD: STD65194 MS/MSD STD: STD65194

Comments: ICAL WG483039 : Alternate Source STD65196

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM26049	WG483039-01 CCB	1	1		07/07/14 15:12
2	1LM.LM26050	WG483039-02 STD (0.10 ug/L)	1	1	STD65194	07/07/14 15:31
3	1LM.LM26051	WG483039-03 STD (0.20 ug/L)	1	1	STD65194	07/07/14 15:49
4	1LM.LM26052	WG483039-04 STD (0.50 ug/L)	1	1	STD65194	07/07/14 16:08
5	1LM.LM26053	WG483039-05 STD (1.00 ug/L)	1	1	STD65194	07/07/14 16:27
6	1LM.LM26054	WG483039-06 STD (2.00 ug/L)	1	1	STD65194	07/07/14 16:46
7	1LM.LM26055	WG483039-07 STD (5.00 ug/L)	1	1	STD65194	07/07/14 17:05
8	1LM.LM26056	WG483039-08 STD (10.0 ug/L)	1	1	STD65194	07/07/14 17:24
9	1LM.LM26057	WG483039-09 SSCV (1.0 ug/L)	1	1	STD65196	07/07/14 17:43
10	1LM.LM26058	WG483065-01 CCB	1	1		07/07/14 18:02
11	1LM.LM26059	WG483065-02 CCV (1.0ug/L)	1	1	STD65194	07/07/14 18:21
12	1LM.LM26060	WG483063-10 MRL (0.2ug/L)	1	1	STD65194	07/07/14 18:40
13	1LM.LM26061	WG483063-01 MCT (0.2ug/L)	1	1	STD65194	07/07/14 18:59
14	1LM.LM26062	WG483063-02 BLANK	1	1		07/07/14 19:18
15	1LM.LM26063	WG483063-03 LCS (0.2ug/L)	1	1	STD65194	07/07/14 19:37
16	1LM.LM26064	L14061344-01	1	1		07/07/14 19:56
17	1LM.LM26065	L14061344-02	1	1		07/07/14 20:15
18	1LM.LM26066	L14061344-03	1	1		07/07/14 20:34
19	1LM.LM26067	L14061344-04	1	1		07/07/14 20:52
20	1LM.LM26068	L14061344-05 RS	1	1		07/07/14 21:11
21	1LM.LM26069	L14061344-06 MS	1	1	STD65194	07/07/14 21:30
22	1LM.LM26070	L14061344-07 MSD	1	1	STD65194	07/07/14 21:49
23	1LM.LM26071	WG483065-03 CCV (1.0ug/L)	1	1	STD65194	07/07/14 22:08
24	1LM.LM26072	WG483063-11 MRL (0.2ug/L)	1	1	STD65194	07/07/14 22:27
25	1LM.LM26073	WG483065-04 CCB	1	1		07/07/14 22:46
26	1LM.LM26074	L14061344-08	1	1		07/07/14 23:05
27	1LM.LM26075	L14061344-09	1	1		07/07/14 23:24
28	1LM.LM26076	L14061344-10	1	1		07/07/14 23:43
29	1LM.LM26077	L14061344-17	1	1		07/08/14 00:02
30	1LM.LM26078	L14061344-11 (NR)	1	1		07/08/14 00:21
31	1LM.LM26079	L14061344-12	1	1		07/08/14 00:40
32	1LM.LM26080	L14061344-13	1	1		07/08/14 00:59
33	1LM.LM26081	L14061344-14 RS	1	1		07/08/14 01:18

Page: 1 Approved: 09-JUL-14

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 070714_JWR.TXT

Analyst1: JWR Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 130818254-1

Eluent ID#:

Column 1 ID: KP-RPPX250 Column 2 ID: NA

Workgroups: Analytical WG483063 (waters)

Internal STD: COA17578 Surrogate STD: NA STD65194 (07/07/2014)

CCV STD: STD65194 LCS STD: STD65194 STD65194

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
34	1LM.LM26082	L14061344-15 MS	1	1	STD65194	07/08/14 01:37
35	1LM.LM26083	L14061344-16 MSD	1	1	STD65194	07/08/14 01:55
36	1LM.LM26084	WG483065-05 CCV (1.0ug/L)	1	1	STD65194	07/08/14 02:14
37	1LM.LM26085	WG483063-12 MRL (0.2ug/L)	1	1	STD65194	07/08/14 02:33
38	1LM.LM26086	WG483065-06 CCB	1	1		07/08/14 02:52
39	1LM.LM26087	WG483065-07 CCV (1.0ug/L)	1	1	STD65194	07/08/14 10:30
40	1LM.LM26088	WG483063-13 MRL (0.2ug/L)	1	1	STD65194	07/08/14 10:48
41	1LM.LM26089	WG483065-08 CCB	1	1		07/08/14 11:07
42	1LM.LM26090	L14061344-02 (RR Neat) (NR)	1	1		07/08/14 11:26
43	1LM.LM26091	L14061344-03 (RR Neat) (NR)	1	1		07/08/14 11:45
44	1LM.LM26092	L14061344-11 (RR 10x)	1	10		07/08/14 12:04
45	1LM.LM26093	WG483065-09 CCV (1.0ug/L)	1	1	STD65194	07/08/14 12:23
46	1LM.LM26094	WG483063-14 MRL (0.2ug/L)	1	1	STD65194	07/08/14 12:42
47	1LM.LM26095	WG483065-10 CCB	1	1		07/08/14 13:01

Comments

Seq.	Rerun	Dil.	Reason	Analytes
17				
	L14061344-02 : The results for this sample do not correlate with the results for it's field duplicate (L14061344-03). This sample will be refiltered from it's bottle and reanalyzed neat on the end of this run for comparison of results.			
18				
	L14061344-03 : This sample is a field duplicate of sample L14061344-02. The results for this sample do not correlate with the results of sample L14061344-02. This sample will be refiltered from it's bottle and reanalyzed neat on the end of this run for comparison of results.			
30	X	10	Over Calibration Range	
	L14061344-11 (NR) : This sample was reanalyzed at a 10x dilution on the end of this run.			
42				
	L14061344-02 (RR Neat) (NR) : The results for this sample due to refiltration have not changed. The initial results for this sample analyzed neat will be reported.			
43				
	L14061344-03 (RR Neat) (NR) : The results for this sample due to refiltration have not changed. The initial results for this sample analyzed neat will be reported.			

Page: 2 Approved: 09-JUL-14

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 082914_JWR.TXT

Analyst1: JWR Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 130818254-1

Eluent ID#:

Workgroups: Column 1 ID: KP-RPPX250 Column 2 ID: NA

Analytical WG490445 (waters)

Internal STD: COA17578 Surrogate STD: NA Calibration STD STD65194 (07/07/2014)

CCV STD: STD65194 LCS STD: STD65194 MS/MSD STD: NA

Comments: All samples analyzed at dilutions were based on their screen results from 08/28/2014.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM26619	WG490448-01 CCB	1	1		08/29/14 13:14
2	1LM.LM26620	WG490448-02 CCV (1.0ug/L)	1	1	STD65194	08/29/14 13:33
3	1LM.LM26621	WG490445-05 MRL (0.2ug/L)	1	1	STD65194	08/29/14 13:52
4	1LM.LM26622	WG490445-01 MCT (0.2ug/L)	1	1	STD65194	08/29/14 14:11
5	1LM.LM26623	WG490445-02 BLANK	1	1		08/29/14 14:30
6	1LM.LM26624	WG490445-03 LCS (0.2ug/L)	1	1	STD65194	08/29/14 14:49
7	1LM.LM26625	L14081365-01	1	1		08/29/14 15:08
8	1LM.LM26626	L14081365-02	1	1		08/29/14 15:27
9	1LM.LM26627	L14081365-03	1	1		08/29/14 15:46
10	1LM.LM26628	L14081365-04 (10,000x)	1	10000		08/29/14 16:05
11	1LM.LM26629	L14081365-05 (100,000x)	1	100000		08/29/14 16:24
12	1LM.LM26630	L14081416-01 (5x)	1	5		08/29/14 16:43
13	1LM.LM26631	L14081416-02	1	1		08/29/14 17:01
14	1LM.LM26632	WG490448-03 CCV (1.0ug/L)	1	1	STD65194	08/29/14 17:20
15	1LM.LM26633	WG490445-06 MRL (0.2ug/L)	1	1	STD65194	08/29/14 17:39
16	1LM.LM26634	WG490448-04 CCB	1	1		08/29/14 17:58
17	1LM.LM26635	L14081417-01 (20x)	1	20		08/29/14 18:17
18	1LM.LM26636	L14081428-01	1	1		08/29/14 18:36
19	1LM.LM26637	L14081428-02	1	1		08/29/14 18:55
20	1LM.LM26638	L14081428-03	1	1		08/29/14 19:14
21	1LM.LM26639	L14081428-04	1	1		08/29/14 19:33
22	1LM.LM26640	L14081432-01 (2x)	1	2		08/29/14 19:52
23	1LM.LM26641	L14081435-01 (10,000x)	1	10000		08/29/14 20:11
24	1LM.LM26642	L14081443-01	1	1		08/29/14 20:30
25	1LM.LM26643	L14081443-02	1	1		08/29/14 20:49
26	1LM.LM26644	L14081443-03 (25x)	1	25		08/29/14 21:08
27	1LM.LM26645	WG490448-05 CCV (1.0ug/L)	1	1	STD65194	08/29/14 21:27
28	1LM.LM26646	WG490445-07 MRL (0.2ug/L)	1	1	STD65194	08/29/14 21:45
29	1LM.LM26647	WG490448-06 CCB	1	1		08/29/14 22:04
30	1LM.LM26648	L14081443-04	1	1		08/29/14 22:23
31	1LM.LM26649	L14081443-05	1	1		08/29/14 22:42
32	1LM.LM26650	L14081444-01	1	1		08/29/14 23:01
33	1LM.LM26651	WG490445-04 LCS2 (0.2ug/L)	1	1	STD65194	08/29/14 23:20

Page: 1 Approved: 02-SEP-14

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 082914_JWR.TXT

Analyst1: JWR Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 130818254-1

Eluent ID#:

Column 1 ID: KP-RPPX250 Column 2 ID: NA

Workgroups: Analytical WG490445 (waters)

Internal STD: COA17578 Surrogate STD: NA STD65194 (07/07/2014)

CCV STD: STD65194 LCS STD: STD65194 NA

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
34	1LM.LM26652	WG490448-07 CCV (1.0ug/L)	1	1	STD65194	08/29/14 23:39
35	1LM.LM26653	WG490445-08 MRL (0.2ug/L)	1	1	STD65194	08/29/14 23:58
36	1LM.LM26654	WG490448-08 CCB	1	1		08/30/14 00:17

Comments

Seq.	Rerun	Dil.	Reason	Analytes

Page: 2 Approved: 02-SEP-14

Microbac Laboratories Inc.

Data Checklist

Date: 07-JUL-2014
Analyst: JWR
Analyst: NA
Method: 6850
Instrument: LCMS1
Curve Workgroup: WG483039
Runlog ID: 62054
Analytical Workgroups: L14061344

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	ND
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Interference check sample (ICS) (LCMS)	MCT
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	
Check for completeness	X
Primary Reviewer	JWR
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
08-JUL-2014

Secondary Reviewer:
09-JUL-2014

CHECKLIST1 - Modified 03/05/2008
Generated: JUL-09-2014 10:15:45

Microbac Laboratories Inc.

Data Checklist

Date: 29-AUG-2014
Analyst: JWR
Analyst: NA
Method: 6850
Instrument: LCMS1
Curve Workgroup: NA
Runlog ID: 63188
Analytical Workgroups: L14081365, 1416, 1417, 1428, 1432, 1435, 1443, 1444

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	ND
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	MCT
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	NA
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	
Check for completeness	X
Primary Reviewer	JWR
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
02-SEP-2014

Secondary Reviewer:
02-SEP-2014

CHECKLIST1 - Modified 03/05/2008
Generated: SEP-02-2014 14:34:17

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 6850 **AAB#:** WG490445

Login Number: L14081444

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
PW134-082414	01	08/24/14					08/29/2014	4.9	28		08/29/14	.4	28	

*** = SEE PROJECT QAPP REQUIREMENTS**

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 3735755
Report generated 09/03/2014 08:30

METHOD BLANK SUMMARY

Login Number: L14081444
Work Group: WG490445
Blank File ID: 1LM.LM26623
Blank Sample ID: WG490445-02
Prep Date: 08/29/14 13:00
Instrument ID: LCMS1
Analyzed Date: 08/29/14 14:30
Method: 6850
Analyst: JWR

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
QCMRL	WG490445-05	1LM.LM26621	08/29/14 13:52	01
MCT	WG490445-01	1LM.LM26622	08/29/14 14:11	01
LCS	WG490445-03	1LM.LM26624	08/29/14 14:49	01
QCMRL	WG490445-06	1LM.LM26633	08/29/14 17:39	01
QCMRL	WG490445-07	1LM.LM26646	08/29/14 21:45	01
PW134-082414	L14081444-01	1LM.LM26650	08/29/14 23:01	01
LCS2	WG490445-04	1LM.LM26651	08/29/14 23:20	01
QCMRL	WG490445-08	1LM.LM26653	08/29/14 23:58	01

Report Name: BLANK_SUMMARY
PDF File ID: 3735756
Report generated 09/03/2014 08:30

Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L14081444 Prep Date: 08/29/14 13:00 Sample ID: WG490445-02
Instrument ID: LCMS1 Run Date: 08/29/14 14:30 Prep Method: 6850
File ID: 1LM.LM26623 Analyst: JWR Method: 6850
Workgroup (AAB#): WG490445 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-07-JUL-14

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Perchlorate	0.100	0.400	0.100	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 3735757
03-SEP-2014 08:30

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L14081444 Analyst: JWR Prep Method: 6850
Instrument ID: LCMS1 Matrix: Water Method: 6850
Workgroup (AAB#): WG490445 Units: ug/L
QC Key: DOD4 Lot #: STD65194

Sample ID: WG490445-03 LCS File ID: 1LM.LM26624 Run Date: 08/29/2014 14:49
Sample ID: WG490445-04 LCS2 File ID: 1LM.LM26651 Run Date: 08/29/2014 23:20

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Perchlorate	0.200	0.210	105	0.200	0.193	96.5	8.44	80 - 120	15	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 3735758
Report generated: 09/03/2014 08:30

Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

Login Number: L14081444
Analytical Method: 6850
ICAL Workgroup: WG483039

Instrument ID: LCMS1
Initial Calibration Date: 07-JUL-14 17:24
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
Perchlorate		1.267	2.44	1.00000	

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008
PDF File ID: 3736680
Report generated 09/03/2014 08:30

Login Number: L14081444
Analytical Method: 6850
Instrument ID: LCMS1
Initial Calibration Date: 07-JUL-14 17:24
Column ID: F

Analyte	WG483039-02			WG483039-03			WG483039-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	0.100	7880.00000	1.313	0.200	15400.0000	1.266	0.500	38300.0000	1.274

INT_CAL - Modified 03/06/2008
PDF File ID: 3736680
Report generated 09/03/2014 08:30

Login Number: L14081444
Analytical Method: 6850
Instrument ID: LCMS1
Initial Calibration Date: 07-JUL-14 17:24
Column ID: F

Analyte	WG483039-05			WG483039-06			WG483039-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	1.00	75700.0000	1.262	2.00	148000.000	1.221	5.00	376000.000	1.273

INT_CAL - Modified 03/06/2008
PDF File ID: 3736680
Report generated 09/03/2014 08:30

Login Number: L14081444
Analytical Method: 6850
Instrument ID: LCMS1
Initial Calibration Date: 07-JUL-14 17:24
Column ID: F

Analyte	WG483039-08		
	CONC	RESP	RF
Perchlorate	10.0	734000.000	1.257

INT_CAL - Modified 03/06/2008
PDF File ID: 3736680
Report generated 09/03/2014 08:30

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L14081444 Run Date: 07/07/2014 Sample ID: WG483039-09
Instrument ID: LCMS1 Run Time: 17:43 Method: 6850
File ID: 1LM.LM26057 Analyst: JWR QC Key: DOD4
ICal Workgroup: WG483039 Cal ID: LCMS1 - 07-JUL-14

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Perchlorate		1.00	0.993	ug/L	1.25	0.700	15	

* Exceeds %D Limit

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 3736681
Report generated 09/03/2014 08:30

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L14081444 | Run Date: 08/29/2014 | Sample ID: WG490448-01
Instrument ID: LCMS1 | Run Time: 13:14 | Method: 6850
File ID: 1LM.LM26619 | Analyst: JWR | Units: ug/L
Workgroup (AAB#): WG490445 | Cal ID: LCMS1 - 07-JUL-14
Matrix: WATER | QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3735761
Report generated 09/03/2014 08:30

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L14081444 | Run Date: 08/29/2014 | Sample ID: WG490448-04
Instrument ID: LCMS1 | Run Time: 17:58 | Method: 6850
File ID: 1LM.LM26634 | Analyst: JWR | Units: ug/L
Workgroup (AAB#): WG490445 | Cal ID: LCMS1 - 07-JUL-14
Matrix: WATER | QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3735761
Report generated 09/03/2014 08:30

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L14081444 | Run Date: 08/29/2014 | Sample ID: WG490448-06
Instrument ID: LCMS1 | Run Time: 22:04 | Method: 6850
File ID: 1LM.LM26647 | Analyst: JWR | Units: ug/L
Workgroup (AAB#): WG490445 | Cal ID: LCMS1 - 07-JUL-14
Matrix: WATER | QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3735761
Report generated 09/03/2014 08:30

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L14081444 | Run Date: 08/30/2014 | Sample ID: WG490448-08
Instrument ID: LCMS1 | Run Time: 00:17 | Method: 6850
File ID: 1LM.LM26654 | Analyst: JWR | Units: ug/L
Workgroup (AAB#): WG490445 | Cal ID: LCMS1 - 07-JUL-14
Matrix: WATER | QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.400	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 3735761
Report generated 09/03/2014 08:30

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L14081444 **Run Date:** 08/29/2014 **Sample ID:** WG490448-02
Instrument ID: LCMS1 **Run Time:** 13:33 **Method:** 6850
File ID: 1LM.LM26620 **Analyst:** JWR **QC Key:** DOD4
Workgroup (AAB#): WG490445 **Cal ID:** LCMS1 - 07-JUL-14
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.05	ug/L	1.33	5.00	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 3735760
Report generated 09/03/2014 08:30

Login Number: L14081444 Run Date: 08/29/2014 Sample ID: WG490448-03
Instrument ID: LCMS1 Run Time: 17:20 Method: 6850
File ID: 1LM.LM26632 Analyst: JWR QC Key: DOD4
Workgroup (AAB#): WG490445 Cal ID: LCMS1 - 07-JUL-14
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.05	ug/L	1.32	5.00	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 3735760
Report generated 09/03/2014 08:30

Login Number: L14081444 Run Date: 08/29/2014 Sample ID: WG490448-05
Instrument ID: LCMS1 Run Time: 21:27 Method: 6850
File ID: 1LM.LM26645 Analyst: JWR QC Key: DOD4
Workgroup (AAB#): WG490445 Cal ID: LCMS1 - 07-JUL-14
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.04	ug/L	1.31	4.00	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 3735760
Report generated 09/03/2014 08:30

Login Number: L14081444 Run Date: 08/29/2014 Sample ID: WG490448-07
Instrument ID: LCMS1 Run Time: 23:39 Method: 6850
File ID: 1LM.LM26652 Analyst: JWR QC Key: DOD4
Workgroup (AAB#): WG490445 Cal ID: LCMS1 - 07-JUL-14
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.01	ug/L	1.28	1.00	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 3735760
Report generated 09/03/2014 08:30

Login Number: L14081444 Run Date: 08/29/2014 Sample ID: WG490445-05
Instrument ID: LCMS1 Run Time: 13:52 Prep Method: 6850
File ID: 1LM.LM26621 Analyst: JWR Method: 6850
Workgroup (AAB#): WG490445 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-07-JUL-14

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.209	105	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3735759
Report generated 09/03/2014 08:30

Login Number: L14081444 Run Date: 08/29/2014 Sample ID: WG490445-06
Instrument ID: LCMS1 Run Time: 17:39 Prep Method: 6850
File ID: 1LM.LM26633 Analyst: JWR Method: 6850
Workgroup (AAB#): WG490445 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-07-JUL-14

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.208	104	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3735759
Report generated 09/03/2014 08:30

Login Number: L14081444 Run Date: 08/29/2014 Sample ID: WG490445-07
Instrument ID: LCMS1 Run Time: 21:45 Prep Method: 6850
File ID: 1LM.LM26646 Analyst: JWR Method: 6850
Workgroup (AAB#): WG490445 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-07-JUL-14

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.206	103	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3735759
Report generated 09/03/2014 08:30

Login Number: L14081444 Run Date: 08/29/2014 Sample ID: WG490445-08
Instrument ID: LCMS1 Run Time: 23:58 Prep Method: 6850
File ID: 1LM.LM26653 Analyst: JWR Method: 6850
Workgroup (AAB#): WG490445 Matrix: Water Units: ug/L
Contract #: Cal ID: LCMS1-07-JUL-14

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.202	101	70 - 130	

QCMRL - Modified 03/06/2007
PDF File ID: 3735759
Report generated 09/03/2014 08:30

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO AVERAGE OF ICAL)

Login Number:L14081444
Instrument ID:LCMS1
Workgroup (AAB#):WG490445

ICAL CCV Number:WG483039-05
CAL ID: LCMS1-07-JUL-14
Matrix:WATER

Sample Number	Dilution	Tag	IS-1
WG483039	NA	NA	300000
Upper Limit	NA	NA	450000
Lower Limit	NA	NA	150000
L14081444-01	1.00	01	320000
WG490445-02	1.00	01	311000
WG490445-03	1.00	01	312000
WG490445-04	1.00	01	321000

IS-1 - O18LP

Underline = Response outside limits

INTERNAL_STD_AVG_ICAL - Modified 03/10/2010
PDF File ID: 3735762
Report generated 09/03/2014 08:30

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**	6850	**Samplenum:**	L14081444-01
Instrument:	LCMS1	**Prep Date:**	08/29/2014 13:00	**File ID:**	1LM.LM26650
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	08/29/2014 23:01	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	68200	23900	2.85	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**		**Samplenum:**	WG483039-02
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM26050
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	07/07/2014 15:31	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	7880	2520	3.13	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**		**Samplenum:**	WG483039-03
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM26051
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	07/07/2014 15:49	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	15400	5440	2.83	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**		**Samplenum:**	WG483039-04
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM26052
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	07/07/2014 16:08	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	38300	12800	2.99	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**		**Samplenum:**	WG483039-05
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM26053
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	07/07/2014 16:27	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	75700	26300	2.88	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**		**Samplenum:**	WG483039-06
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM26054
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	07/07/2014 16:46	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	148000	53000	2.79	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**		**Samplenum:**	WG483039-07
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM26055
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	07/07/2014 17:05	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	376000	128000	2.94	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**		**Samplenum:**	WG483039-08
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM26056
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	07/07/2014 17:24	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	734000	247000	2.97	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**		**Samplenum:**	WG483039-09
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM26057
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	07/07/2014 17:43	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	76400	25700	2.97	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**	6850	**Samplenum:**	WG490445-01
Instrument:	LCMS1	**Prep Date:**	08/29/2014 13:00	**File ID:**	1LM.LM26622
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	08/29/2014 14:11	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	16000	5320	3.01	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**	6850	**Samplenum:**	WG490445-02
Instrument:	LCMS1	**Prep Date:**	08/29/2014 13:00	**File ID:**	1LM.LM26623
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	08/29/2014 14:30	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	502	186	2.70	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**	6850	**Samplenum:**	WG490445-03
Instrument:	LCMS1	**Prep Date:**	08/29/2014 13:00	**File ID:**	1LM.LM26624
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	08/29/2014 14:49	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	16700	5880	2.84	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**	6850	**Samplenum:**	WG490445-04
Instrument:	LCMS1	**Prep Date:**	08/29/2014 13:00	**File ID:**	1LM.LM26651
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	08/29/2014 23:20	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	15800	5390	2.93	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**	6850	**Samplenum:**	WG490445-05
Instrument:	LCMS1	**Prep Date:**	08/29/2014 13:00	**File ID:**	1LM.LM26621
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	08/29/2014 13:52	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	15900	5670	2.80	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**	6850	**Samplenum:**	WG490445-06
Instrument:	LCMS1	**Prep Date:**	08/29/2014 13:00	**File ID:**	1LM.LM26633
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	08/29/2014 17:39	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	16300	5400	3.02	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**	6850	**Samplenum:**	WG490445-07
Instrument:	LCMS1	**Prep Date:**	08/29/2014 13:00	**File ID:**	1LM.LM26646
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	08/29/2014 21:45	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	16500	5760	2.86	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**	6850	**Samplenum:**	WG490445-08
Instrument:	LCMS1	**Prep Date:**	08/29/2014 13:00	**File ID:**	1LM.LM26653
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	08/29/2014 23:58	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	16500	5460	3.02	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**		**Samplenum:**	WG490448-01
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM26619
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	08/29/2014 13:14	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	0.000	84.8	0.000	2.3	3.8	*

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**		**Samplenum:**	WG490448-02
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM26620
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	08/29/2014 13:33	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	79800	27200	2.93	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**		**Samplenum:**	WG490448-03
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM26632
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	08/29/2014 17:20	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	81300	27100	3.00	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**		**Samplenum:**	WG490448-04
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM26634
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	08/29/2014 17:58	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	0.000	319	0.000	2.3	3.8	*

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**		**Samplenum:**	WG490448-05
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM26645
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	08/29/2014 21:27	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	83100	27900	2.98	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**		**Samplenum:**	WG490448-06
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM26647
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	08/29/2014 22:04	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	0.000	71.3	0.000	2.3	3.8	*

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**		**Samplenum:**	WG490448-07
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM26652
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	08/29/2014 23:39	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	81800	27700	2.95	2.3	3.8	

Perchlorate Ion Ratios

Microbac Laboratories Inc.

Login #:	L14081444	**Prep Method:**		**Samplenum:**	WG490448-08
Instrument:	LCMS1	**Prep Date:**		**File ID:**	1LM.LM26654
Analyst:	JWR	**Anal Method:**	6850	**Matrix:**	Water
Worknum:	WG490445	**Analysis Date:**	08/30/2014 00:17	**Units:**	ug/L

Analyte	Res #1	Res #2	Ratio	Lower	Upper	Q
PERCHLORATE	200	0.000	0.000	2.3	3.8	*

2.2.1.3 Sample Data

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Printed: 9/2/2014 12:41 PM

Data File	LM26650.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	8/29/2014 11:01:42 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

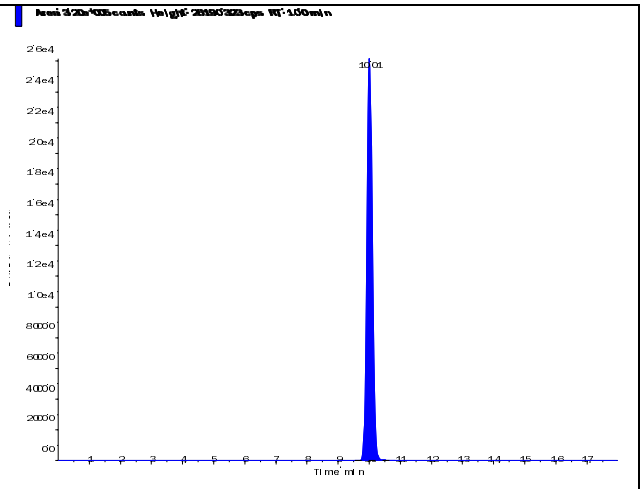
Sample Name	L14081444-01	**Injection Vial**	26.00
Data File	LM26650.wiff	**Injection Volume**	10.00
Acquisition Date	8/29/2014 11:01:42 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	L14081444-01	**Dilution Factor**	1.00
Sample Comment	1,1 (Screened)	**Weight to Volume**	0.00

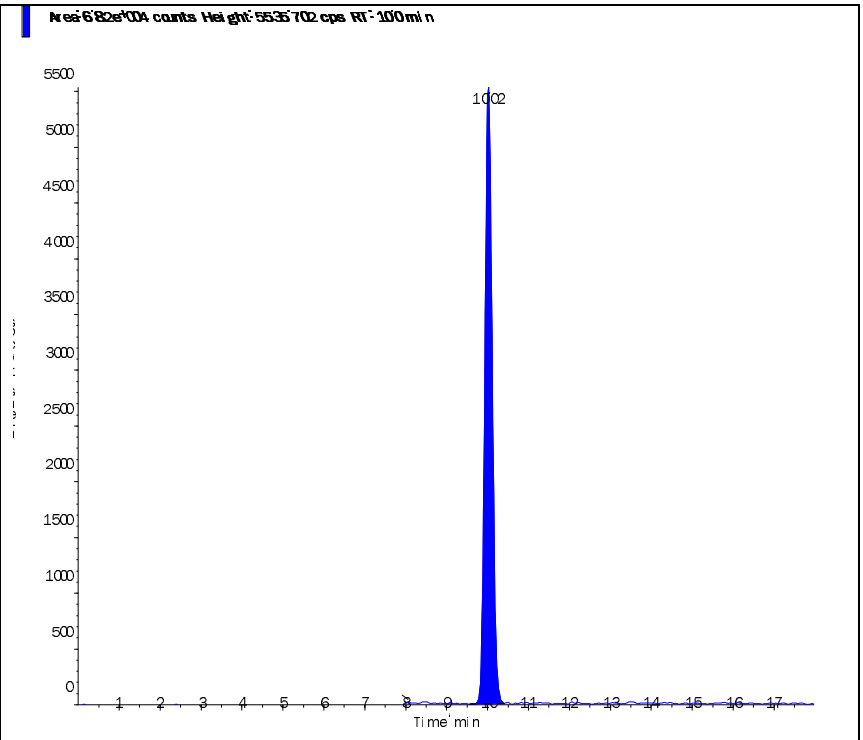
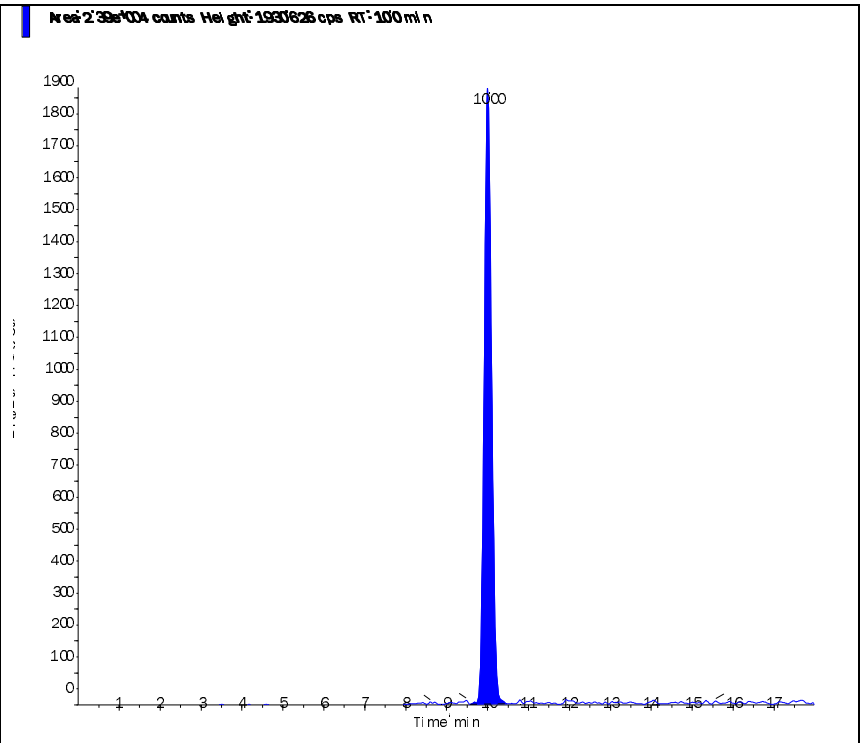
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.200e+05	10.00	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	6.820e+04	10.00	N/A	0.845
Perchlorate conf	2.390e+04	10.00	N/A	0.87

O18LP (Internal Standard)

RT (Exp. RT): 10.00(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.00 (9.86) min Calculated conc: 0.845 ng/ml Area Ratio: 0.213 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.00 (9.82) min Calculated conc: 0.87 ng/ml Area Ratio: 0.075 Sample Type: (Unknown)	

2.2.1.4 Standards Data

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Created with Analyst Reporter
Printed: 9/2/2014 12:29 PM

Data File	LM26049.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	7/7/2014 3:12:06 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

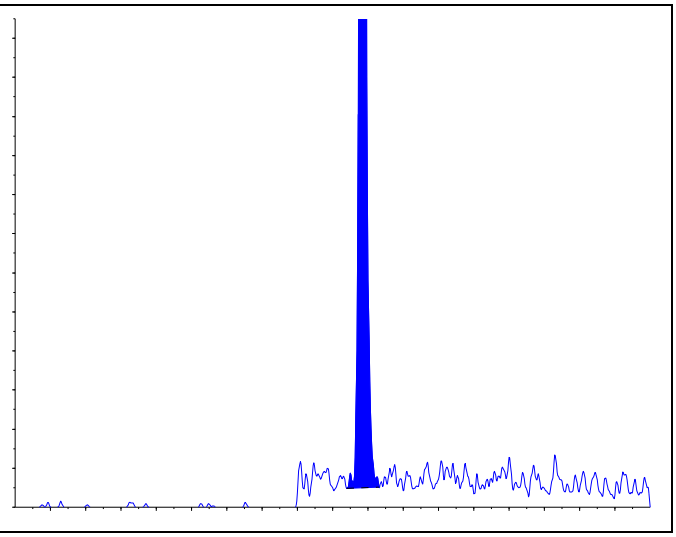
Sample Name	WG483039-01 CCB	**Injection Vial**	1.00
Data File	LM26049.wiff	**Injection Volume**	10.00
Acquisition Date	7/7/2014 3:12:06 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG483039-01	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.020e+05	9.82	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	9.310e+01	9.75	N/A	< 0
Perchlorate conf	0.000e+00	0.00	N/A	No Peak

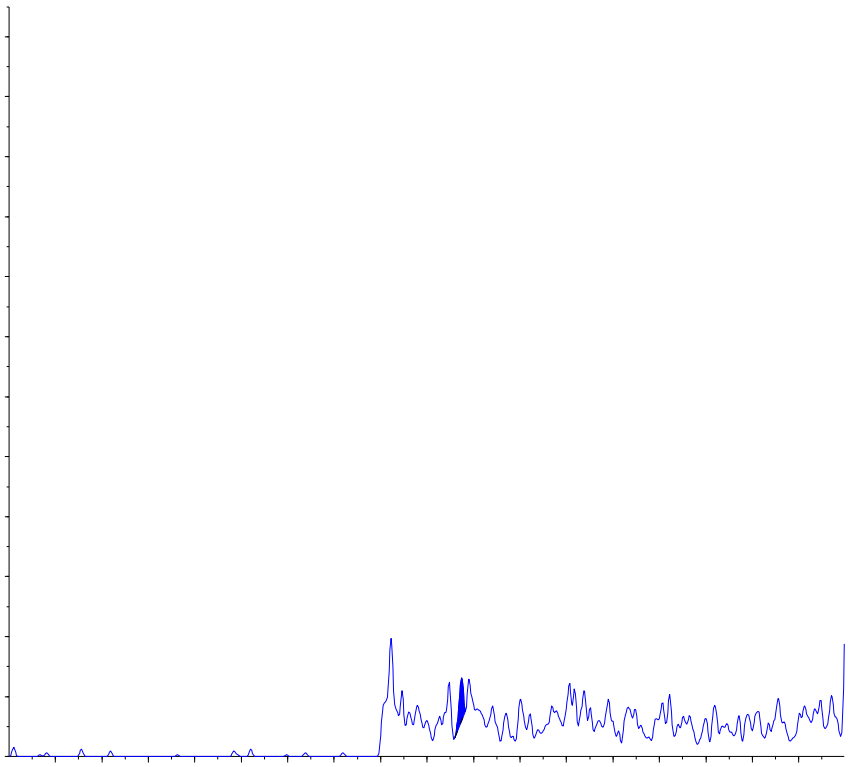
O18LP (Internal Standard)

RT (Exp. RT): 9.82(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



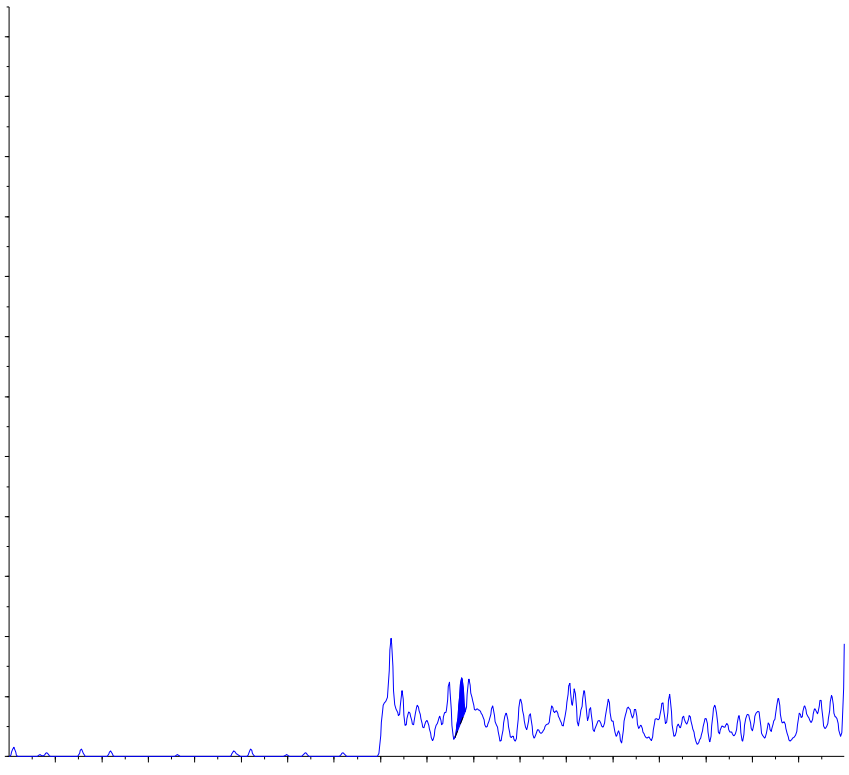
Perchlorate (98.8/83.3 amu)

RT (Exp. RT):	9.75 (9.86) min
Calculated conc:	< 0 ng/ml
Area Ratio:	0.00
Sample Type:	(Unknown)



Perchlorate conf (100.8/85.2 amu)

RT (Exp. RT):	0.00 (9.82) min
Calculated conc:	No Peak ng/ml
Area Ratio:	0.00
Sample Type:	(Unknown)



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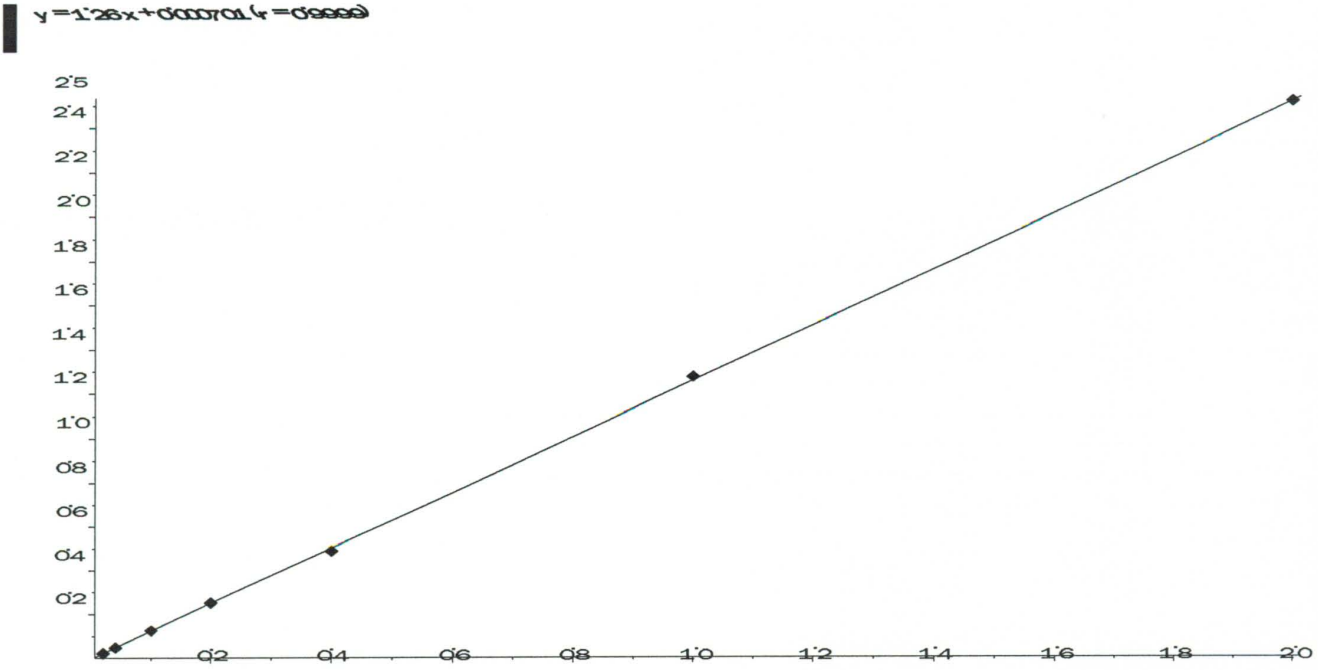
Created with Analyst Reporter
Printed: 7/8/2014 3:24 PM

Analyte Name: **Perchlorate**
Internal Standard: O18LP

Data File	LM26049.wiff	**Result Table**	070714_JWR.rdb
Acquisition Date	7/7/2014 3:12:06 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

Regression Equation: y = 1.26 x + 0.000701 (r = 0.9999)

Expected Concentration	Number of Values	Mean Calculated Concentration	% Accuracy	Std. Deviation	%CV
0.10	1	0.10	101.6	N/A	N/A
0.20	1	0.20	99.3	N/A	N/A
0.50	1	0.50	100.8	N/A	N/A
1.00	1	1.00	100.1	N/A	N/A
2.00	1	1.94	97.0	N/A	N/A
5.00	1	5.06	101.2	N/A	N/A
10.00	1	9.99	99.9	N/A	N/A



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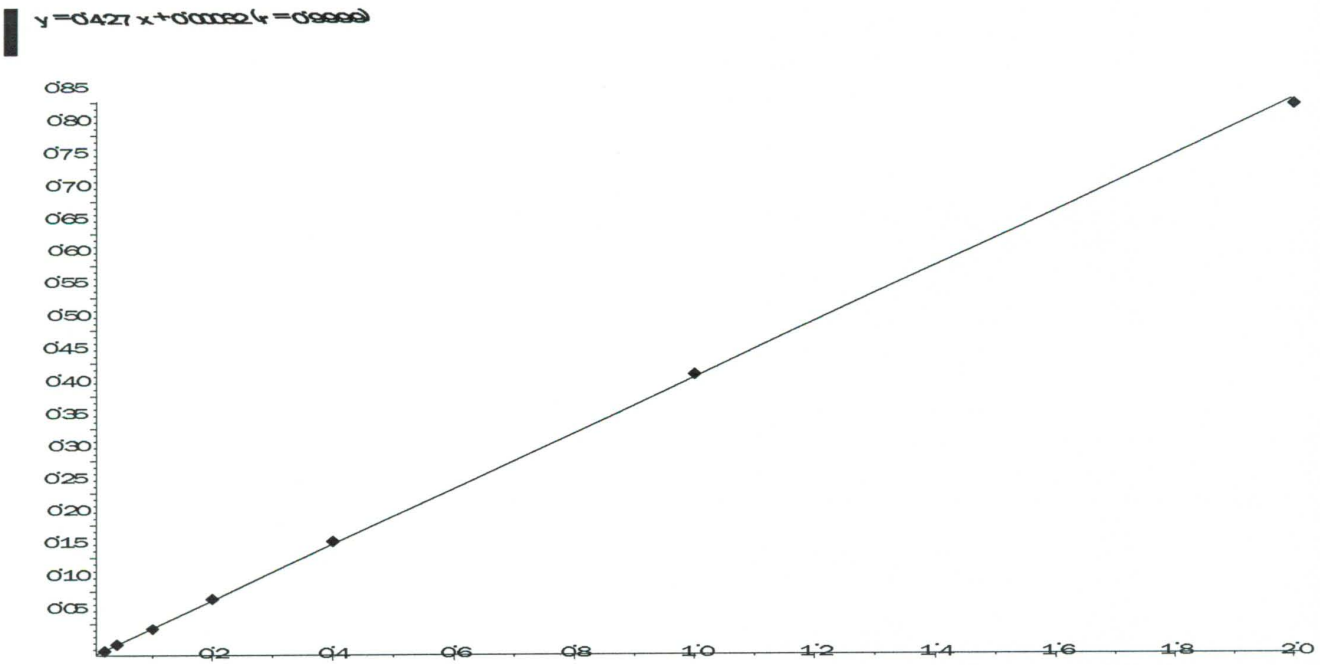
Created with Analyst Reporter
Printed: 7/8/2014 3:24 PM

Analyte Name: **Perchlorate conf**
Internal Standard: O18LP

Data File	LM26049.wiff	**Result Table**	070714_JWR.rdb
Acquisition Date	7/7/2014 3:12:06 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

Regression Equation: y = 0.427 x + 0.00032 (r = 0.9999)

Expected Concentration	Number of Values	Mean Calculated Concentration	% Accuracy	Std. Deviation	%CV
0.10	1	0.09	94.3	N/A	N/A
0.20	1	0.21	102.6	N/A	N/A
0.50	1	0.49	98.7	N/A	N/A
1.00	1	1.02	102.4	N/A	N/A
2.00	1	2.04	102.1	N/A	N/A
5.00	1	5.05	101.1	N/A	N/A
10.00	1	9.89	98.9	N/A	N/A



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Created with Analyst Reporter
Printed: 9/2/2014 12:29 PM

Data File	LM26050.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	7/7/2014 3:31:01 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

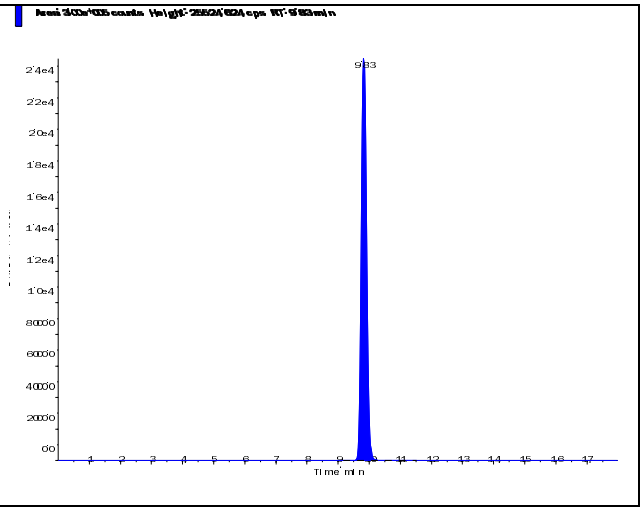
Sample Name	WG483039-02 STD (0.10 ug/L)	**Injection Vial**	2.00
Data File	LM26050.wiff	**Injection Volume**	10.00
Acquisition Date	7/7/2014 3:31:01 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG483039-02	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.000e+05	9.83	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.880e+03	9.84	0.10	0.102
Perchlorate conf	2.520e+03	9.82	0.10	0.0943

O18LP (Internal Standard)

RT (Exp. RT): 9.83(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



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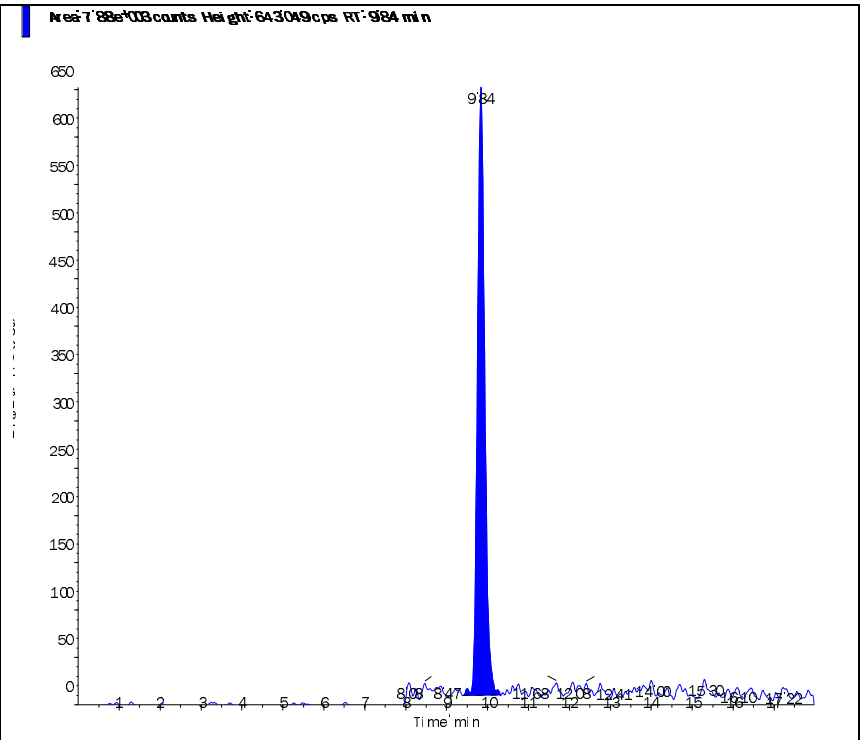
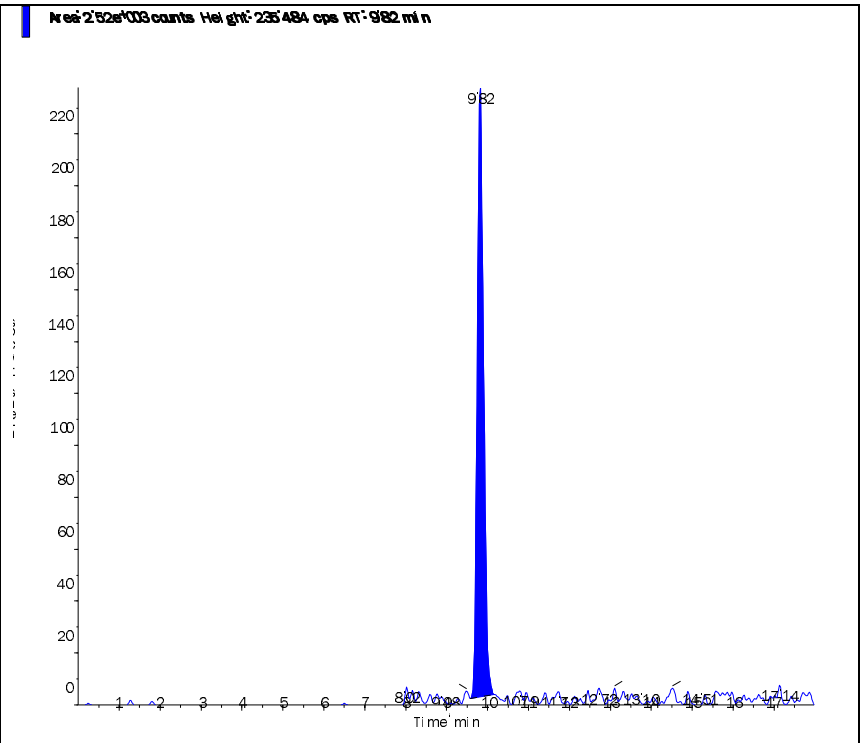
Printed: 9/2/2014 12:29 PM

Perchlorate (98.8/83.3 amu) RT (Exp. RT): 9.84 (9.86) min Calculated conc: 0.102 ng/ml Area Ratio: 0.026 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 9.82 (9.82) min Calculated conc: 0.0943 ng/ml Area Ratio: 0.008 Sample Type: (Standard)	

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Created with Analyst Reporter
Printed: 9/2/2014 12:29 PM

Data File	LM26051.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	7/7/2014 3:49:56 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

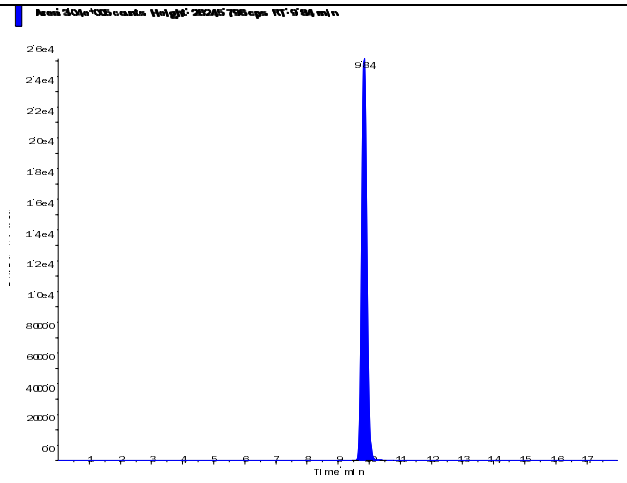
Sample Name	WG483039-03 STD (0.20 ug/L)	**Injection Vial**	3.00
Data File	LM26051.wiff	**Injection Volume**	10.00
Acquisition Date	7/7/2014 3:49:56 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG483039-03	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

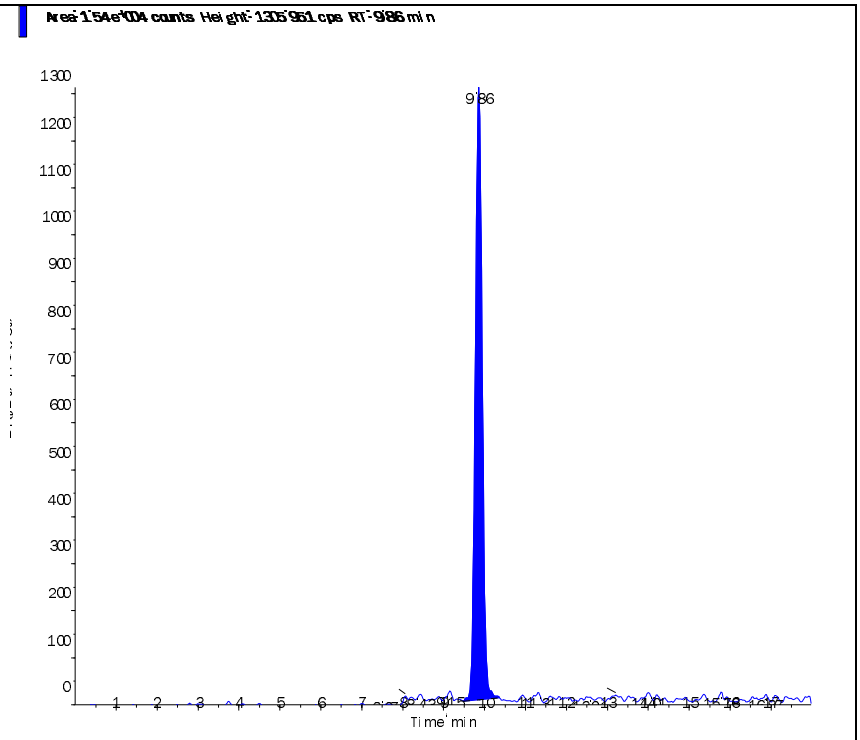
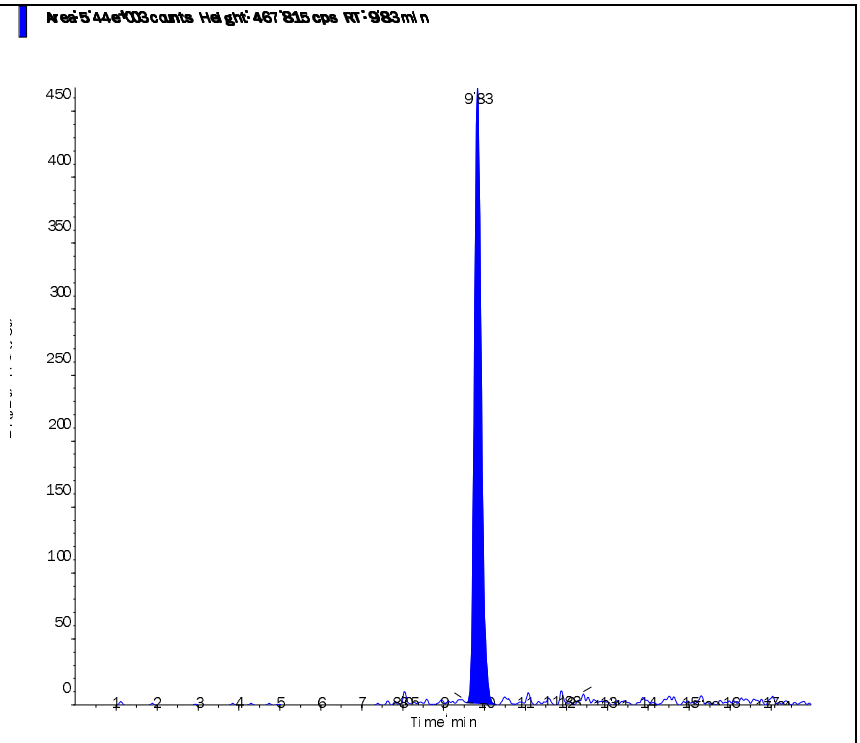
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.040e+05	9.84	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.540e+04	9.86	0.20	0.199
Perchlorate conf	5.440e+03	9.83	0.20	0.205

O18LP (Internal Standard)

RT (Exp. RT): 9.84(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 9.86 (9.86) min Calculated conc: 0.199 ng/ml Area Ratio: 0.051 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 9.83 (9.82) min Calculated conc: 0.205 ng/ml Area Ratio: 0.018 Sample Type: (Standard)	

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Data File	LM26052.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	7/7/2014 4:08:52 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

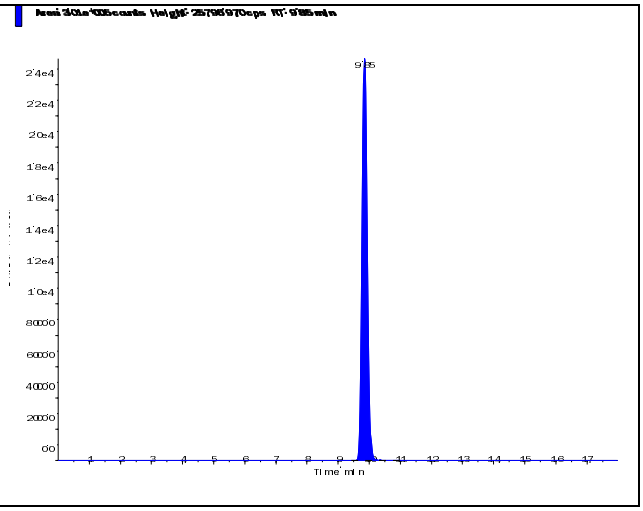
Sample Name	WG483039-04 STD (0.50 ug/L)	**Injection Vial**	4.00
Data File	LM26052.wiff	**Injection Volume**	10.00
Acquisition Date	7/7/2014 4:08:52 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG483039-04	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

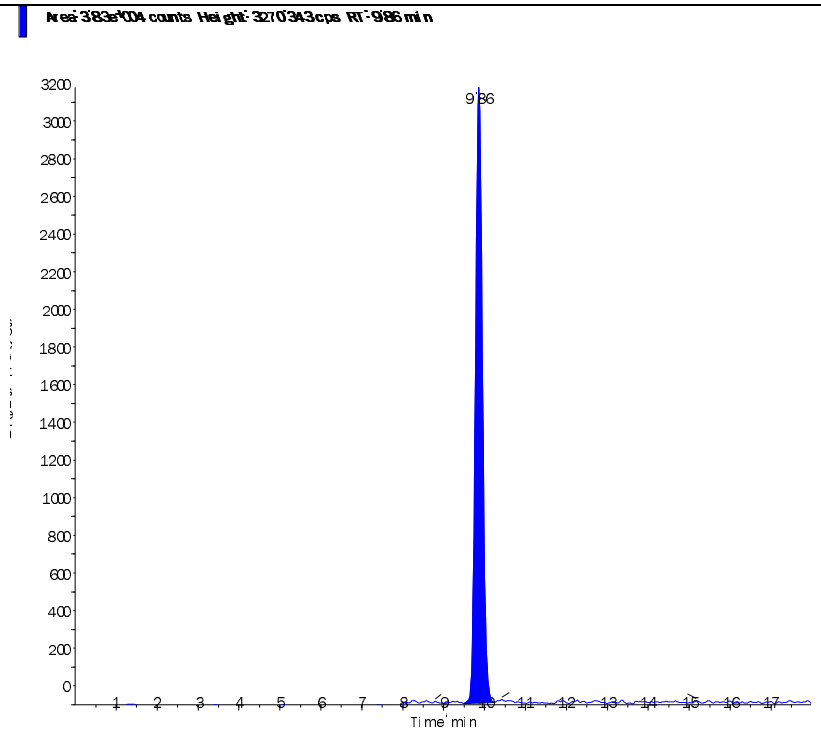
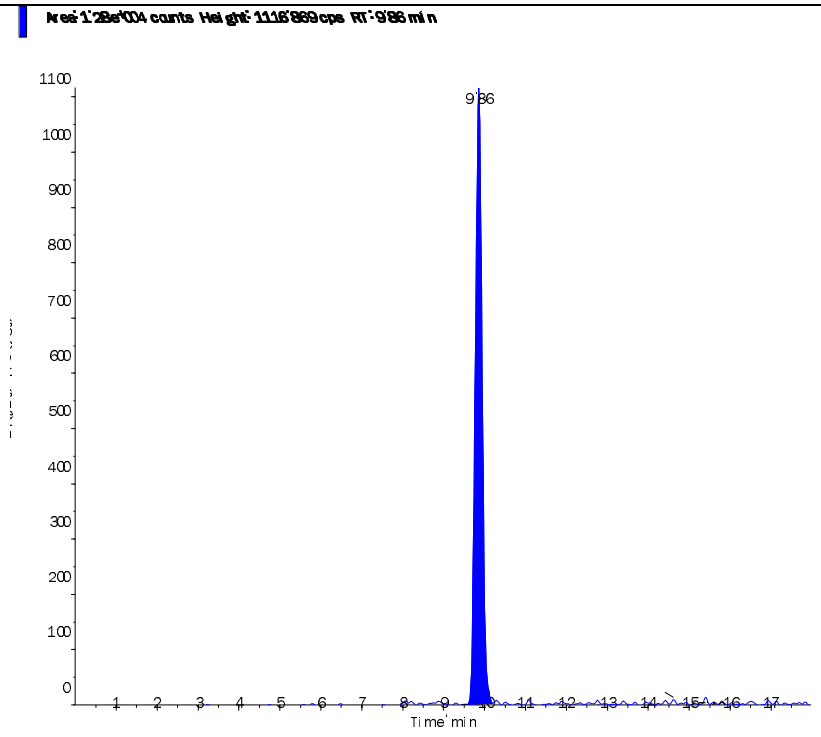
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.010e+05	9.85	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	3.830e+04	9.86	0.50	0.504
Perchlorate conf	1.280e+04	9.86	0.50	0.494

O18LP (Internal Standard)

RT (Exp. RT): 9.85(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 9.86 (9.86) min Calculated conc: 0.504 ng/ml Area Ratio: 0.127 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 9.86 (9.82) min Calculated conc: 0.494 ng/ml Area Ratio: 0.042 Sample Type: (Standard)	

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Data File	LM26053.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	7/7/2014 4:27:47 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

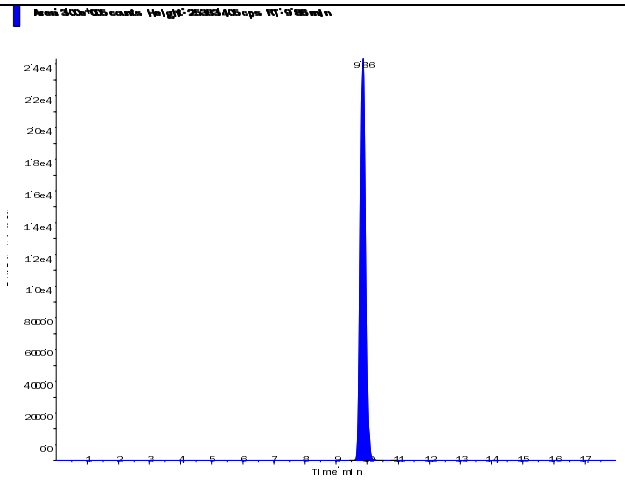
Sample Name	WG483039-05 STD (1.00 ug/L)	**Injection Vial**	5.00
Data File	LM26053.wiff	**Injection Volume**	10.00
Acquisition Date	7/7/2014 4:27:47 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG483039-05	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

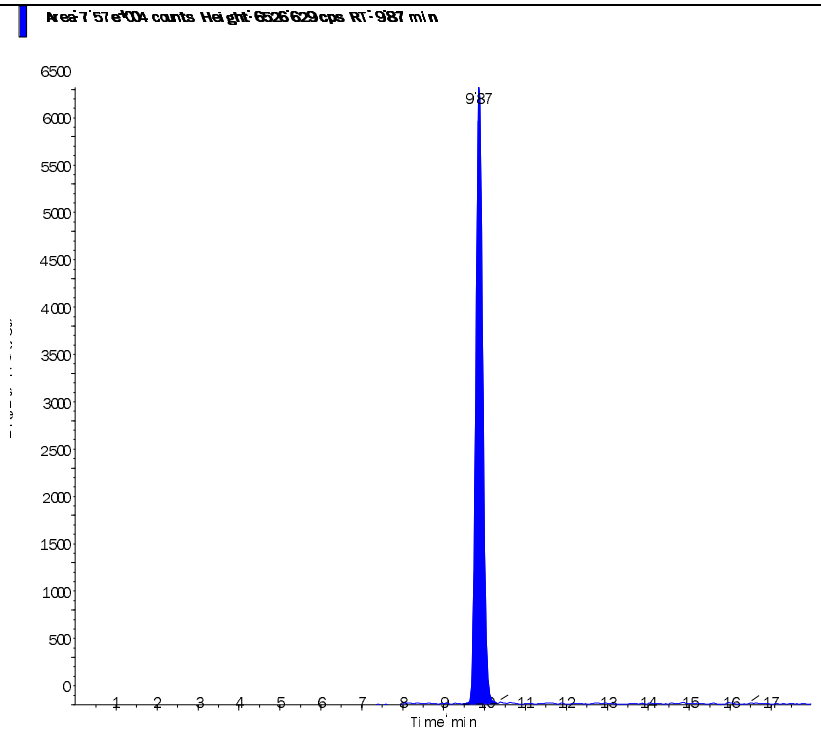
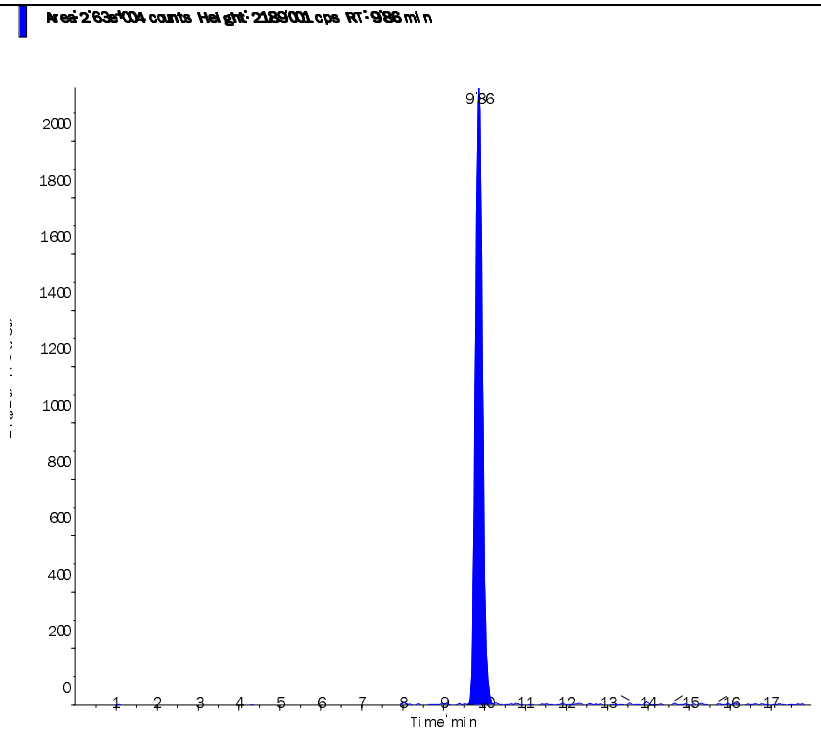
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.000e+05	9.86	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.570e+04	9.87	1.00	1.00
Perchlorate conf	2.630e+04	9.86	1.00	1.02

O18LP (Internal Standard)

RT (Exp. RT): 9.86(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 9.87 (9.86) min Calculated conc: 1.00 ng/ml Area Ratio: 0.252 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 9.86 (9.82) min Calculated conc: 1.02 ng/ml Area Ratio: 0.088 Sample Type: (Standard)	

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Data File	LM26054.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	7/7/2014 4:46:43 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

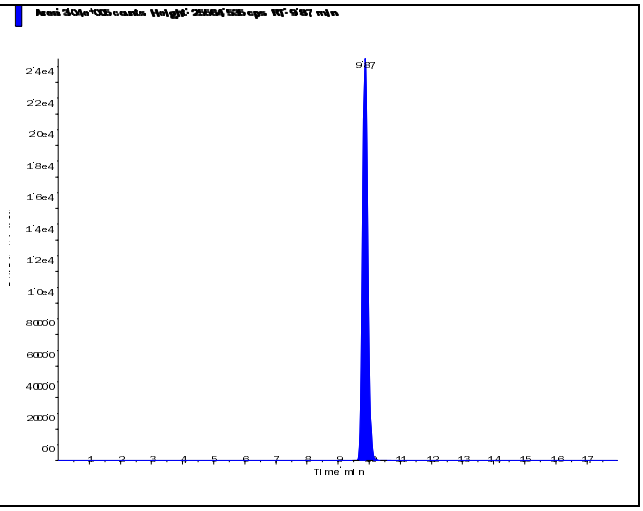
Sample Name	WG483039-06 STD (2.00 ug/L)	**Injection Vial**	6.00
Data File	LM26054.wiff	**Injection Volume**	10.00
Acquisition Date	7/7/2014 4:46:43 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG483039-06	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

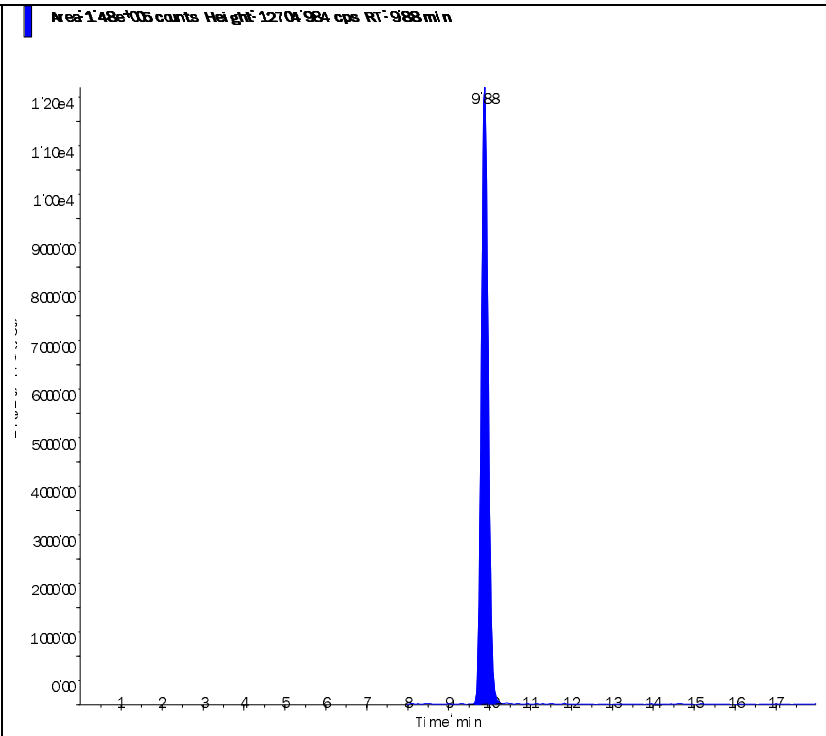
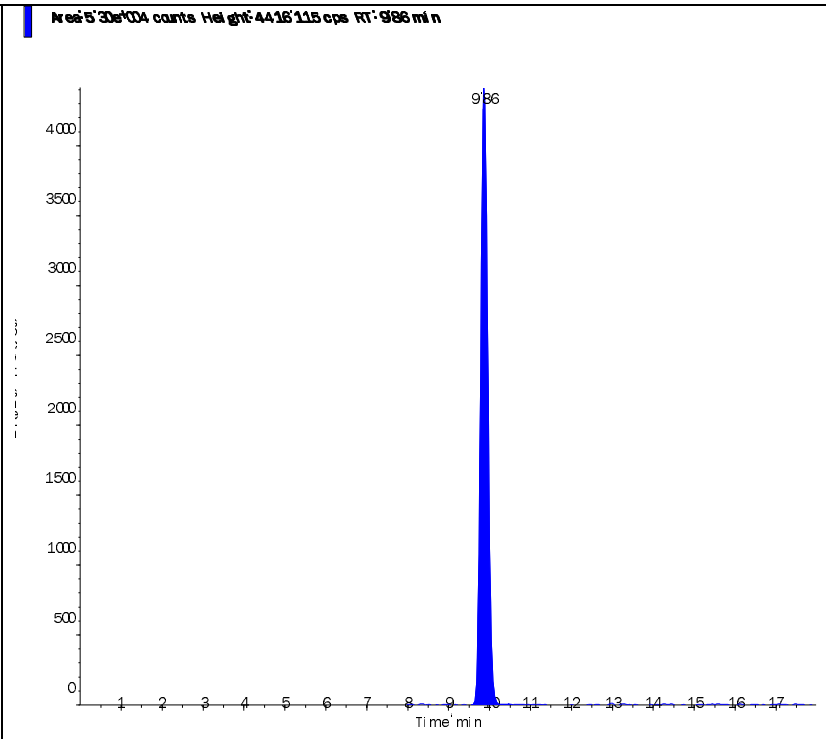
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.040e+05	9.87	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.480e+05	9.88	2.00	1.94
Perchlorate conf	5.300e+04	9.86	2.00	2.04

O18LP (Internal Standard)

RT (Exp. RT): 9.87(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 9.88 (9.86) min Calculated conc: 1.94 ng/ml Area Ratio: 0.489 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 9.86 (9.82) min Calculated conc: 2.04 ng/ml Area Ratio: 0.175 Sample Type: (Standard)	

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Data File	LM26055.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	7/7/2014 5:05:42 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

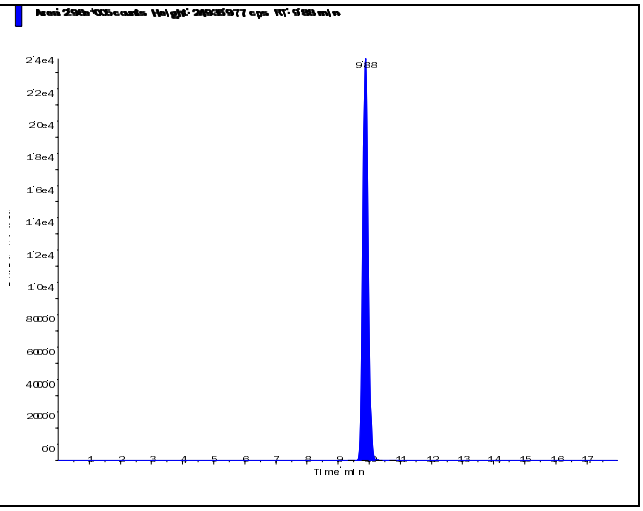
Sample Name	WG483039-07 STD (5.00 ug/L)	**Injection Vial**	7.00
Data File	LM26055.wiff	**Injection Volume**	10.00
Acquisition Date	7/7/2014 5:05:42 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG483039-07	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.960e+05	9.88	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	3.760e+05	9.89	5.00	5.06
Perchlorate conf	1.280e+05	9.87	5.00	5.05

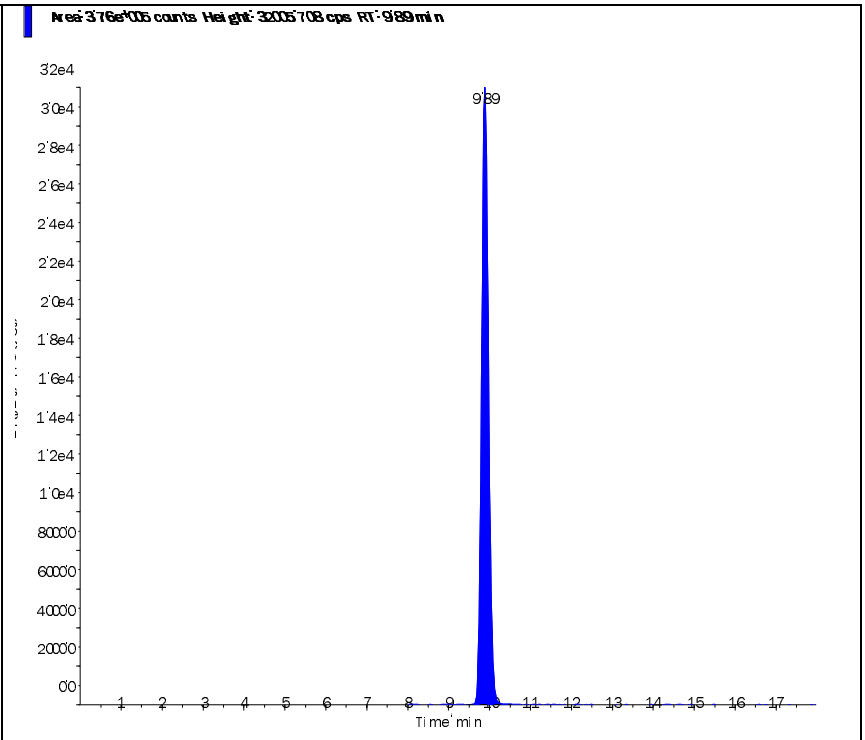
O18LP (Internal Standard)

RT (Exp. RT): 9.88(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



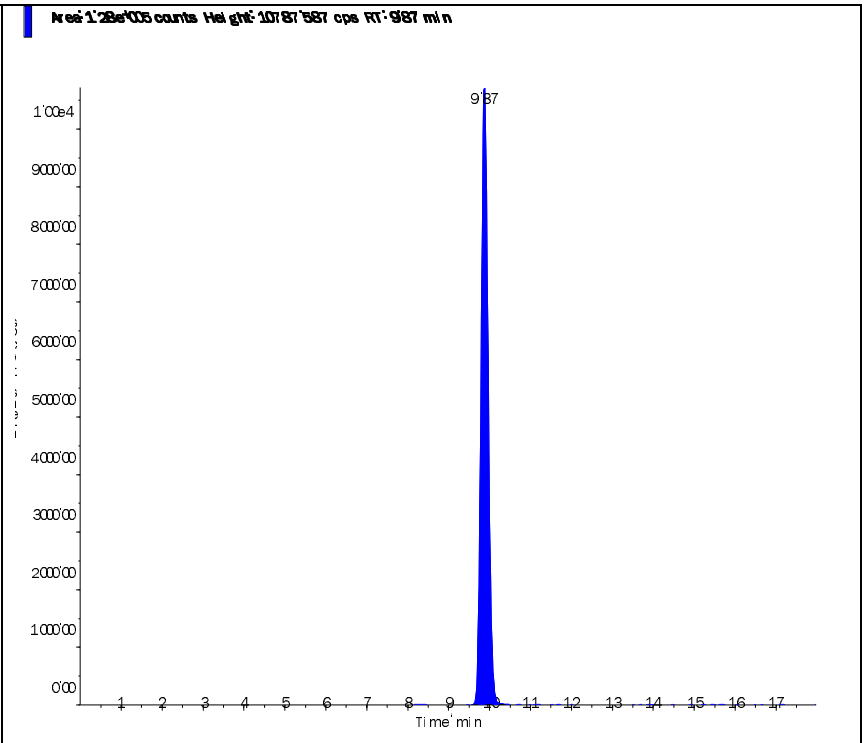
Perchlorate (98.8/83.3 amu)

RT (Exp. RT):	9.89 (9.86) min
Calculated conc:	5.06 ng/ml
Area Ratio:	1.273
Sample Type:	(Standard)



Perchlorate conf (100.8/85.2 amu)

RT (Exp. RT):	9.87 (9.82) min
Calculated conc:	5.05 ng/ml
Area Ratio:	0.432
Sample Type:	(Standard)



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Data File	LM26056.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	7/7/2014 5:24:40 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

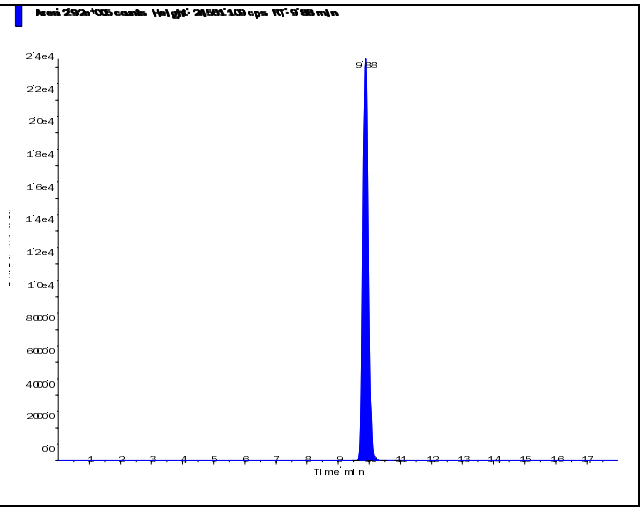
Sample Name	WG483039-08 STD (10.0 ug/L)	**Injection Vial**	8.00
Data File	LM26056.wiff	**Injection Volume**	10.00
Acquisition Date	7/7/2014 5:24:40 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Standard
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG483039-08	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

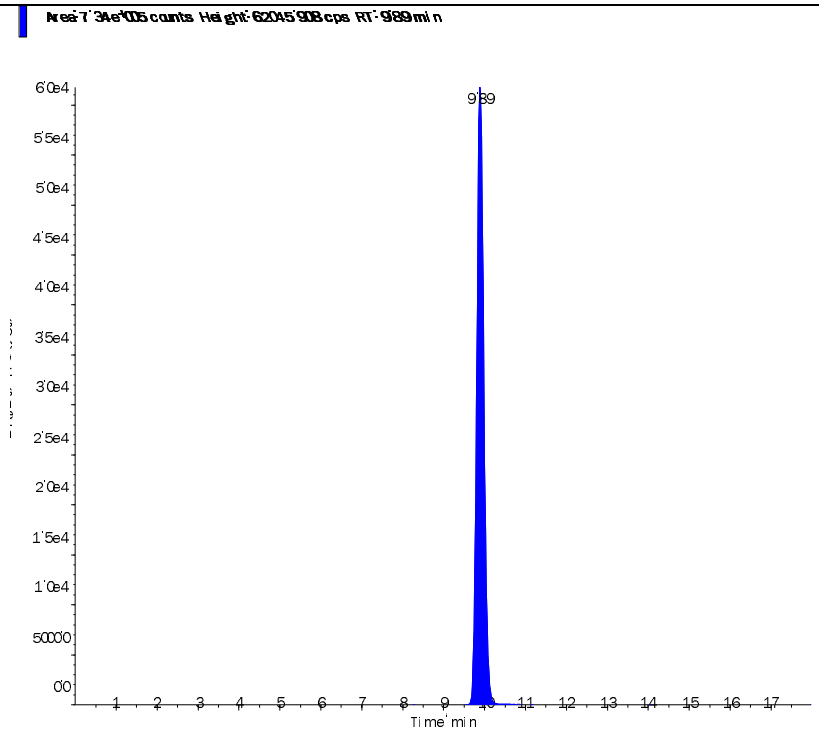
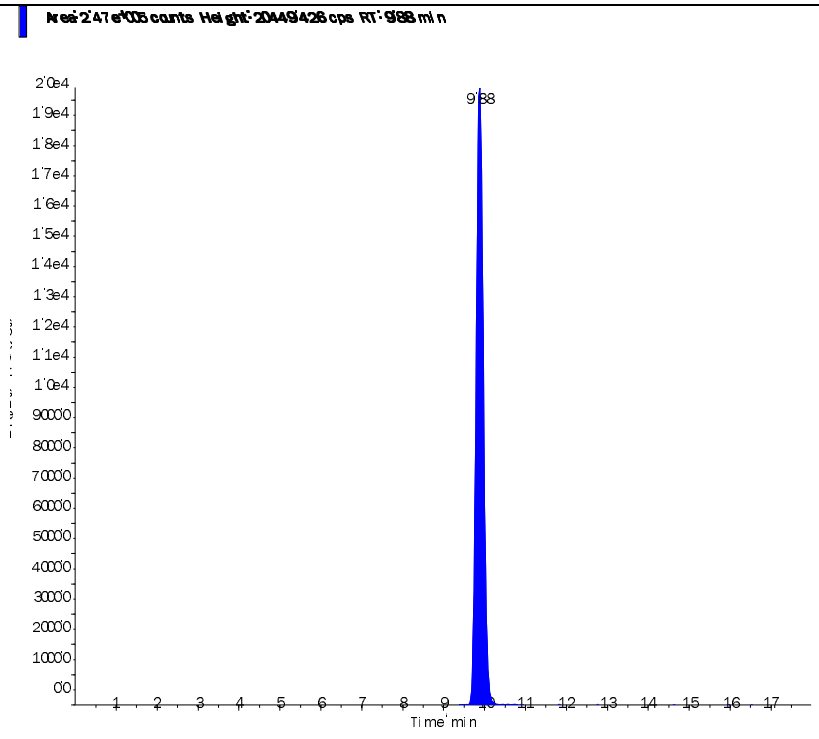
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.920e+05	9.88	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.340e+05	9.89	10.00	9.99
Perchlorate conf	2.470e+05	9.88	10.00	9.89

O18LP (Internal Standard)

RT (Exp. RT): 9.88(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Standard)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 9.89 (9.86) min Calculated conc: 9.99 ng/ml Area Ratio: 2.513 Sample Type: (Standard)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 9.88 (9.82) min Calculated conc: 9.89 ng/ml Area Ratio: 0.845 Sample Type: (Standard)	

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Data File	LM26057.wiff	**Result Table**	070714_JWR.rdb
Acquisition Date	7/7/2014 5:43:36 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

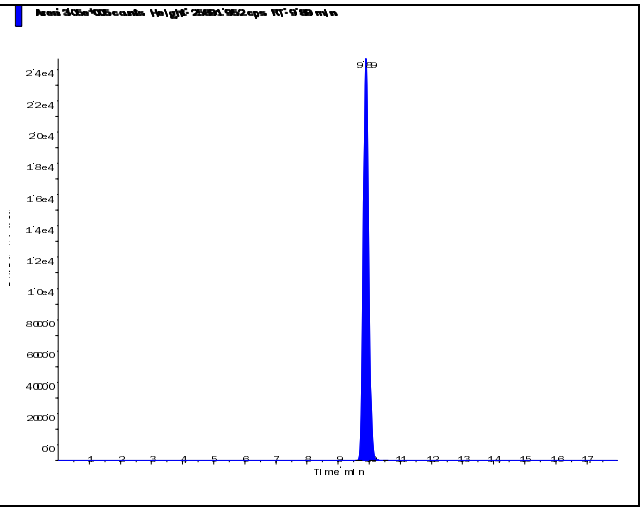
Sample Name	WG483039-09 SSCV (1.0 ug/L)	**Injection Vial**	9.00
Data File	LM26057.wiff	**Injection Volume**	10.00
Acquisition Date	7/7/2014 5:43:36 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	070714_JWR.rdb
Sample ID	WG483039-09	**Dilution Factor**	1.00
Sample Comment	1,1 STD65196	**Weight to Volume**	0.00

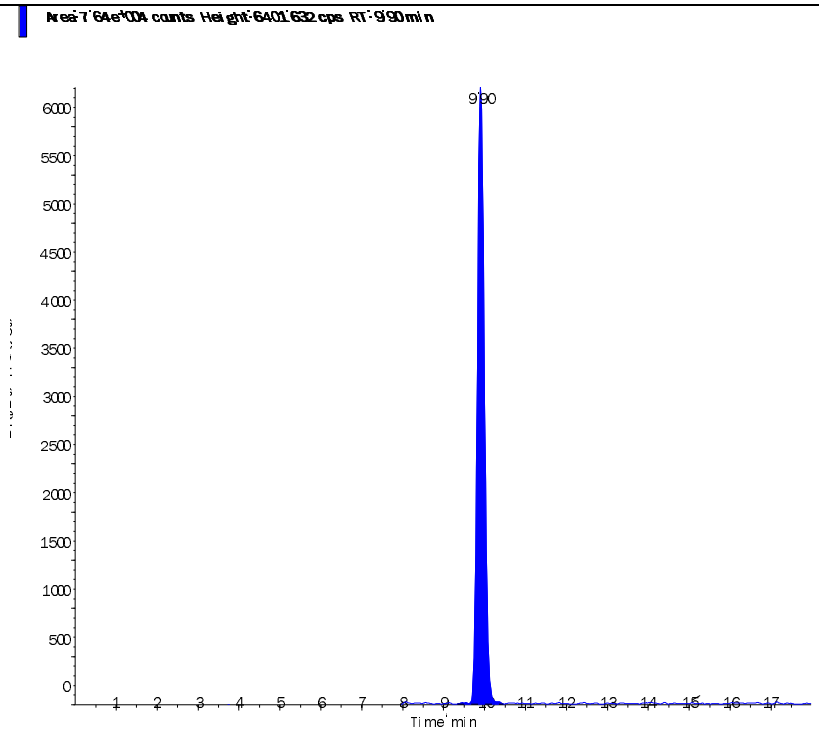
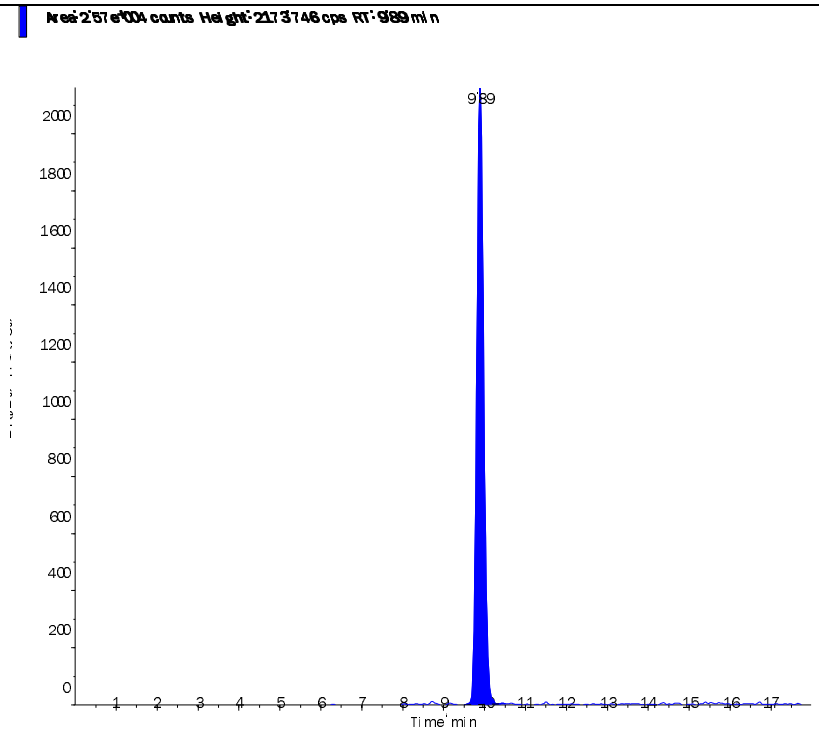
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.050e+05	9.89	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.640e+04	9.90	1.00	0.993
Perchlorate conf	2.570e+04	9.89	1.00	0.98

O18LP (Internal Standard)

RT (Exp. RT): 9.89(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 9.90 (9.86) min Calculated conc: 0.993 ng/ml Area Ratio: 0.25 Sample Type: (Quality Control)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 9.89 (9.82) min Calculated conc: 0.98 ng/ml Area Ratio: 0.084 Sample Type: (Quality Control)	

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Data File	LM26620.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	8/29/2014 1:33:41 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

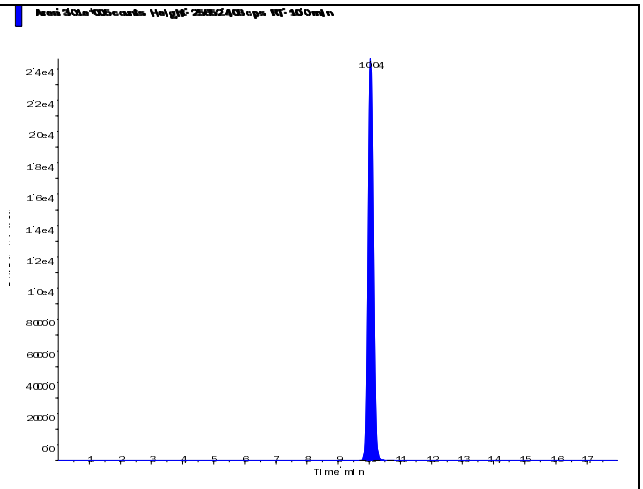
Sample Name	WG490448-02 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM26620.wiff	**Injection Volume**	10.00
Acquisition Date	8/29/2014 1:33:41 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG490448-02	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.010e+05	10.00	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	7.980e+04	10.10	1.00	1.05
Perchlorate conf	2.720e+04	10.00	1.00	1.05

O18LP (Internal Standard)

RT (Exp. RT): 10.00(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



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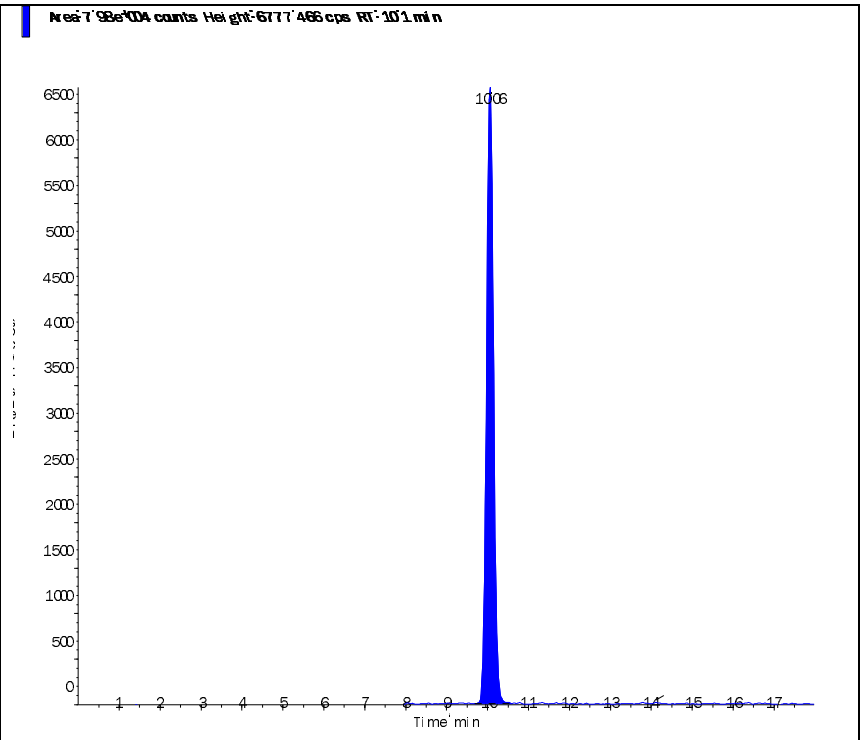
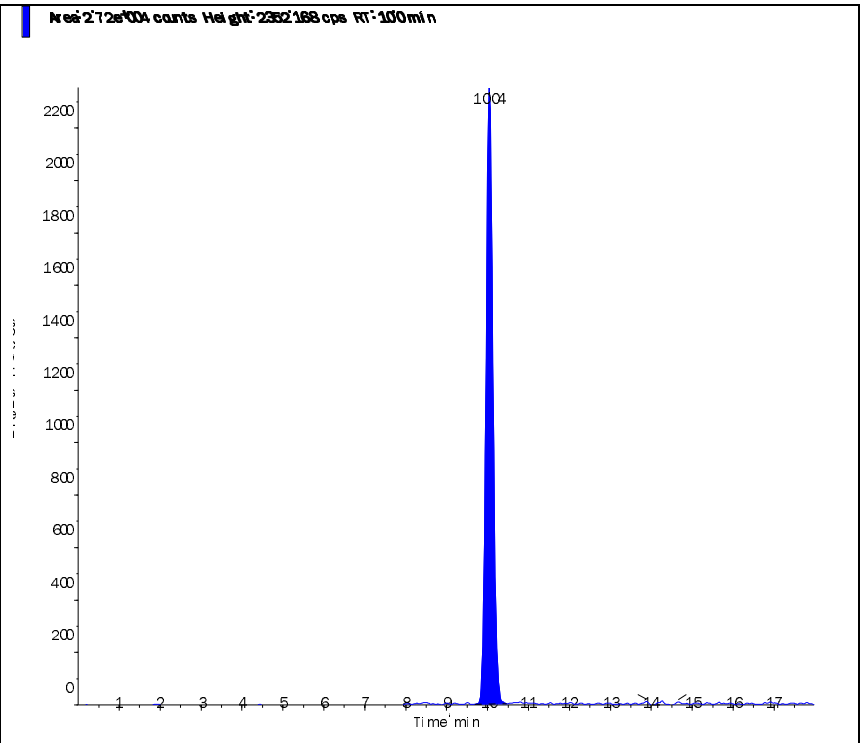
Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.10 (9.86) min Calculated conc: 1.05 ng/ml Area Ratio: 0.265 Sample Type: (Quality Control)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.00 (9.82) min Calculated conc: 1.05 ng/ml Area Ratio: 0.09 Sample Type: (Quality Control)	

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Data File	LM26632.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	8/29/2014 5:20:51 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

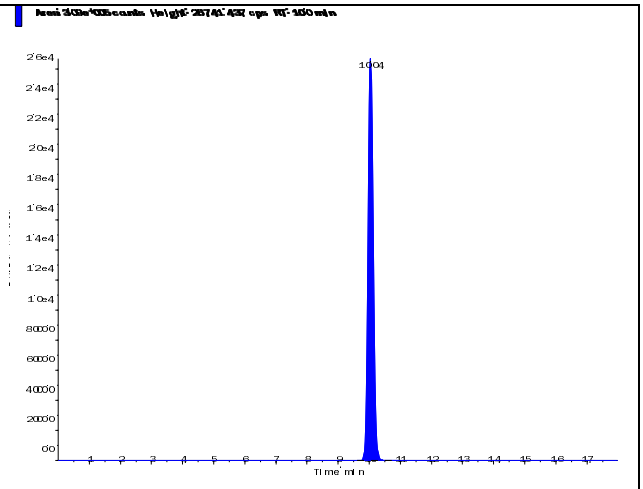
Sample Name	WG490448-03 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM26632.wiff	**Injection Volume**	10.00
Acquisition Date	8/29/2014 5:20:51 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG490448-03	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.090e+05	10.00	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	8.130e+04	10.10	1.00	1.05
Perchlorate conf	2.710e+04	10.00	1.00	1.02

O18LP (Internal Standard)

RT (Exp. RT): 10.00(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



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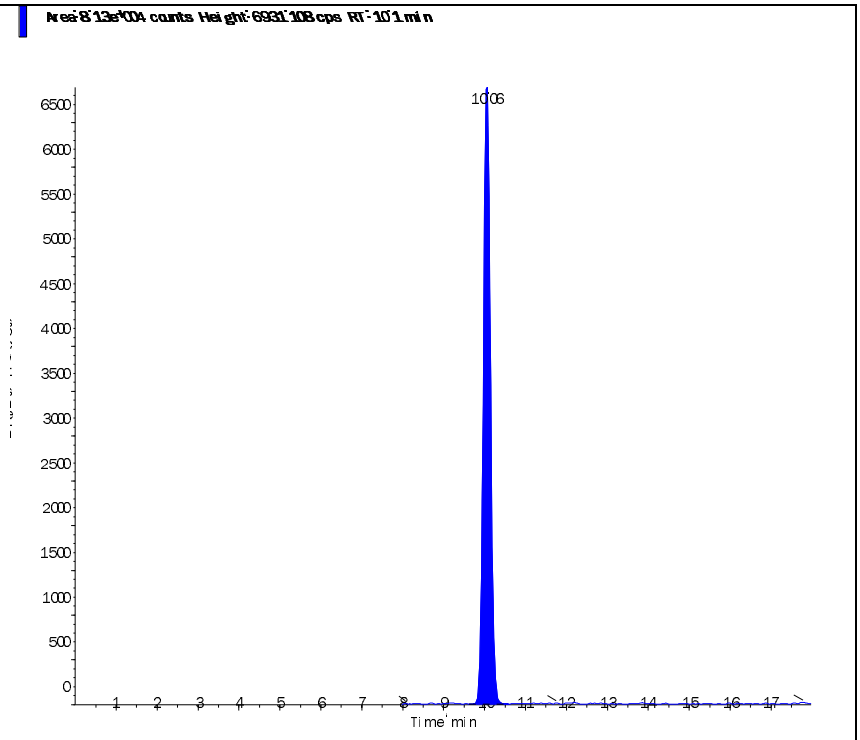
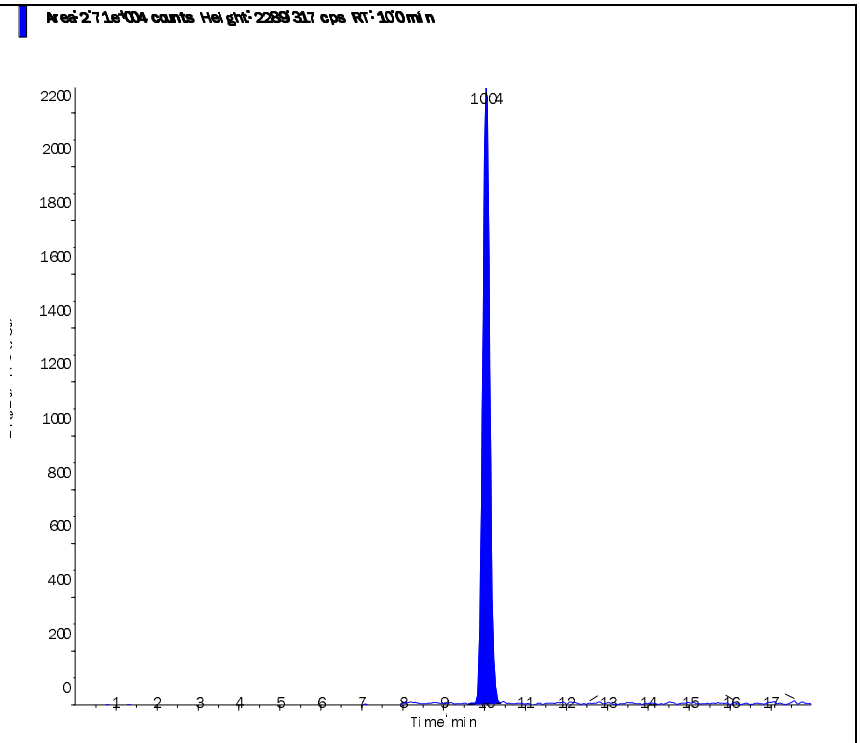
Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.10 (9.86) min Calculated conc: 1.05 ng/ml Area Ratio: 0.263 Sample Type: (Quality Control)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.00 (9.82) min Calculated conc: 1.02 ng/ml Area Ratio: 0.088 Sample Type: (Quality Control)	

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Data File	LM26645.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	8/29/2014 9:27:00 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

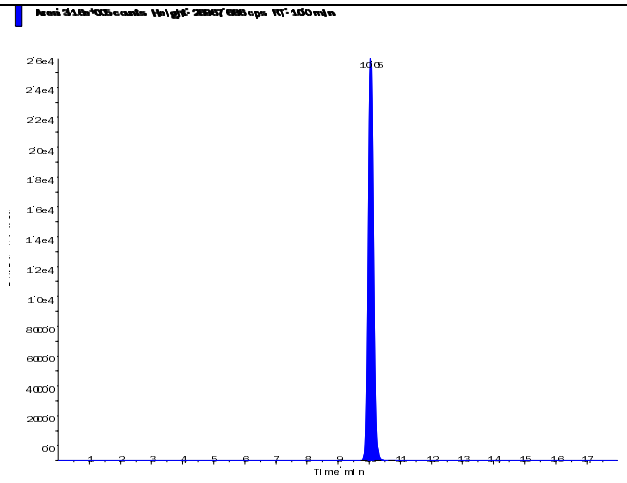
Sample Name	WG490448-05 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM26645.wiff	**Injection Volume**	10.00
Acquisition Date	8/29/2014 9:27:00 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG490448-05	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.160e+05	10.00	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	8.310e+04	10.10	1.00	1.04
Perchlorate conf	2.790e+04	10.00	1.00	1.03

O18LP (Internal Standard)

RT (Exp. RT): 10.00(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



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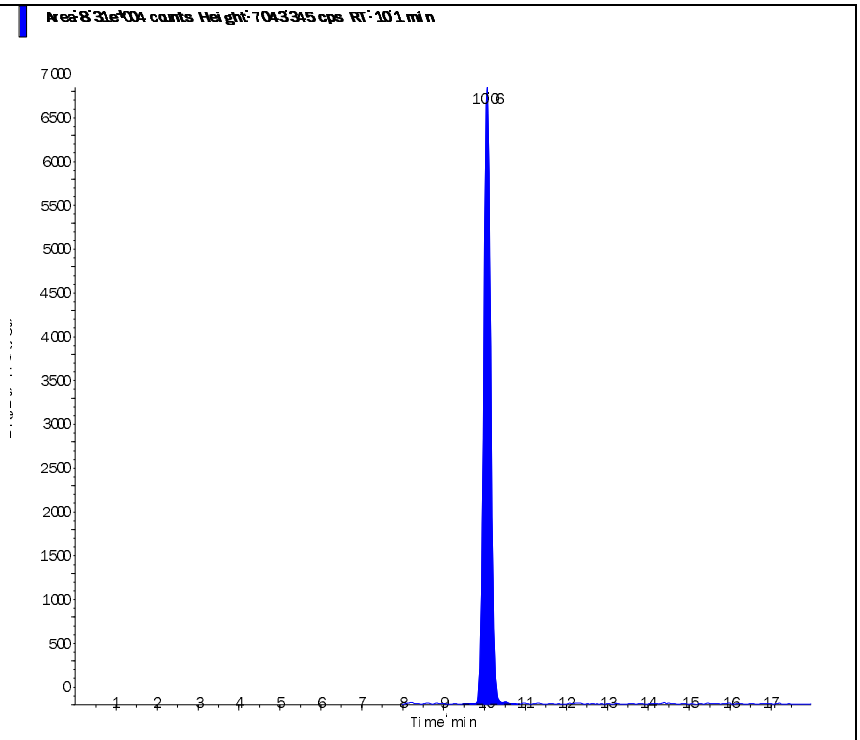
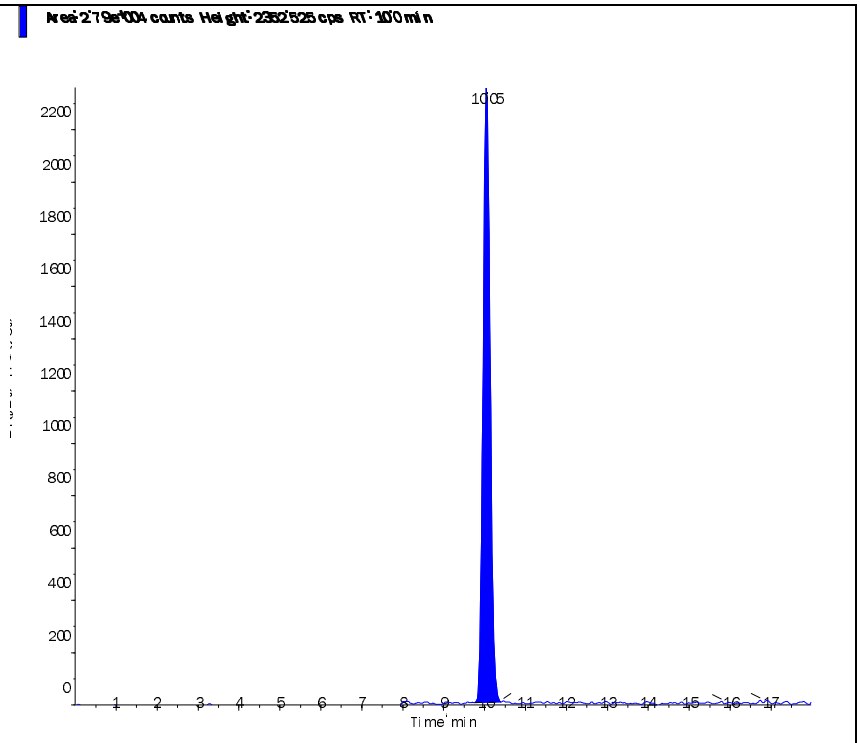
Printed: 9/2/2014 12:39 PM

Perchlorate (98.8/83.3 amu) RT (Exp. RT): Calculated conc: Area Ratio: Sample Type:	10.10 (9.86) min 1.04 ng/ml 0.263 (Quality Control)



Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): Calculated conc: Area Ratio: Sample Type:	10.00 (9.82) min 1.03 ng/ml 0.088 (Quality Control)



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Data File	LM26652.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	8/29/2014 11:39:36 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

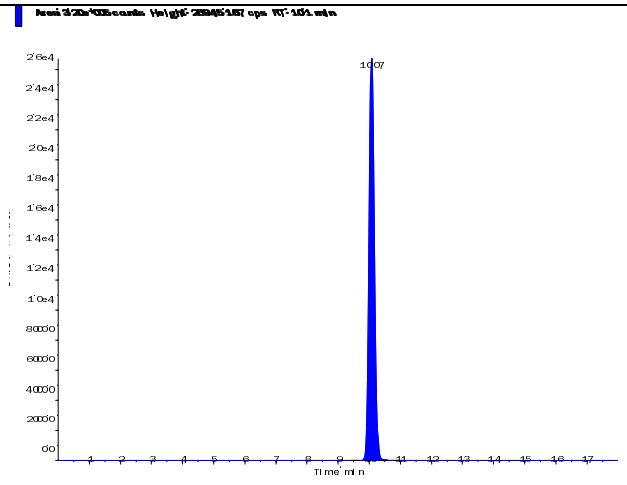
Sample Name	WG490448-07 CCV (1.0ug/L)	**Injection Vial**	3.00
Data File	LM26652.wiff	**Injection Volume**	10.00
Acquisition Date	8/29/2014 11:39:36 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Quality Control
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG490448-07	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

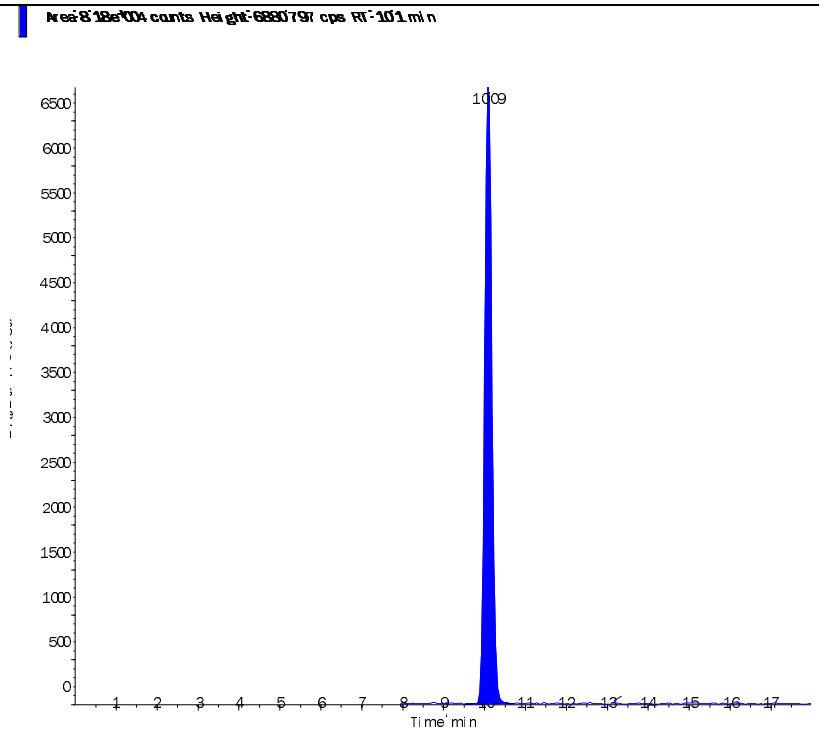
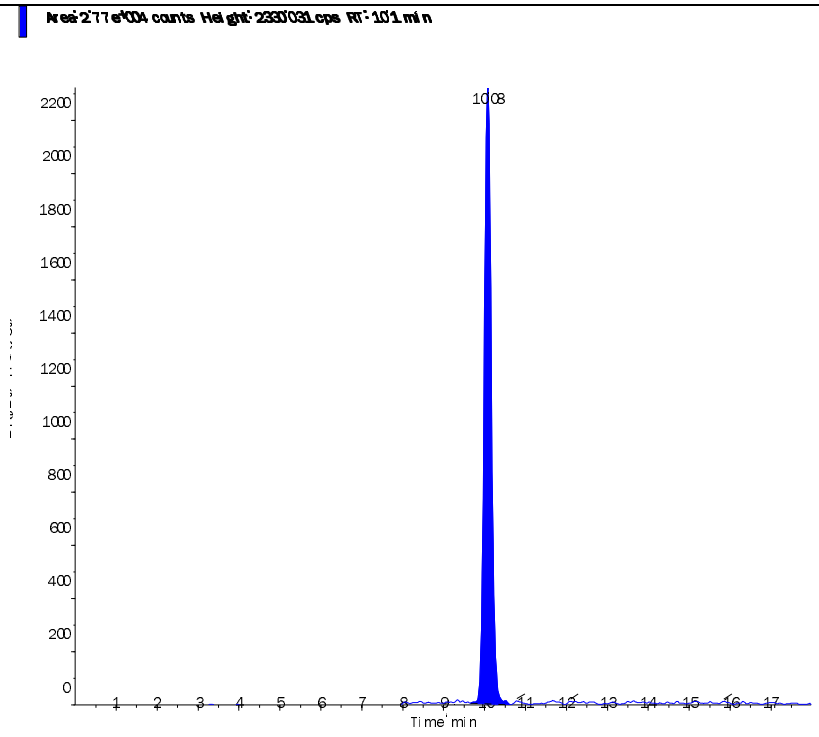
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.200e+05	10.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	8.180e+04	10.10	1.00	1.01
Perchlorate conf	2.770e+04	10.10	1.00	1.01

O18LP (Internal Standard)

RT (Exp. RT): 10.10(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Quality Control)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.10 (9.86) min Calculated conc: 1.01 ng/ml Area Ratio: 0.256 Sample Type: (Quality Control)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.10 (9.82) min Calculated conc: 1.01 ng/ml Area Ratio: 0.087 Sample Type: (Quality Control)	

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Data File	LM26621.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	8/29/2014 1:52:36 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

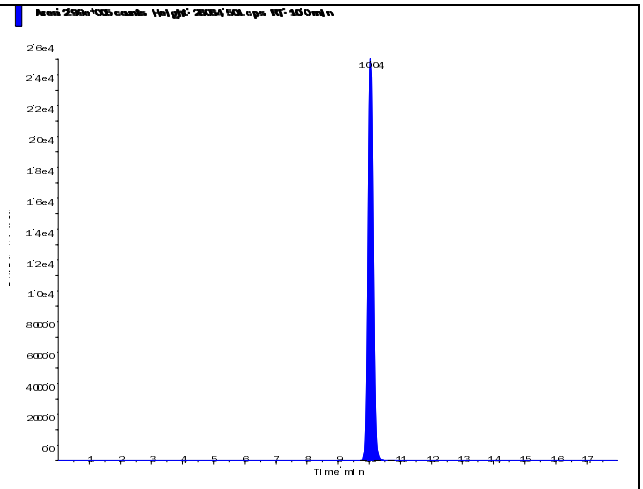
Sample Name	WG490445-05 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM26621.wiff	**Injection Volume**	10.00
Acquisition Date	8/29/2014 1:52:36 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG490445-05	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

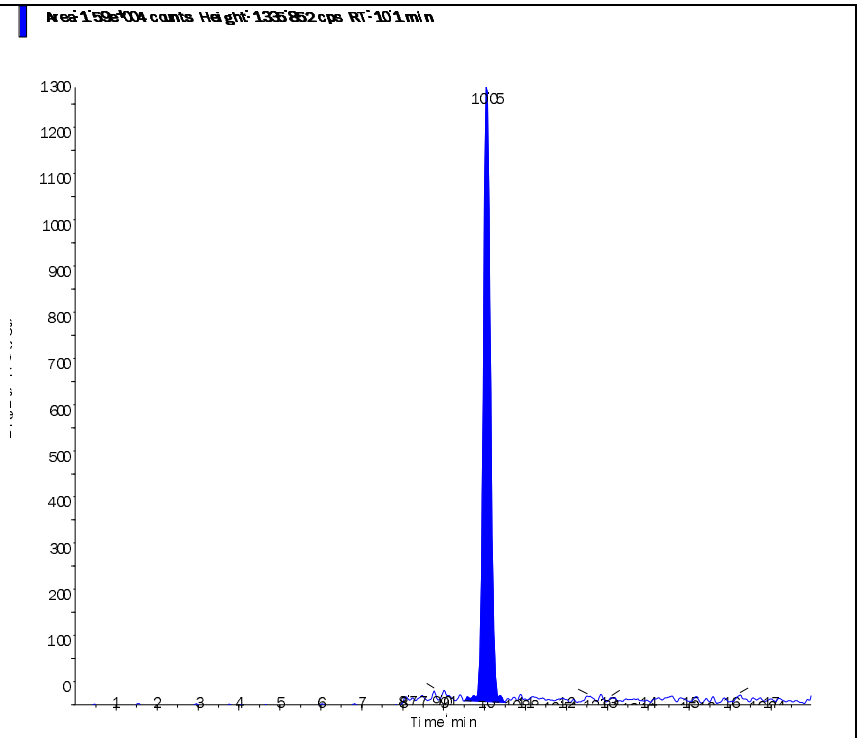
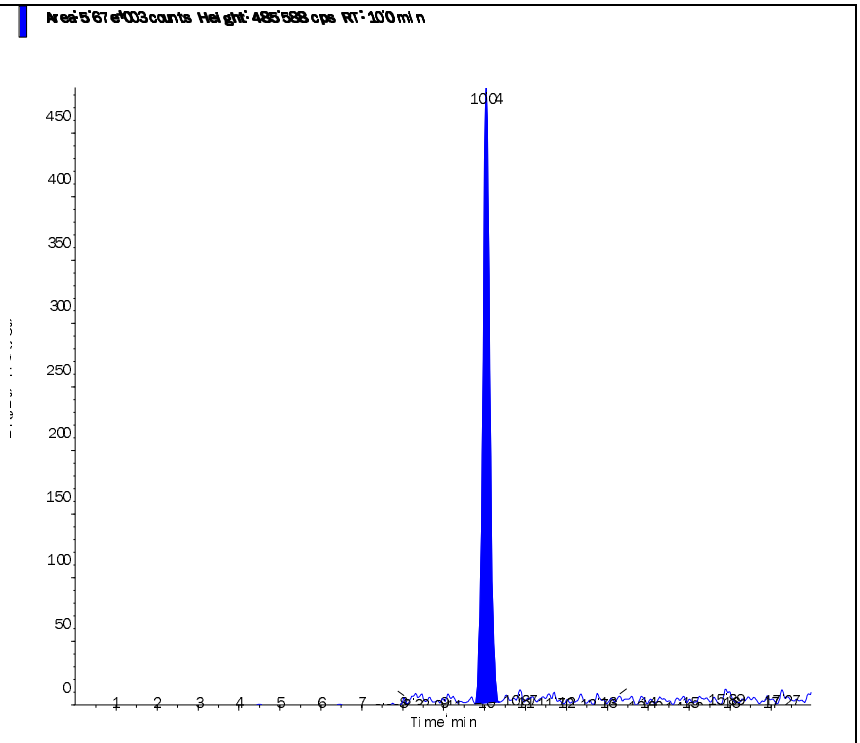
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	2.990e+05	10.00	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.590e+04	10.10	N/A	0.209
Perchlorate conf	5.670e+03	10.00	N/A	0.218

O18LP (Internal Standard)

RT (Exp. RT): 10.00(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.10 (9.86) min Calculated conc: 0.209 ng/ml Area Ratio: 0.053 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.00 (9.82) min Calculated conc: 0.218 ng/ml Area Ratio: 0.019 Sample Type: (Unknown)	

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Data File	LM26633.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	8/29/2014 5:39:45 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

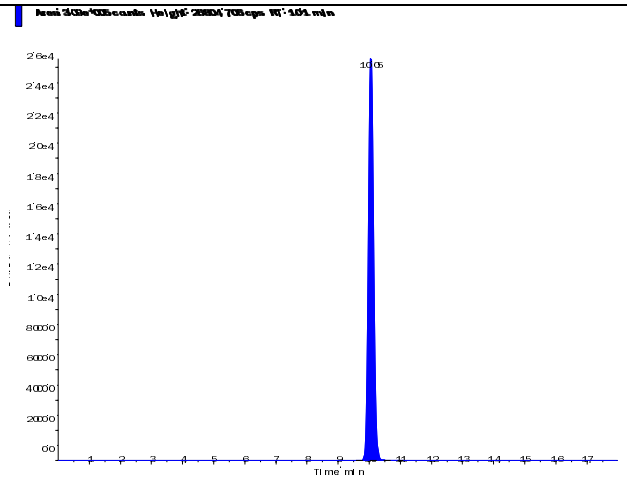
Sample Name	WG490445-06 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM26633.wiff	**Injection Volume**	10.00
Acquisition Date	8/29/2014 5:39:45 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG490445-06	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

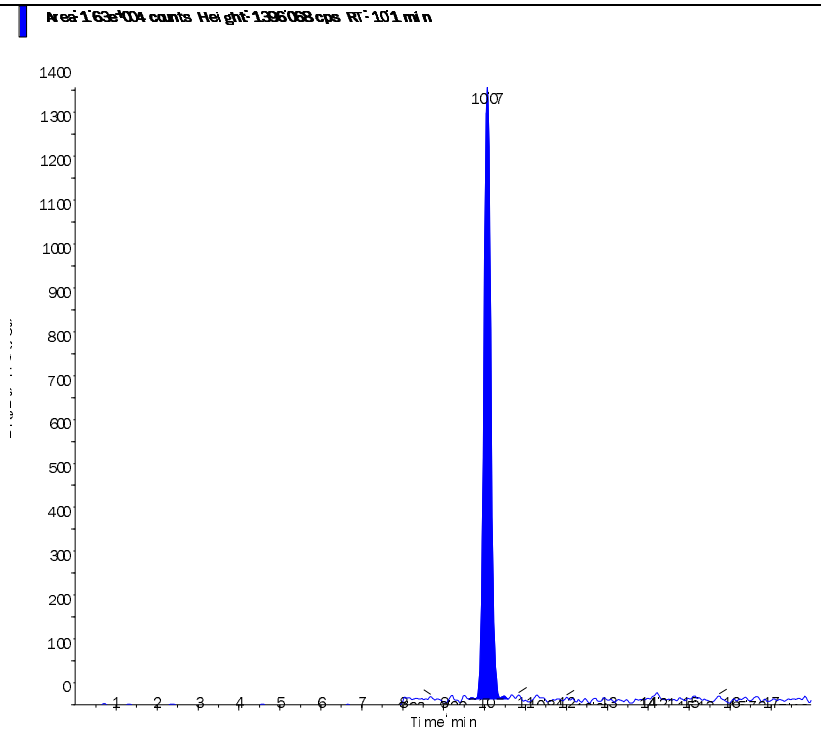
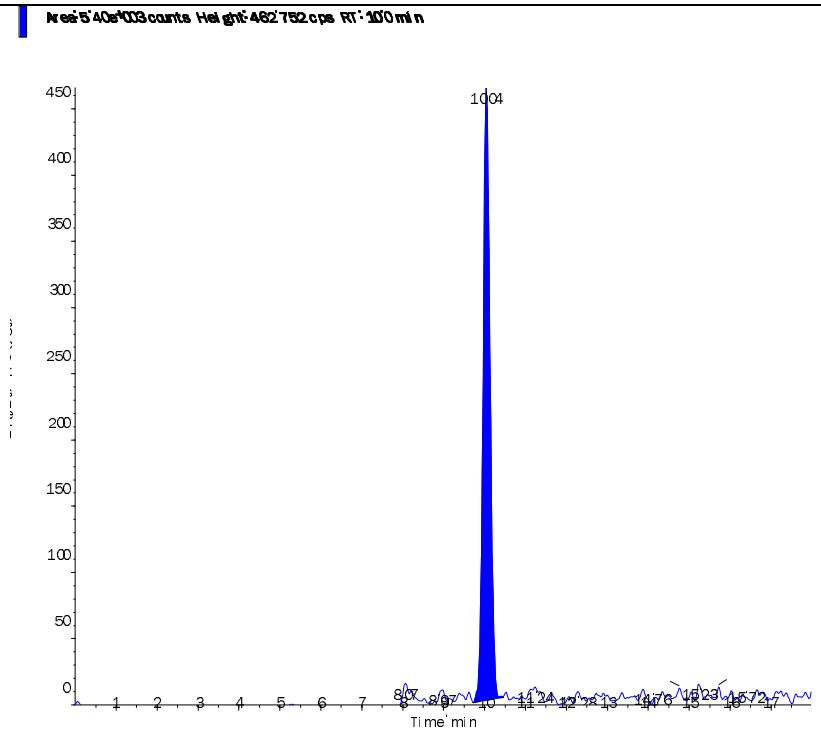
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.090e+05	10.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.630e+04	10.10	N/A	0.208
Perchlorate conf	5.400e+03	10.00	N/A	0.201

O18LP (Internal Standard)

RT (Exp. RT): 10.10(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.10 (9.86) min Calculated conc: 0.208 ng/ml Area Ratio: 0.053 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.00 (9.82) min Calculated conc: 0.201 ng/ml Area Ratio: 0.017 Sample Type: (Unknown)	

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Data File	LM26646.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	8/29/2014 9:45:57 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

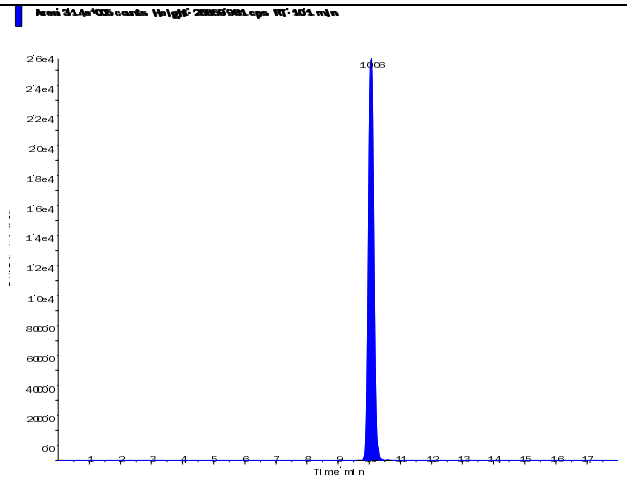
Sample Name	WG490445-07 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM26646.wiff	**Injection Volume**	10.00
Acquisition Date	8/29/2014 9:45:57 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG490445-07	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

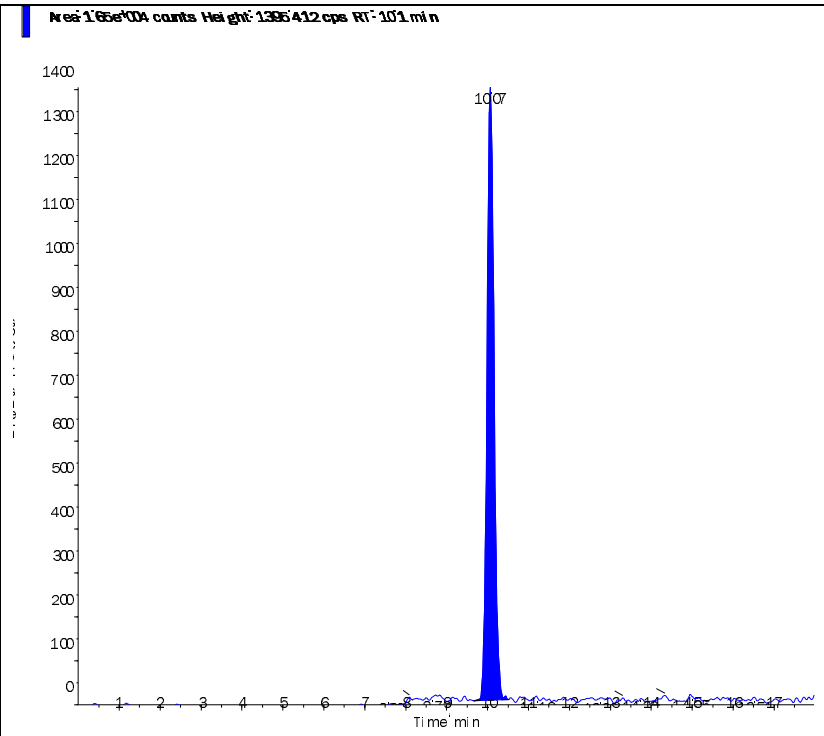
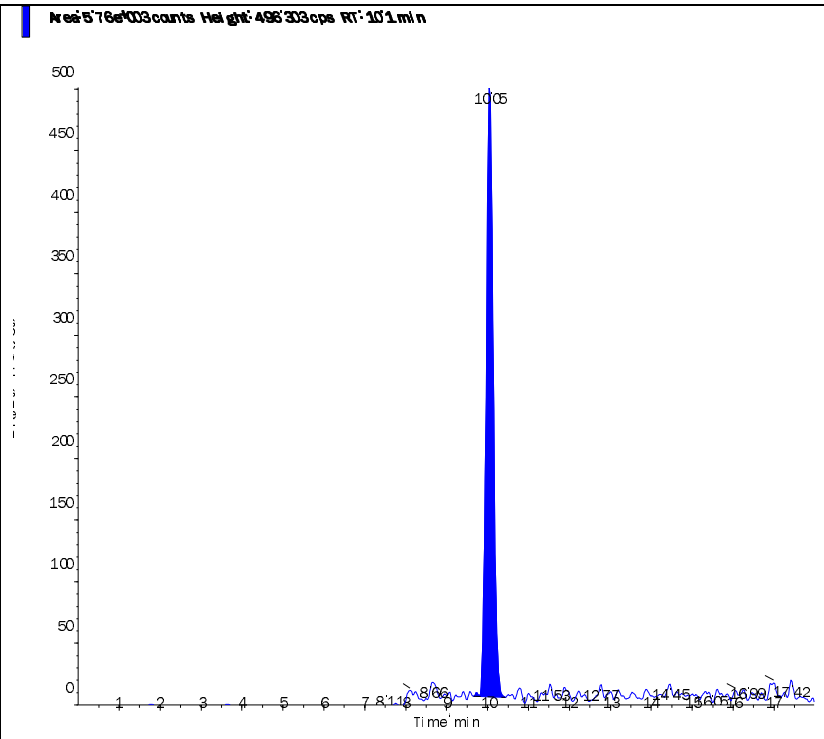
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.140e+05	10.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.650e+04	10.10	N/A	0.206
Perchlorate conf	5.760e+03	10.10	N/A	0.211

O18LP (Internal Standard)

RT (Exp. RT): 10.10(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.10 (9.86) min Calculated conc: 0.206 ng/ml Area Ratio: 0.053 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.10 (9.82) min Calculated conc: 0.211 ng/ml Area Ratio: 0.018 Sample Type: (Unknown)	

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Data File	LM26653.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	8/29/2014 11:58:30 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

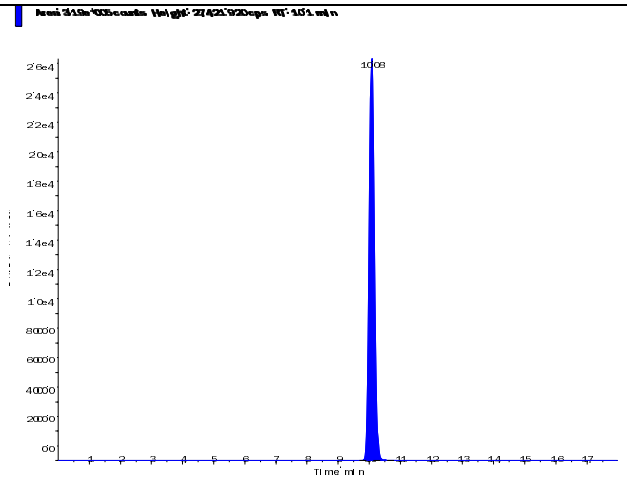
Sample Name	WG490445-08 MRL (0.2ug/L)	**Injection Vial**	2.00
Data File	LM26653.wiff	**Injection Volume**	10.00
Acquisition Date	8/29/2014 11:58:30 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG490445-08	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.190e+05	10.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.650e+04	10.10	N/A	0.202
Perchlorate conf	5.460e+03	10.10	N/A	0.196

O18LP (Internal Standard)

RT (Exp. RT): 10.10(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



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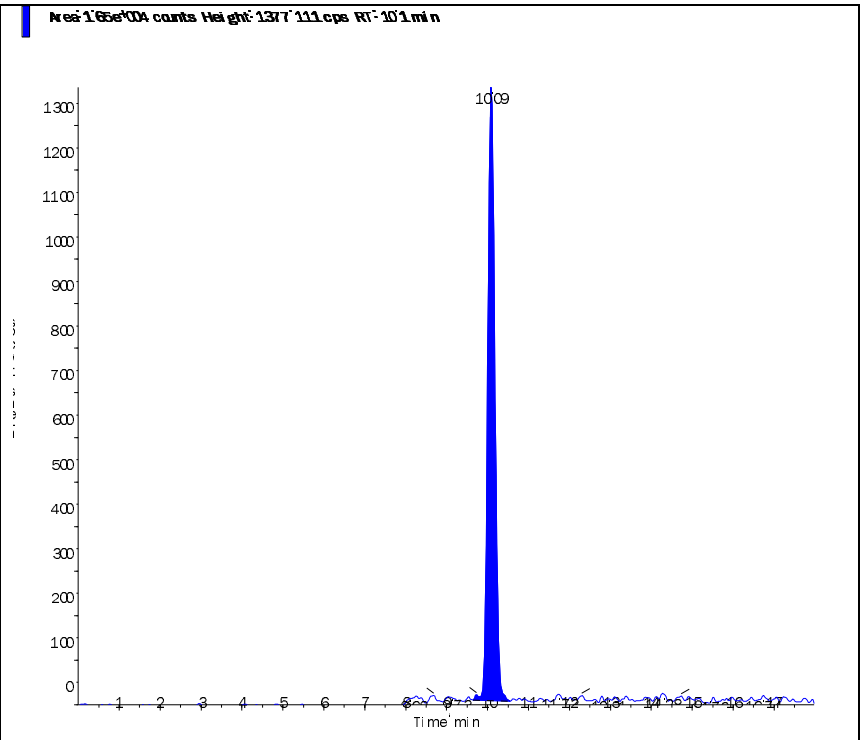
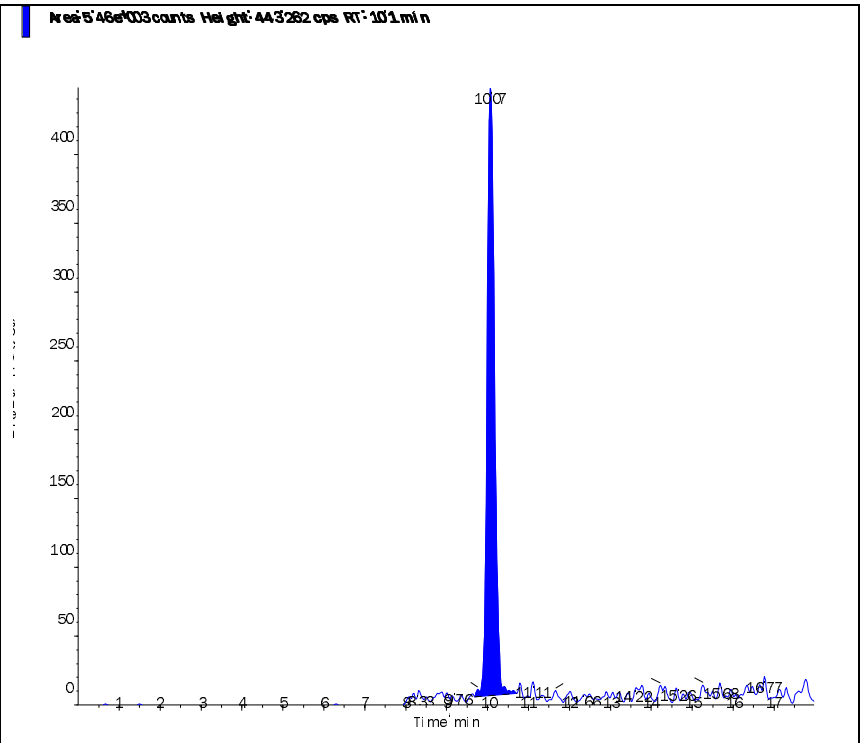
Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.10 (9.86) min Calculated conc: 0.202 ng/ml Area Ratio: 0.052 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.10 (9.82) min Calculated conc: 0.196 ng/ml Area Ratio: 0.017 Sample Type: (Unknown)	

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Data File	LM26619.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	8/29/2014 1:14:42 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

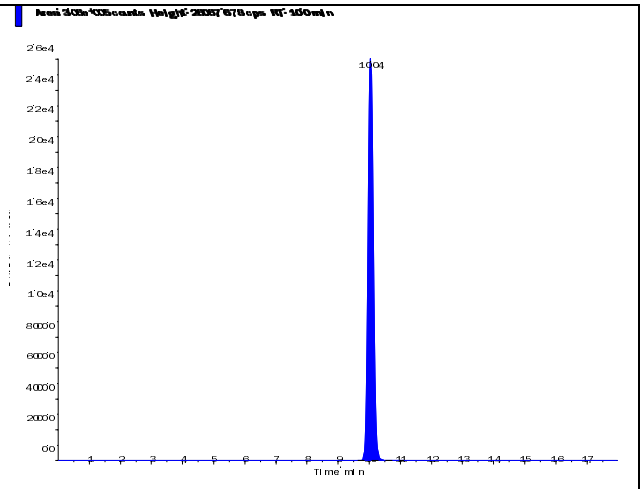
Sample Name	WG490448-01 CCB	**Injection Vial**	1.00
Data File	LM26619.wiff	**Injection Volume**	10.00
Acquisition Date	8/29/2014 1:14:42 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG490448-01	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

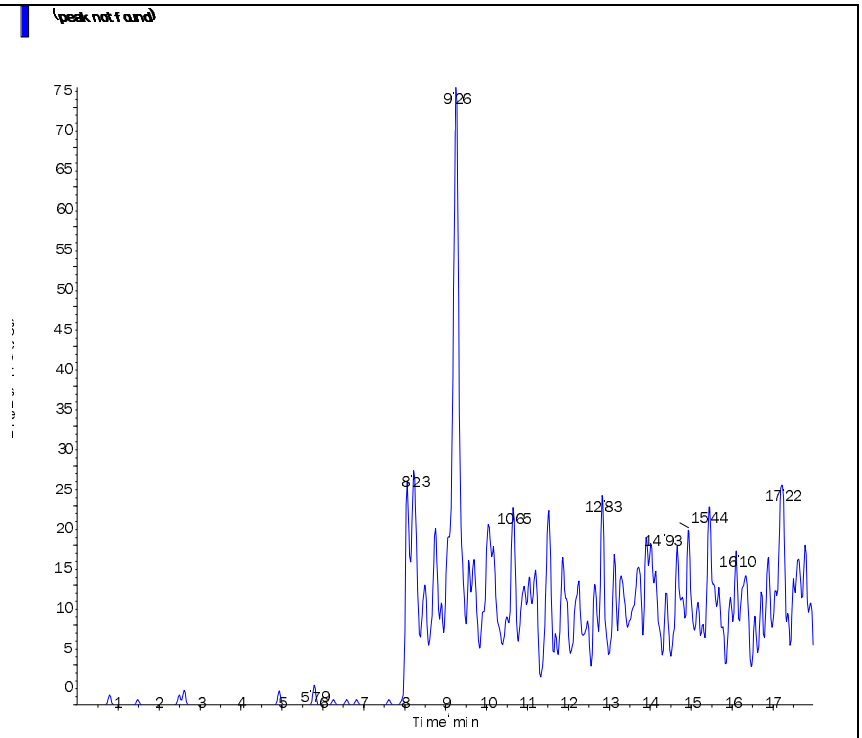
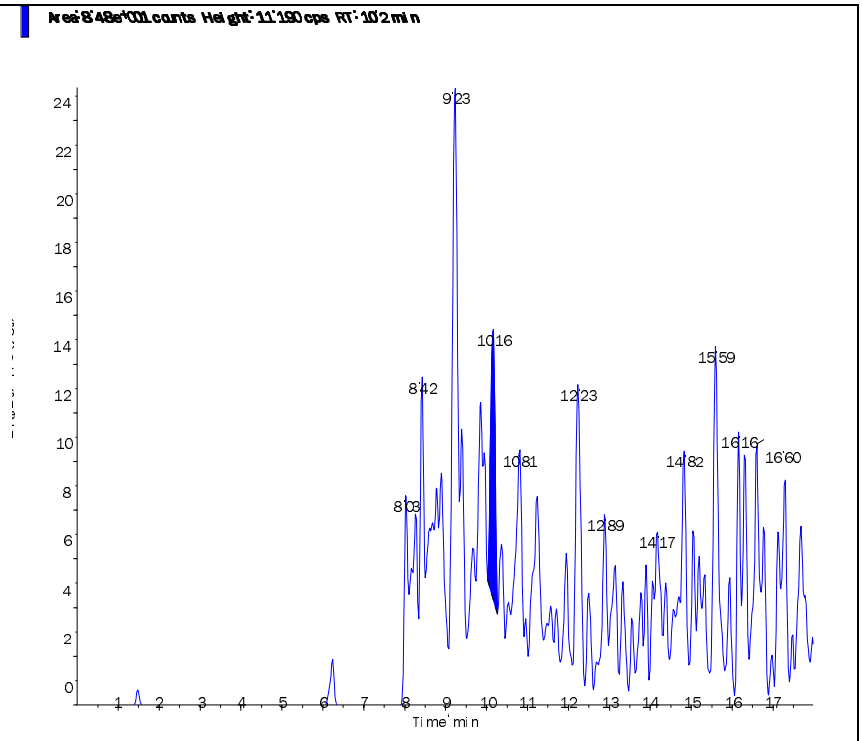
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.060e+05	10.00	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	0.000e+00	0.00	N/A	No Peak
Perchlorate conf	8.480e+01	10.20	N/A	< 0

O18LP (Internal Standard)

RT (Exp. RT): 10.00(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 0.00 (9.86) min Calculated conc: No Peak ng/ml Area Ratio: 0.00 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.20 (9.82) min Calculated conc: < 0 ng/ml Area Ratio: 0.00 Sample Type: (Unknown)	

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Data File	LM26634.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	8/29/2014 5:58:42 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

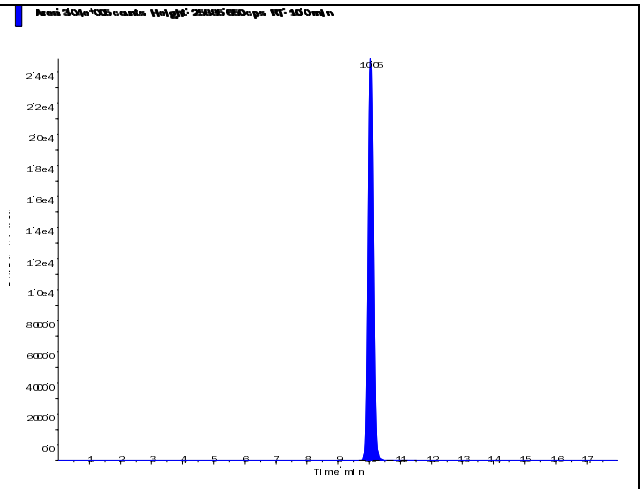
Sample Name	WG490448-04 CCB	**Injection Vial**	1.00
Data File	LM26634.wiff	**Injection Volume**	10.00
Acquisition Date	8/29/2014 5:58:42 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG490448-04	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.040e+05	10.00	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	0.000e+00	0.00	N/A	No Peak
Perchlorate conf	3.190e+02	10.10	N/A	0.0085

O18LP (Internal Standard)

RT (Exp. RT): 10.00(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



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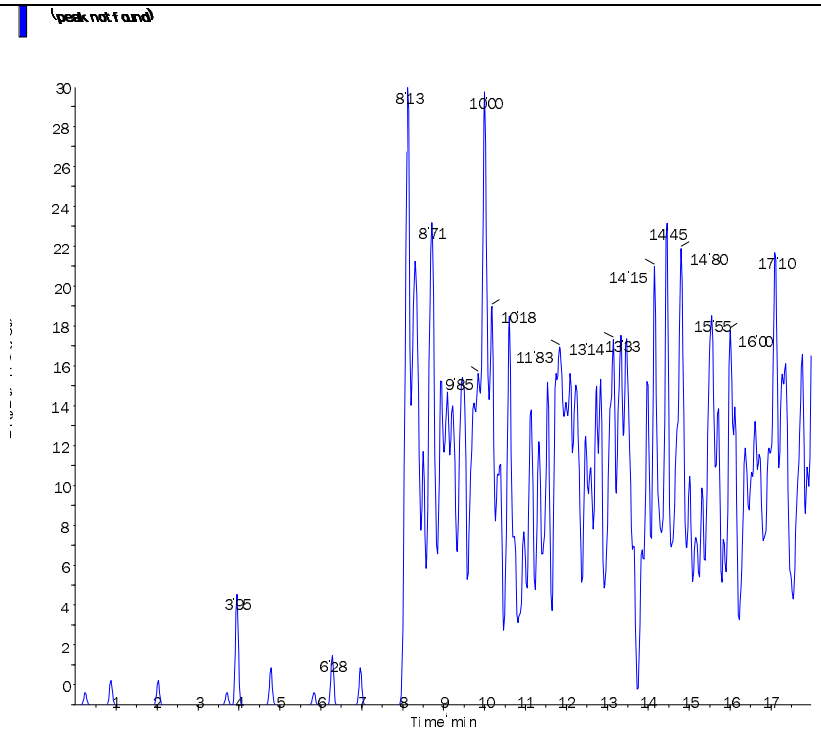
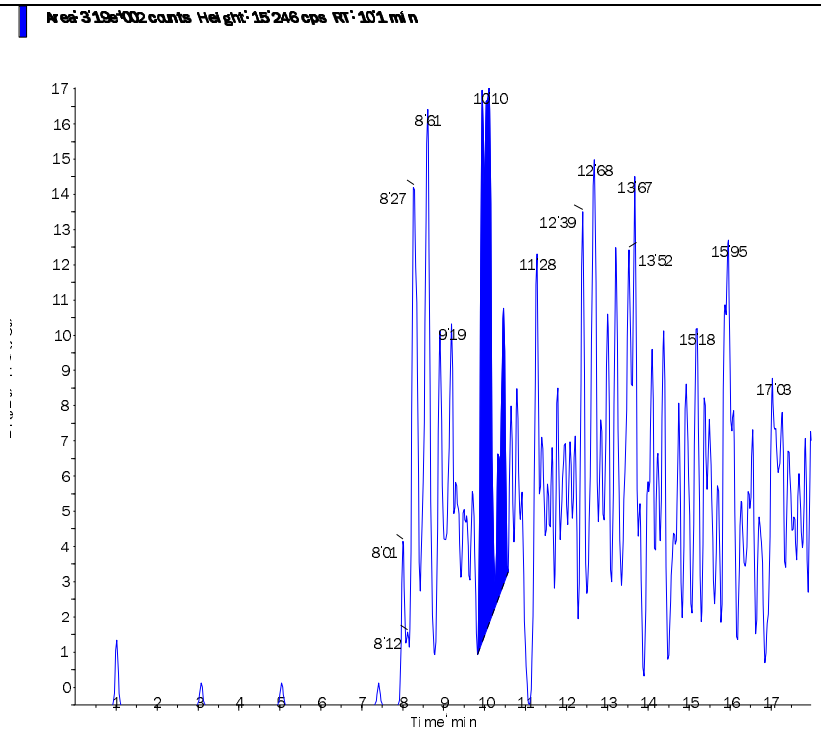
Perchlorate (98.8/83.3 amu) RT (Exp. RT): Calculated conc: Area Ratio: Sample Type:	0.00 (9.86) min No Peak ng/ml 0.00 (Unknown)



Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): Calculated conc: Area Ratio: Sample Type:	10.10 (9.82) min 0.0085 ng/ml 0.001 (Unknown)



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Created with Analyst Reporter
Printed: 9/2/2014 12:40 PM

Data File	LM26647.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	8/29/2014 10:04:53 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

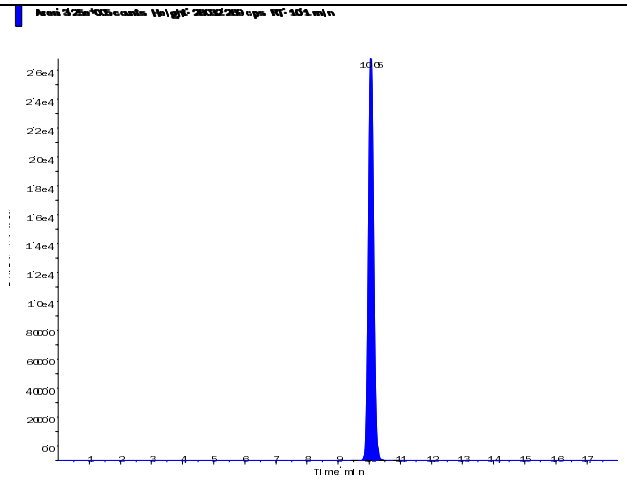
Sample Name	WG490448-06 CCB	**Injection Vial**	1.00
Data File	LM26647.wiff	**Injection Volume**	10.00
Acquisition Date	8/29/2014 10:04:53 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG490448-06	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

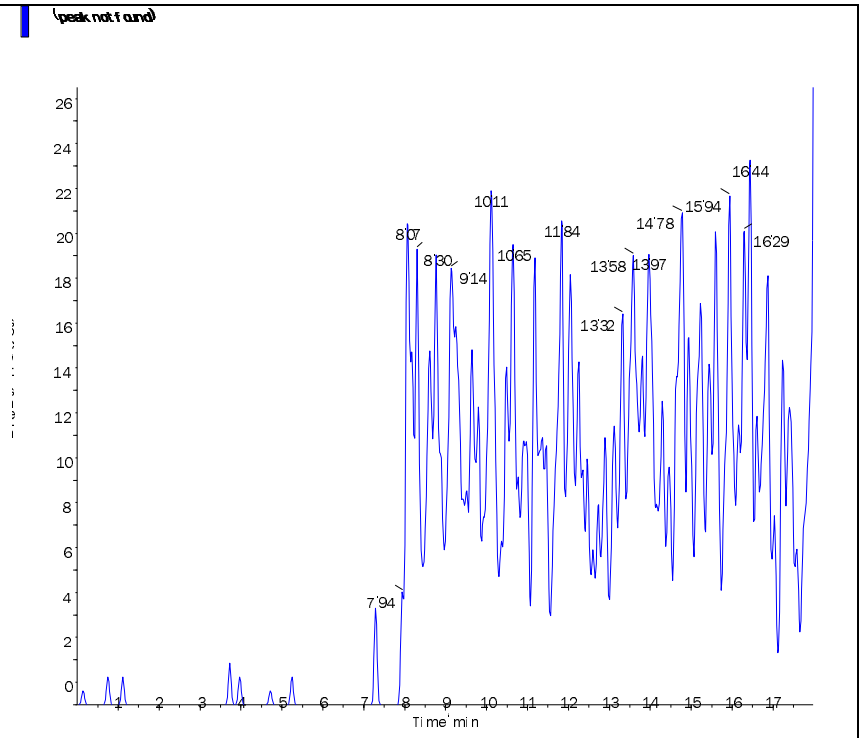
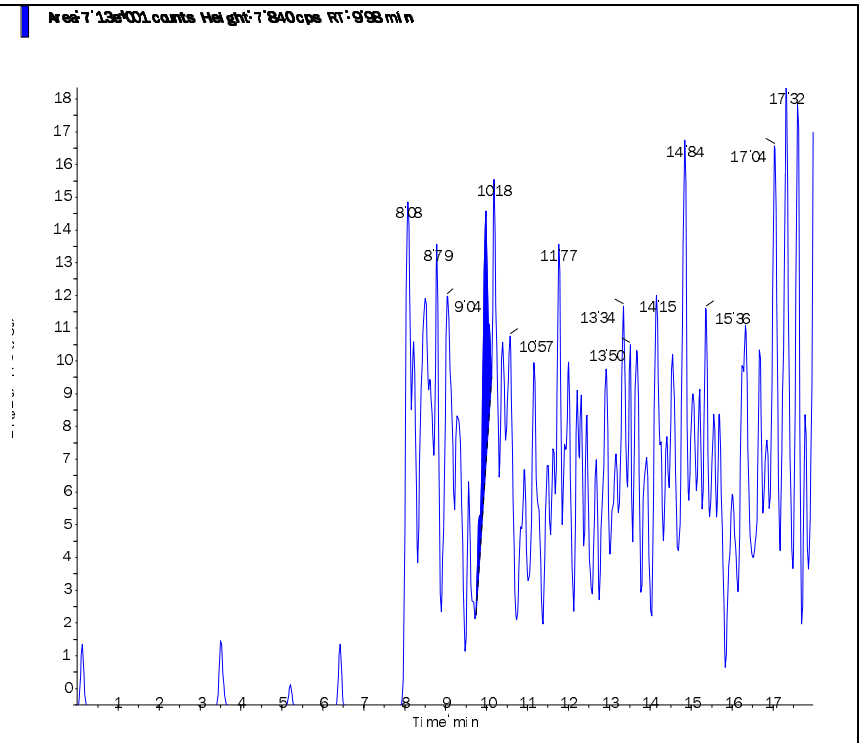
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.250e+05	10.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	0.000e+00	0.00	N/A	No Peak
Perchlorate conf	7.130e+01	9.98	N/A	< 0

O18LP (Internal Standard)

RT (Exp. RT): 10.10(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 0.00 (9.86) min Calculated conc: No Peak ng/ml Area Ratio: 0.00 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 9.98 (9.82) min Calculated conc: < 0 ng/ml Area Ratio: 0.00 Sample Type: (Unknown)	

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Created with Analyst Reporter
Printed: 9/2/2014 12:42 PM

Data File	LM26654.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	8/30/2014 12:17:28 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

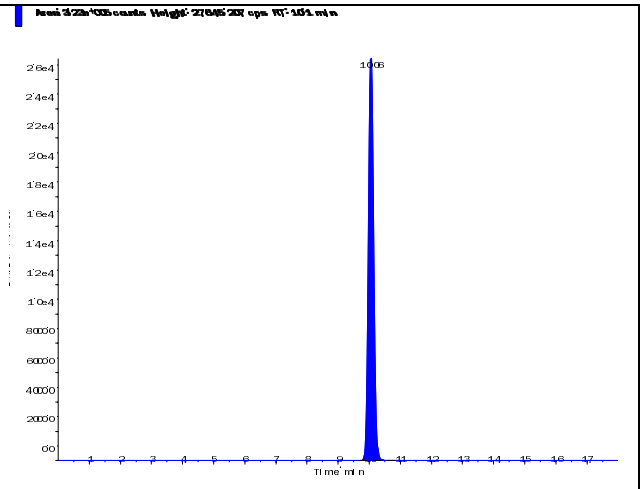
Sample Name	WG490448-08 CCB	**Injection Vial**	1.00
Data File	LM26654.wiff	**Injection Volume**	10.00
Acquisition Date	8/30/2014 12:17:28 AM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG490448-08	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.230e+05	10.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	2.000e+02	10.00	N/A	< 0
Perchlorate conf	0.000e+00	0.00	N/A	No Peak

O18LP (Internal Standard)

RT (Exp. RT): 10.10(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



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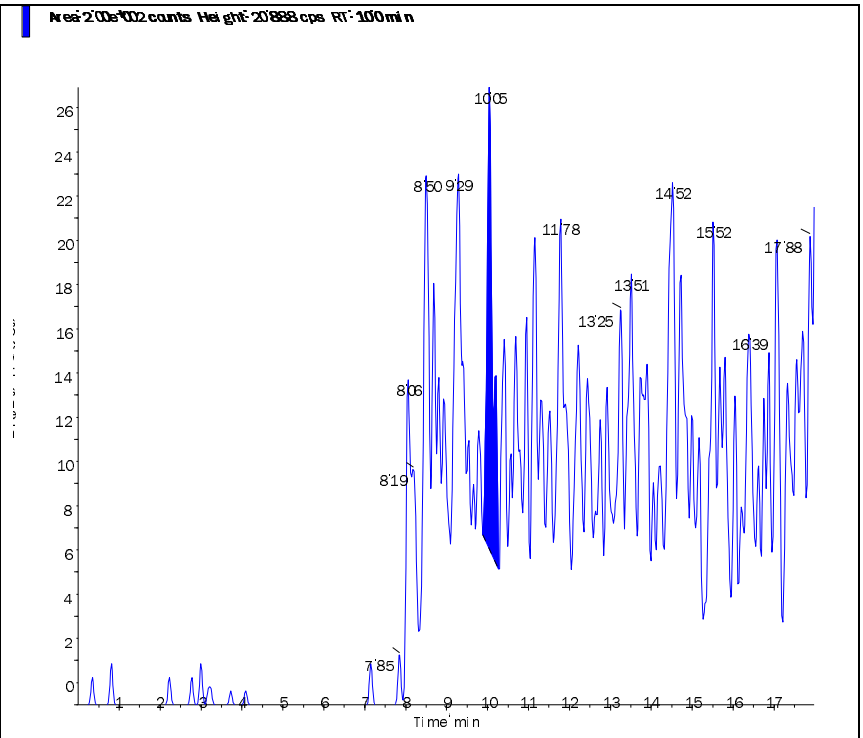
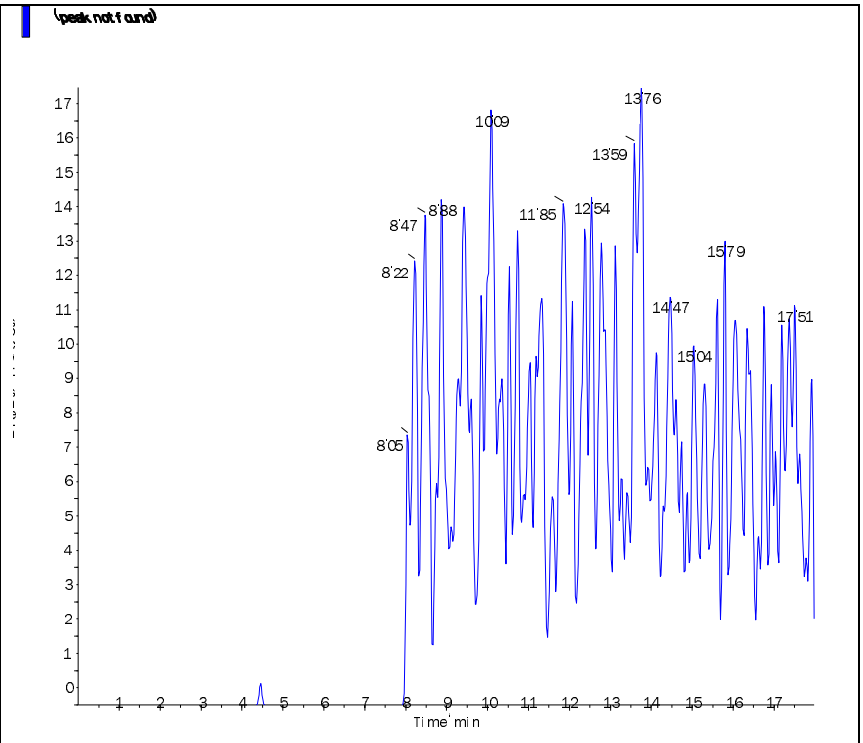
Created with Analyst Reporter
Printed: 9/2/2014 12:42 PM

Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.00 (9.86) min Calculated conc: < 0 ng/ml Area Ratio: 0.001 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 0.00 (9.82) min Calculated conc: No Peak ng/ml Area Ratio: 0.00 Sample Type: (Unknown)	

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Created with Analyst Reporter
Printed: 9/2/2014 12:32 PM

Data File	LM26622.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	8/29/2014 2:11:32 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

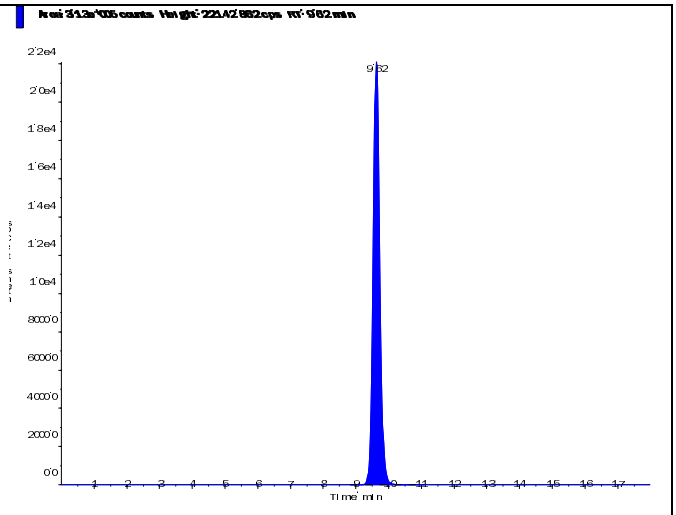
Sample Name	WG490445-01 MCT (0.2ug/L)	**Injection Vial**	4.00
Data File	LM26622.wiff	**Injection Volume**	10.00
Acquisition Date	8/29/2014 2:11:32 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG490445-01	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

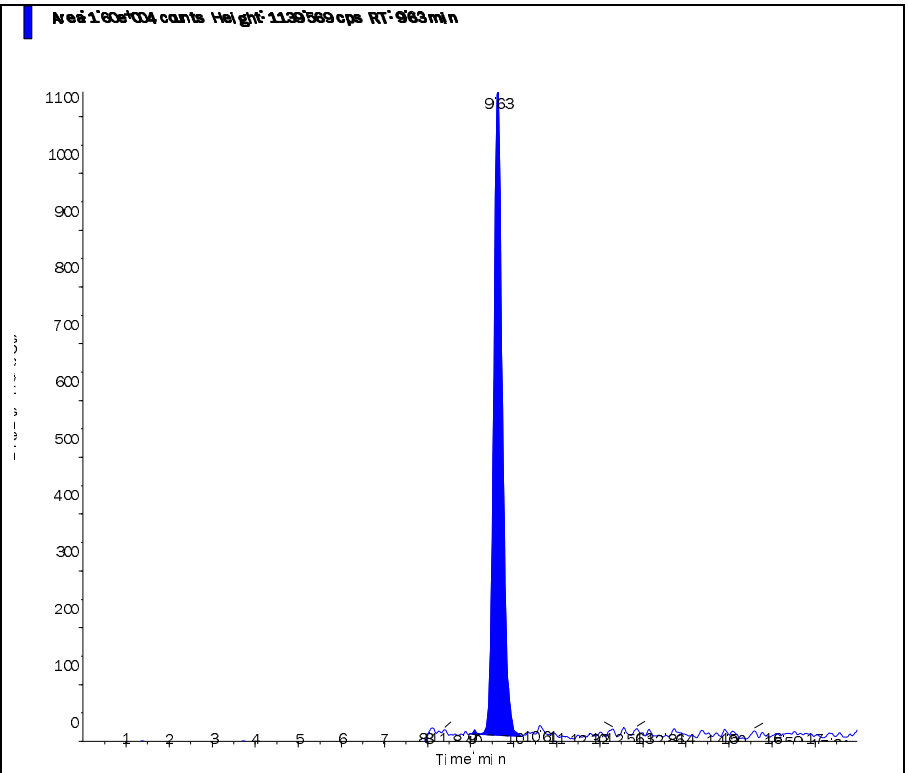
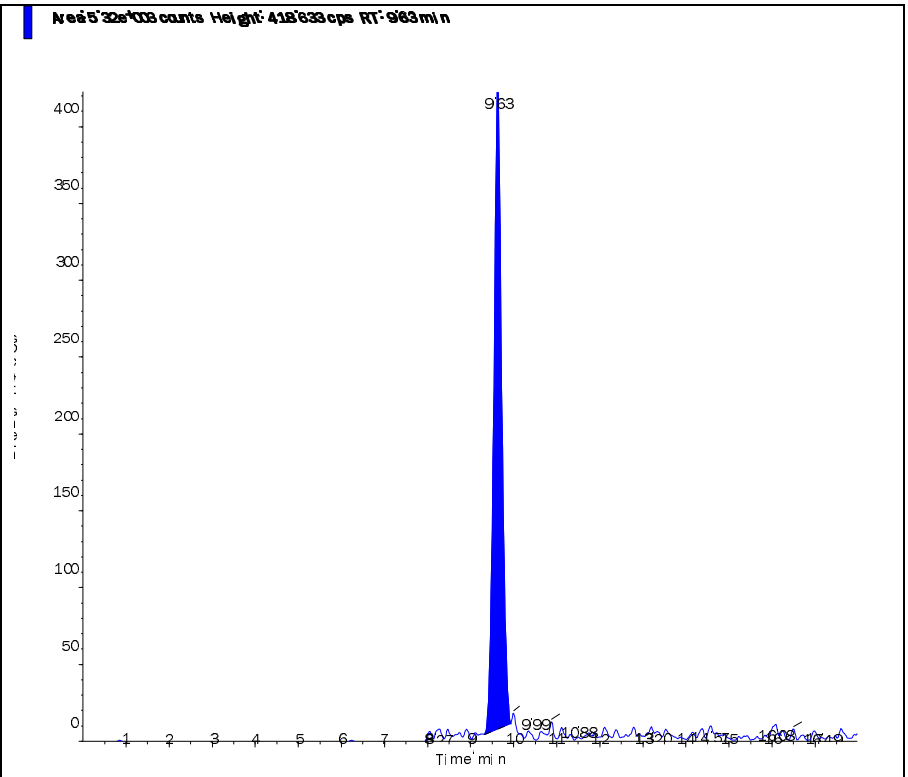
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.130e+05	9.62	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.600e+04	9.63	N/A	0.20
Perchlorate conf	5.320e+03	9.63	N/A	0.195

O18LP (Internal Standard)

RT (Exp. RT): 9.62(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 9.63 (9.86) min Calculated conc: 0.20 ng/ml Area Ratio: 0.051 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 9.63 (9.82) min Calculated conc: 0.195 ng/ml Area Ratio: 0.017 Sample Type: (Unknown)	

2.2.1.5 Raw QC Data

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Data File	LM26623.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	8/29/2014 2:30:28 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

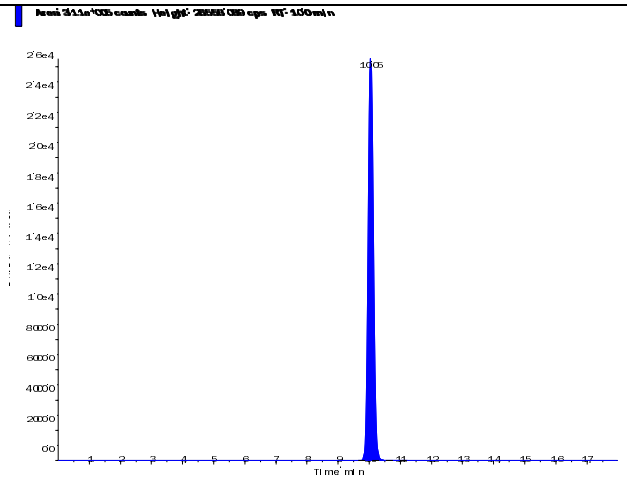
Sample Name	WG490445-02 BLANK	**Injection Vial**	5.00
Data File	LM26623.wiff	**Injection Volume**	10.00
Acquisition Date	8/29/2014 2:30:28 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG490445-02	**Dilution Factor**	1.00
Sample Comment	11.00	**Weight to Volume**	0.00

Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.110e+05	10.00	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	5.020e+02	10.10	N/A	0.0036
Perchlorate conf	1.860e+02	10.10	N/A	0.0032

O18LP (Internal Standard)

RT (Exp. RT): 10.00(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



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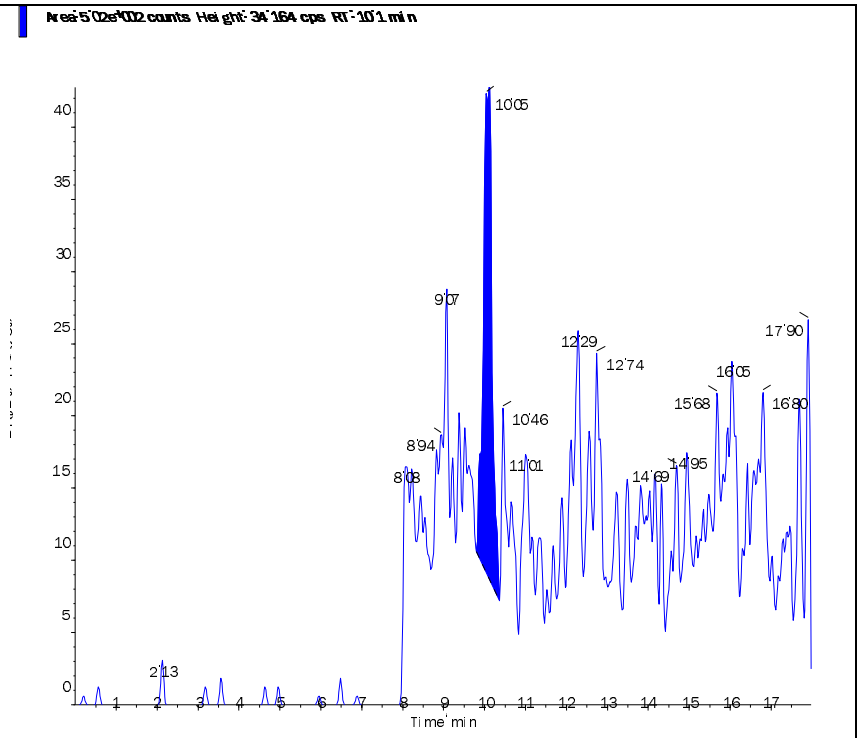
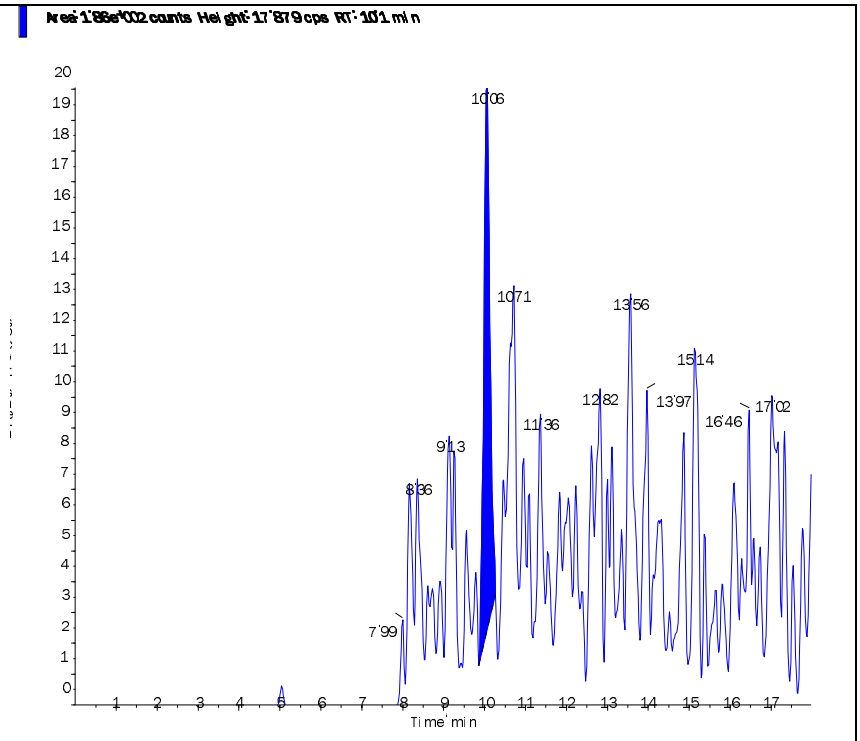
Printed: 9/2/2014 12:32 PM

Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.10 (9.86) min Calculated conc: 0.0036 ng/ml Area Ratio: 0.002 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.10 (9.82) min Calculated conc: 0.0032 ng/ml Area Ratio: 0.001 Sample Type: (Unknown)	

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Created with Analyst Reporter
Printed: 9/2/2014 12:33 PM

Data File	LM26624.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	8/29/2014 2:49:24 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

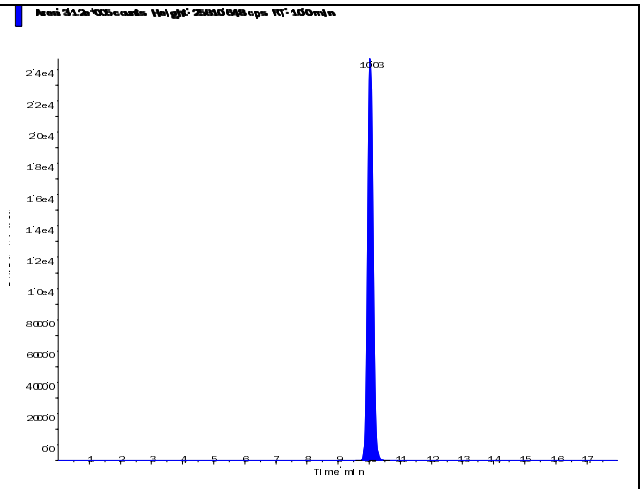
Sample Name	WG490445-03 LCS (0.2ug/L)	**Injection Vial**	6.00
Data File	LM26624.wiff	**Injection Volume**	10.00
Acquisition Date	8/29/2014 2:49:24 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG490445-03	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

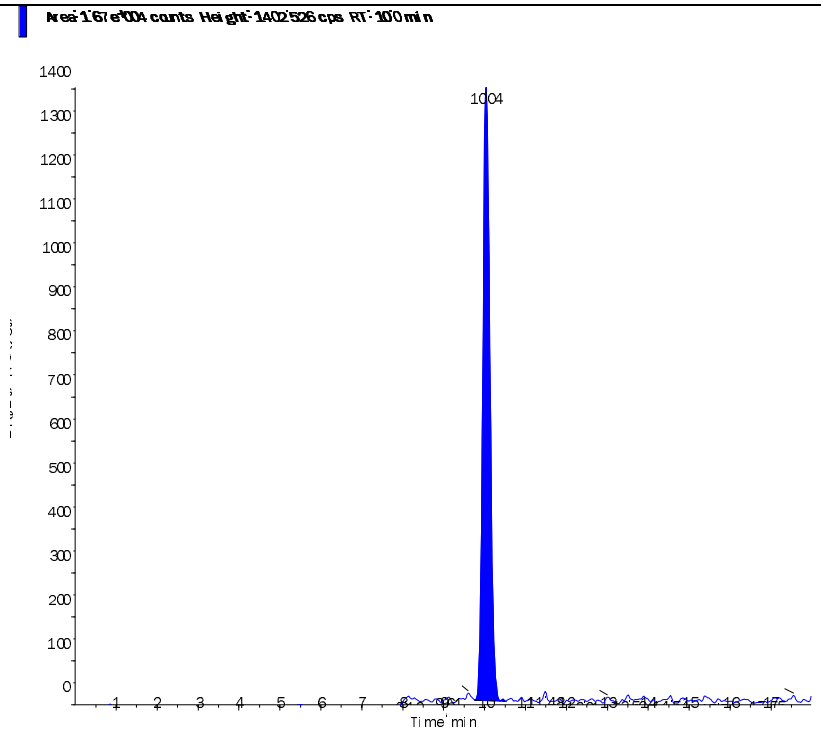
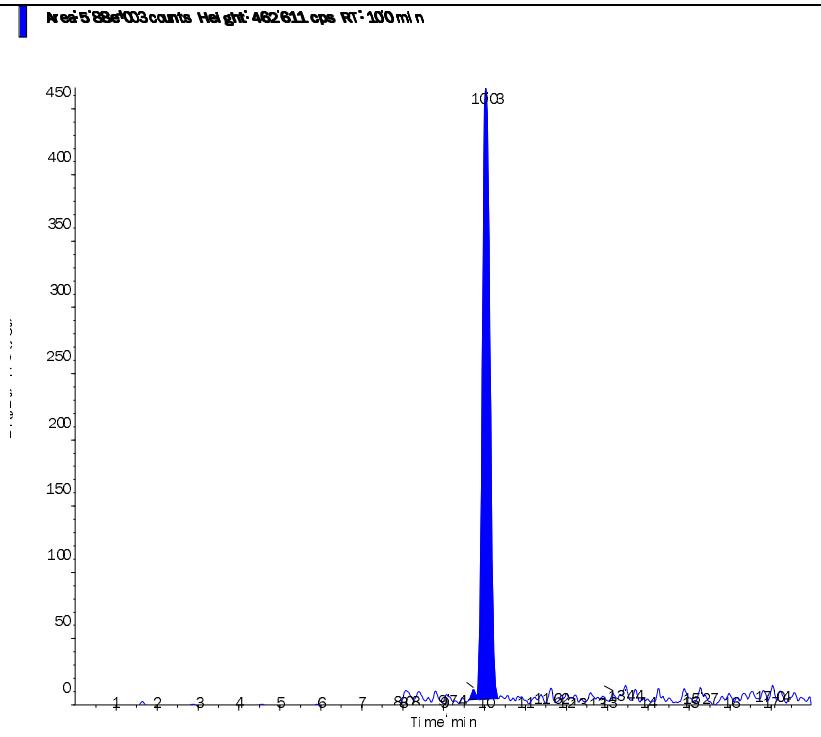
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.120e+05	10.00	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.670e+04	10.00	N/A	0.21
Perchlorate conf	5.880e+03	10.00	N/A	0.217

O18LP (Internal Standard)

RT (Exp. RT): 10.00(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.00 (9.86) min Calculated conc: 0.21 ng/ml Area Ratio: 0.053 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.00 (9.82) min Calculated conc: 0.217 ng/ml Area Ratio: 0.019 Sample Type: (Unknown)	

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Created with Analyst Reporter
Printed: 9/2/2014 12:41 PM

Data File	LM26651.wiff	**Result Table**	082914_JWR.rdb
Acquisition Date	8/29/2014 11:20:39 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Instrument Name**	API 4000
Project	Perchlorate\2009_07_22		

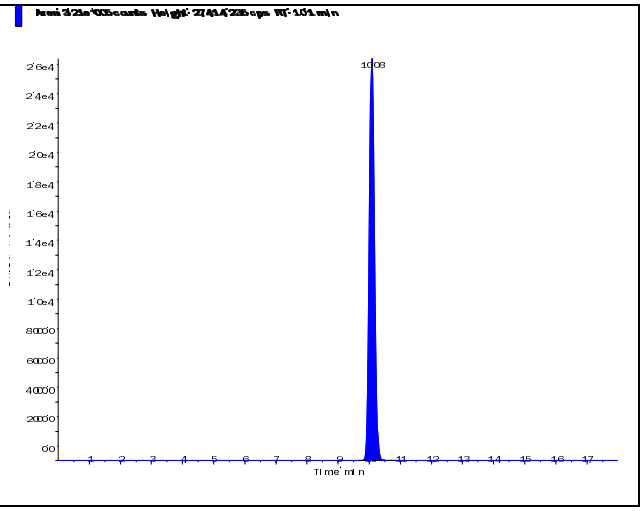
Sample Name	WG490445-04 LCS2 (0.2ug/L)	**Injection Vial**	27.00
Data File	LM26651.wiff	**Injection Volume**	10.00
Acquisition Date	8/29/2014 11:20:39 PM	**Algorithm Used**	Analyst Classic
Acquisition Method	062911.dam	**Sample Type**	Unknown
Instrument Name	API 4000	**Result Table**	082914_JWR.rdb
Sample ID	WG490445-04	**Dilution Factor**	1.00
Sample Comment	1,1 STD65194	**Weight to Volume**	0.00

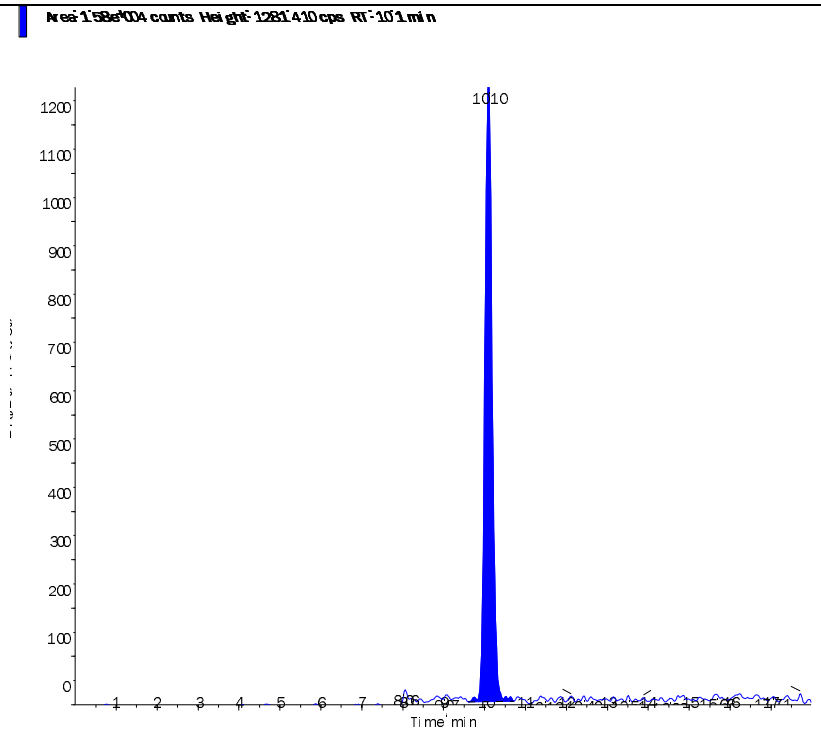
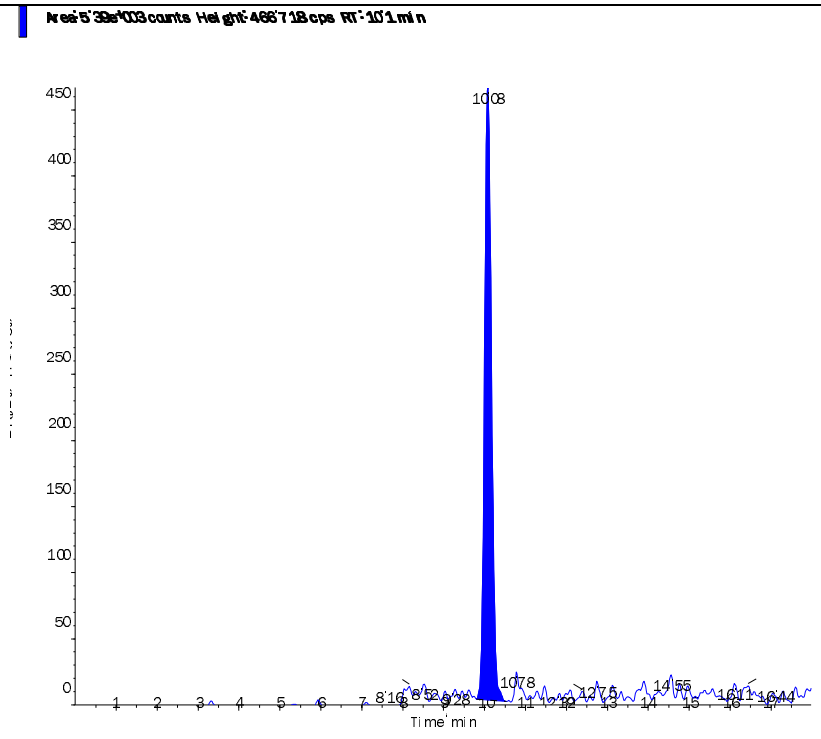
Internal Standard	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
O18LP	3.210e+05	10.10	5.00	-

Target Analyte	Area (cps)	RT (min)	Target conc. (ug/L)	Calc. Conc. (ug/L)
Perchlorate	1.580e+04	10.10	N/A	0.193
Perchlorate conf	5.390e+03	10.10	N/A	0.193

O18LP (Internal Standard)

RT (Exp. RT): 10.10(9.84) min
Concentration: 5.00 ug/L
Sample Type: (Unknown)



Perchlorate (98.8/83.3 amu) RT (Exp. RT): 10.10 (9.86) min Calculated conc: 0.193 ng/ml Area Ratio: 0.049 Sample Type: (Unknown)	
Perchlorate conf (100.8/85.2 amu) RT (Exp. RT): 10.10 (9.82) min Calculated conc: 0.193 ng/ml Area Ratio: 0.017 Sample Type: (Unknown)	

3.0 Attachments

Microbac Laboratories Inc.
Ohio Valley Division Analyst List
September 4, 2014

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001 – BIO-CHEM TESTING WVDEP 220	002 – REIC Consultants, Inc. WVDEP 060
003 – Sturm Environmental	004 – MICROBAC PITTSBURGH
005 – ES LABORATORIES	006 – ALCOSAN LABORATORIES
007 – ALS LABORATORIES	008 – BENCHMARK LABORATORIES
010 – MICROBAC CHICAGOLAND	ADC – ANTHONY D. CANTER
ADG – APRIL D. GREENE	ALS – ADRIANE L. STEED
AWE – ANDREW W. ESSIG	AZH – AFTER HOURS
BJO – BRIAN J. OGDEN	BKT – BRENDAN TORRENCE
BLG – BRENDA L. GREENWALT	BRG – BRENDA R. GREGORY
CAA – CASSIE A. AUGENSTEIN	CAF – CHERYL A. FLOWERS
CEB – CHAD E. BARNES	CJR – COURTNEY J. REXROAD
CLC – CHRYS L. CRAWFORD	CLS – CARA L. STRICKLER
CLW – CHARISSA L. WINTERS	CPD – CHAD P. DAVIS
CSH – CHRIS S. HILL	DAK – DEAN A. KETELSEN
DCM – DAVID C. MERCKLE	DEV – DAVID E. VANDENBERG
DIH – DEANNA I. HESSON	DLB – DAVID L. BUMGARNER
DLP – DOROTHY L. PAYNE	DSM – DAVID S. MOSSOR
ECL – ERIC C. LAWSON	ENY – EMILY N. YOAK
EPT – ETHAN P. TIDD	ERP – ERIN R. PORTER
FJB – FRANCES J. BOLDEN	JBK – JEREMY B. KINNEY
JDH – JUSTIN D. HESSON	JDS – JARED D. SMITH
JJS – JOHN J. STE MARIE	JLL – JOHN L. LENT
JMW – JEANA M. WHITE	JTP – JOSHUA T. PEMBERTON
JWR – JOHN W. RICHARDS	JWS – JACK W. SHEAVES
JYH – JI Y. HU	KAJ – KELLIE A. JOHNSON
KDW – KATHRYN D. WELCH	KEB – KATIE E. BARNES
KHR – KIM H. RHODES	KRA – KATHY R. ALBERTSON
KRB – KAELY R. BECKER	KRP – KATHY R. PARSONS
LEC – LAURA E. CARPENTER	LKN – LINDA K. NEDEFF
LLS – LARRY L. STEPHENS	LSB – LESLIE S. BUCINA
MBK – MORGAN B. KNOWLTON	MDA – MIKE D. ALBERTSON
MDC – MIKE D. COCHRAN	MES – MARY E. SCHILLING
MLB – MEGAN L. BACHE	MMB – MAREN M. BEERY
MRT – MICHELLE R. TAYLOR	MSW – MATT S. WILSON
PDM – PIERCE D. MORRIS	PIT – MICROBAC WARRENDALE
PRL – PAIGE R. LAMB	PSW – PEGGY S. WEBB
QX – QIN XU	RAH – ROY A. HALSTEAD
REK – BOB E. KYER	RLB – BOB BUCHANAN
RM – RAYMOND MALEKE	RNP – RICK N. PETTY
SAV – SARAH A. VANDENBERG	SDC – SHALYN D. CONLEY
SLM – STEPHANIE L. MOSSBURG	SLP – SHERI L. PFALZGRAF
TB – TODD BOYLE	TMB – TIFFANY M. BAILEY
TMM – TAMMY M. MORRIS	VC – VICKI COLLIER
WJB – WILL J. BEASLEY	WRR – WESLEY R. RICHARDS
WTD – WADE T. DELONG	XXX – UNAVAILABLE OR SUBCONTRACT

Microbac Laboratories Inc.
List of Valid Qualifiers
September 04, 2014

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
H1	Sample analysis performed past holding time.
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value; the analyte concentration was less than the RL/LOQ.
J,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.
J,H1	The reported result is an estimated value. Sample was analyzed past holding time.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentativlely identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL/MDL).
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, H1	Not detected; Sample analysis performed past holding time.
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
Q,H1	One or more quality control criteria failed. Sample analyzed past holding time. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.
TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.
U	Analyte was not detected. The concentration is below the reported LOD.
U,H1	Not detected; Sample analysis performed past holding time.

Microbac Laboratories Inc.
List of Valid Qualifiers
September 04, 2014

Qualkey: DOD

UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

AECOM

Chain of Custody Record

COC Number:

Laboratory: Microbac POC: Kathy Albertson	Project Manager: Dave Wacker	Mail to: Linda Raabe	
Address: 158 Starlite Drive	Phone/Fax Number: 210-296-2000	112 East Pecan STE. 400	
Marietta, OH 45750	Sampler (print): Scott Beesinger	San Antonio, TX 78205	
Phone: 1-800-373-4071		210-296-2000	
Client: AECOM	Signature: Scott Beesinger	Fed Ex Airbill No:	
Address: 112 East Pecan Ste. 400			
San Antonio, TX 78205	pH:	Program:	
Turn Around Time: STANDARD			
Project Name/Location: Longhorn			
Project Number: 60274185.0013BF			

Site Name	Sample ID/Location ID	SBD	SED	Date	Time	Comp*	Grab	Matrix	Number of Containers	VOC	Perchlorate	SA CODE	Cooler ID	LOT CONTROL NUMBERS ABLOT	EBLOT	TBLOT
Pad'matter	PW134-082414			8/24/14	1455		✓	W	4	✓	✓					
	Trip Blank			8/24/14			✓	W	2	✓						

Microbac OVD
Received: 08/26/2014 10:25
By: COURTNEY REXROAD
221000058660
Courtney Rexroad

Comments: STANDARD TAT Split Sampling

1 (Signature) Scott Beesinger	Date 8/25/14	Time 1000	Received by: (Signature)	Received by: (Signature)	Date	Time	Relinquished by: (Signature)
Relinquished by: (Signature)	Date	Time	Received for Laboratory by: (Signature)	Date	Time		Remarks:

*Homogenize all composite samples prior to analysis

Distribution: White to Laboratory, Canary to Project Manager, Pink QA/QC Manager

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L14081444
Account: 2551
Project: 2551.096
Samples: 2
Due Date: 05-SEP-2014

Samplenum	Container ID	Products
L14081444-01	426199	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	26-AUG-2014 16:33	CJR		<2
2	ANALYZ	V1	ORG4	27-AUG-2014 08:58	JLL	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	26-AUG-2014 16:33	CJR		<2
2	ANALYZ	V1	ORG4	27-AUG-2014 08:58	JLL	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	26-AUG-2014 16:33	CJR		<2
2	ANALYZ	V1	ORG4	27-AUG-2014 08:58	JLL	CLS	

Samplenum	Container ID	Products
L14081444-01	426200	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	26-AUG-2014 16:33	CJR		
2	ANALYZ	W1	SEM	28-AUG-2014 10:20	JWR	CLS	

Samplenum	Container ID	Products
L14081444-02	426201	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	26-AUG-2014 16:33	CJR		<2
2	ANALYZ	V1	ORG4	27-AUG-2014 08:58	JLL	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	26-AUG-2014 16:33	CJR		<2
2	ANALYZ	V1	ORG4	27-AUG-2014 08:58	JLL	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

NELAP Addendum - May 22, 2014

Non-NELAP LIMS Product and Description

The following is a list of those tests that are not included in the Microbac – OVL NELAP Scope of Accreditation:

Heat of Combustion (BTU)
Total Halide by Bomb Combustion (TX)
Particle Sizing - 200 Mesh (PS200)
Specific Gravity/Density (SPGRAV)
Total Residual Chlorine (CL-TRL)
Total Volatile Solids (all forms) (TVS)
Total Coliform Bacteria (all methods)
Fecal Coliform Bacteria (all methods)
Sulfite (SO3)
Thiodiglycol (TDG-LCMS)
Acetate (HPLC-UV)
Formate (HPLC-UV)
Acetaldehyde (HPLC-UV)
Propionaldehyde (HPLC-UV)
Fluoroborate (ISE)

SOLID AND HAZARDOUS CHEMICALS
Nitrogen, Ammonia by Method 350.1
Chromium, Hexavalent, Leachable by SM3500 Cr-B 2009
Phenolics, Total by Method 420.1

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVL HPLC02/HPLC-UV

Nitroglycerin
Acetic acid
Butyric acid
Lactic acid
Propionic acid
Pyruvic acid

OVL MSS01/GC-MS

1,4-Phenylenediamine
1-Methylnaphthalene
1,4-Dioxane
Atrazine
Benzaldehyde
Biphenyl
Caprolactam

Hexamethylphosphoramide (HMPA)
Pentachlorobenzene
Pentachloroethane

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVL MSV0I/GC-MS

1, 1, 2-Trichloro-1,2,2-trifluoroethane
1,3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
T-amylmethylether (TAME)
Tetrahydrofuran (THF)

OVL RSKOI/GC-FID

Isobutane
n-Butane
Propane
Propylene
Propyne

OVL HPLC07/HPLC-MS-MS

Hexamethylphosphoramide (XMPA-LCMS)

SOLID AND HAZARDOUS CHEMICALS

OVL MSS0I/GC-MS

1-Methylnaphthalene
Benzaldehyde
Biphenyl
Caprolactam
Pentachloroethane

NELAP Accreditation by Laboratory SOP

SOLID AND HAZARDOUS CHEMICALS

OVL MSV0I/GC-MS

1.3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
lsoprene
Methylacetate
Methylcyclohexane
n-Hexane
T-amylmethylether (TAME)

Comprehensive Land Use Control (LUC) Management Plan

Former Longhorn Army Ammunition Plant (LHAAP)
Karnack, Texas

March 2, 2015

COMPREHENSIVE LUC & NOTIFICATION MANAGEMENT PLAN
REVISION LOG

Fiscal Year	Date	Reason for Revision	Approved *		
			Army	EPA	TCEQ
Original	9-13-07	N/A			
2008		None Required			
2009		None Required			
2010		None Required			
2011		None Required			
2012	2-4-13	Add LHAAP-06,-07,-08,-35/36,-35B (37)/67, -46, -49, -50,-51,-55,-35A (58),-59,-60,-66,-68, Pistol Range, LHAAP-001-R-01 and LHAAP-003-R-01			
2013	10-1-13	None Required			
2014	12-17-14	Add LHAAP-02, -03, -19, -56, -65, -68, -69 and Notices for LHAAP-46, and -67	3-17-15	3-24-15	3-27-15

* Approval by all three parties required during the first quarter of each fiscal year.

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Revision Log……ii
LUC & Notification Management Plan….....1

List of Sites

LHAAP-02 Vacuum Truck Overnight Parking (LHAAP-02)

Nonresidential Land Use site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58) Pending

LHAAP-03 Former Waste Collection Pad Building 722-P Paint Shop (LHAAP-03)

Nonresidential Land Use site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58) Pending

LHAAP-06 Building 54F Solvent (LHAAP-06)

Notice of Nonresidential Land Use for LHAAP-06 Filed in Public Records of Harrison County, Texas (including survey plat)

LHAAP-07 Building 50G Drum Processing (LHAAP-07)

Notice of Nonresidential Land Use for LHAAP-07 Filed in Public Records of Harrison County, Texas (including survey plat)

LHAAP-08 Former Sewage Treatment Plant (LHAAP-08)

Notice of Nonresidential Land Use for LHAAP-08 Filed in Public Records of Harrison County, Texas (including survey plat)

LHAAP- 12 Landfill 12 (LHAAP-12)

12-1 LUC Inspection and Maintenance Log

12-2 LUCs from Final Remedial Design Addendum

12-3 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-12 Filed in Public Records of Harrison County, Texas (including survey plat)

12-4 Land Use Control Compliance Inspection Form

LHAAP-19 Construction Materials Landfill (LHAAP-19)

Notice of Land Use Controls and Nonresidential Land Use at LHAAP-19, Filed in the Public Records of Harrison County, Texas (including survey plat)

LHAAP-35/36 Sumps and Waste Rack Sumps (LHAAP-35/36)

Notice of Nonresidential Land Use at Sumps/Waste Rack Sump locations (LHAAP-35/36) Filed in Public Records of Harrison County, Texas (including survey plat)

LHAAP-37 Chemical Laboratory (LHAAP-35B (37))

37-1 LUCs from Final Remedial Design
37-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-35B (37) Filed in Public Records of Harrison County, Texas (including survey plat) Pending
37-3 Land Use Control Compliance Inspection Form

LHAAP-46 Plant 2 Area (LHAAP-46)

46-1 LUCs from Final Remedial Design
46-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-46 Filed in Public Records of Harrison County, Texas (including survey plat)
46-3 Land Use Control Compliance Inspection Form

LHAAP-49 Former Acid Storage Area (LHAAP-49)

Notice of Nonresidential Land Use for LHAAP-49 Filed in Public Records of Harrison County, Texas (including survey plat)

LHAAP-50 Sump Water Storage Tank (LHAAP-50)

50-1 LUCs from Final Remedial Design
50-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-50 Filed in Public Records of Harrison County, Texas (including survey plat) Pending
50-3 Land Use Control Compliance Inspection Form

LHAAP-51 Building 60-B Photo Lab (LHAAP-51)

Notice of Nonresidential Land Use at LHAAP-51 Filed in Public Records of Harrison County, Texas (including survey plat)

LHAAP-55 Septic Tanks (LHAAP-55

Notice of Nonresidential Land Use at Septic Tank locations Filed in Public Records of Harrison County, Texas (including survey plat)

LHAAP-56 Grease Rack (LHAAP-56)

Nonresidential Land Use site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58) Pending

LHAAP-58 Shops Area (LHAAP-35A (58))

58-1 LUCs from Final Remedial Design
58-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-35A (58) Filed in Public Records of Harrison County, Texas (including survey plat) Pending

LHAAP-59 Former Pesticide Storage Building 725 (LHAAP-59)

Notice of Nonresidential Land Use for LHAAP-59 Filed in Public Records of Harrison County, Texas (including survey plat)
Site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58) Pending

LHAAP-60 Former Storage Building 411 & 714 (LHAAP-60)

Notice of Nonresidential Land Use at LHAAP-60 Filed in Public Records of Harrison County, Texas (including survey plat)
Building 714 included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58) Pending

LHAAP-64 Transformer Storage (LHAAP-64)

Notice of Nonresidential Land Use at LHAAP-64 Filed in Public Records of Harrison County, Texas (including survey plat)

LHAAP-65 Flammable Materials Storehouse Building 209 (LHAAP-65)

Nonresidential Land Use site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58) Pending

LHAAP-66 405-L Transformer Yard (LHAAP-66)

Notice of Nonresidential Land Use at LHAAP-66 Filed in Public Records of Harrison County, Texas (including survey plat)

LHAAP-67 Aboveground Storage Tank Farm (LHAAP-67)

67-1 LUCs from Final Remedial Design
67-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-67 Filed in Public Records of Harrison County, Texas (including survey plat)
67-3 Land Use Control Compliance Inspection Form

LHAAP-68 Transformer Storage (LHAAP-68)

Notice of Nonresidential Land Use at LHAAP-68 Filed in Public Records of Harrison County, Texas (including survey plat)
Site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58) Pending

LHAAP-69 Service Station Underground Storage Tank (LHAAP-69)

Nonresidential Land Use site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58) Pending

Pistol Range Pistol Range

Notice of Nonresidential Land Use at Pistol Range Filed in Public Records of Harrison County, Texas (including survey plat)

LHAAP-001-R-01/ LHAAP-003-R-01 South Test Area (LHAAP-001-R-01) and Ground Signal Test Area (LHAAP-003-R-01)

MMRP-1 Draft LUC Inspection and Maintenance Log
MMRP-2 LUCs from Final Remedial Design Pending
MMRP-3 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-001-R-01 and LHAAP-003-R-01 Filed in Public Records of Harrison County, Texas (including survey plat) Pending
MMRP-4 Land Use Control Compliance Inspection Form Pending

Table 1 Summary of Land Use Controls and Notifications
Figure 1 Sites with Land Use Controls
Figure 2 Sites with Restricted Uses Notifications

List of Appendices

Appendix A GSA Transfer Letters

Comprehensive Land Use Control (LUC) & Notification Management Plan, Former Longhorn Army Ammunition Plant (LHAAP), Texas

The purpose of this management plan is to ensure that all site-specific LUCs are compiled into one comprehensive location for both pre-transfer and post-transfer use. Additionally, all nonresidential use notifications required under 30 TAC §335.560(b) are included. This management plan shall be accessible to the property owner, regulators, local government, and the public and will accompany LHAAP's Administrative Record. This plan will be updated as LUC and notification requirements for additional environmental sites are identified; the revision number, date, reason for revision, and author will be documented in the Revision Log. As a document control measure, an annual approval by the three FFA parties, Army, EPA and TCEQ within the first quarter of the fiscal year will confirm the effective date. This approval is required whether or not a revision took place.

Land Use Controls

Land use controls (LUCs) include any type of physical, legal, or administrative mechanism that restricts the use of, or limits access to, real property. LUCs may be a component of an interim or final remedy selected under CERCLA and used to protect human health, the environment, and/or the integrity of an engineered remedy. The LUC performance objectives are established in the site-specific Record of Decision (ROD). The specific LUCs and implementation details are outlined in the corresponding site-specific Remedial Design (RD), a primary document of the Federal Facilities Agreement.

The land use control area is depicted on Figure 1, the site-specific performance objectives and LUCs are presented in Table 1, and the site-specific section contains a LUC Inspection and Maintenance Log, a copy of an approved LUC Remedial Design, Notice of Land Use Controls (including a survey plat) filed in Harrison County public records, and LUC compliance inspection form. Upon USEPA and TCEQ approval of each LUC RD, the LUC requirements will be effective immediately and this management plan will be updated. Once property is transferred, the plan will be amended to include a copy of the transfer letter describing specific LUC obligations assigned to the transferee.

LUCs will remain in place until applicable or relevant and appropriate requirements (ARARs) as established in accordance with the NCP (40 CFR 300) are met; or in the case of a landfill remedy it will remain in place for perpetuity unless otherwise removed by the U.S. Army per agreement with the USEPA and TCEQ. The continued effectiveness of the selected remedy, including LUCs, will be evaluated with the CERCLA 121(c) five-year review process.

Notifications

The future anticipated use of LHAAP is industrial/refuge and is, therefore, consistent with a nonresidential/industrial reuse under the Risk Reduction Rules. As required by 30 TAC §335.560(b) and in accordance with 30 TAC §335.566, a notification must be filed in the Harrison County records stating that the land is considered suitable for future non-residential use. Limited monitoring will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of the sites is consistent with the non-residential use. The non-residential use notification will remain in place until it is demonstrated that the levels of COCs in soil and groundwater allow for unlimited use and unrestricted exposure.

Table 1 –Summary of Land Use Controls and Notifications

Site Name	Transfer Documents		Decision Documents		Land Use Controls					Notifications
IRP MMRP* LHAAP-	GSA Transfer To USFWS	ECP/ ECOP	ROD	DD	Groundwater Use Restriction	Nonresidential Land Use Restriction	Intrusive Activities Prohibition	MEC Warning	Landfill Cap Maintenance	Nonresidential Use Notification
2					**					**
3					**					**
6				2008						√
7				2008						√
8		VI		2008						√
12	2014	V	2007		√	Cap Only	Cap Only		√	√
19		VII		2014		Cap Only	Cap Only			√
35/36		VI		2010						√
37			2010		√					*
46			2010		√					√
49		VI	2010							√
50			2010		√					*
51				2008						√
55		VI		2008						√
56				2014	**					**
58			2010		√					*
59				2008	**					√
60				2008	**					√
64				2008						√

65				2014	**					**
66				2008						√
67			2010		√					√
68				2008	**					√
69				2014	**					**
Pistol Range		VII	2010							√
001-R-01*/003-R-01*		VII	2012		√	√	√	√		√

Pending- not final

* Pending restriction boundary defined

** Nonresidential Land Use site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58)

FIGURES

00194650

DRAFT REQUIRES REVISION

LHAAP_46

LHAAP_58

LHAAP_37

LHAAP_50

LHAAP_67

LHAAP_12

MMRP Site LHAAP-003-R-01

MMRP Site LHAAP-001-R-01

0 1,250 2,500 5,000 7,500 10,000
Feet

N

Legend

- Residential Use and Intrusive Activities Restriction
- Groundwater Use Restriction
- MEC Warning
- Landfill Cap Maintenance
- LHAAP_Surveyed_Boundary

LONGHORN ARMY AMMUNITION PLANT

Figure 1

Sites with Land Use Controls

00194651

DRAFT REQUIRES REVISION

N

LHAAP_59
LHAAP_46
LHAAP_51
Bldg 60-B
LHAAP_06
Bldg 51-F
LHAAP_07
Bldg 60-G
LHAAP_58
LHAAP_07
LHAAP_60D
Bldg 714
LHAAP_68
LHAAP_66
LHAAP_60A
Bldg 411
LHAAP_08
LHAAP_60B
Bldg TS-80
LHAAP_49
LHAAP_37
LHAAP_50
LHAAP_67
LHAAP_60C
Bldg 411-A
LHAAP_64
LHAAP_55
ST-01
LHAAP_12
Pistol Range

LHAAP_35/36
WR Sump 003
LHAAP_35/36
WR Sump 002
LHAAP_35/36
Sump 100
LHAAP_35/36
Sump 101
LHAAP_35/36
Sump 099
LHAAP_55
ST-02
LHAAP_35/36
Sump 098
LHAAP_35/36
Sump 123
LHAAP_35/36
Sump 097
LHAAP_35/36
Sump 094
LHAAP_35/36
Sump 096
LHAAP_55
ST-03
LHAAP_35/36
Sump 095
LHAAP_35/36
WR Sump 001
LHAAP_55
ST-08
LHAAP_55
ST-04
LHAAP_55
ST-05
LHAAP_55
ST-06
LHAAP_55
ST-07
LHAAP_35/36
Sump 102
LHAAP_35/36
Sump 103
LHAAP_35/36
Sump 104
LHAAP_55
ST-10
LHAAP_35/36
Sump 105
LHAAP_55
ST-09

Legend

- Suitable for Nonresidential Use
- LHAAP_Surveyed_Boundary

0 1,250 2,500 5,000 7,500 10,000 Feet

LONGHORN ARMY AMMUNITION PLANT

Figure 2

Sites with Nonresidential Use Notifications

LHAAP - 06

NOTICE OF NONRESIDENTIAL LAND USE FOR LHAAP-06 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

2010-000005555

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005555 **Receipt No:** 1006195 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-06, is the area of a demolished building location known as Building 51-F located within the Plant 3 production area of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-06 is not itself considered an NPL site. Environmental activities at LHAAP-06 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-06 (Building 51-F) was a collection point for waste acids and solvents. Its three-sided shed contained a rack that held a single 55-gallon drum set on a 50-square foot pie-shaped concrete pad. Beginning in 1985, the drum was used to collect waste acids and solvents from bench-scale manufacture of the explosive cyclotetramethylenetetranitramine. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to

5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-06 parcel is 119 square foot, more or less, or 0.00273 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-06 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-06. Contaminants in soil samples from LHAAP-06 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-06 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-06 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
Or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

Notary Public in and for the State of Texas,
County of Harrison

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-06" TRACT
(REMAINS OF DEMOLISHED BUILDING 51-F)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-06" being defined by the four external corners of the three concrete walls remaining at demolished Building 51-F (wall defining the West edge of said building is either gone or never existed) in the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-06" being more particularly described as follows :

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "HORSE" (N=6960008.269 feet E=3309591.340 feet). Said traverse indicates a surface distance of 4895.70 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation E.C.C.W. indicates External Corner of Concrete Wall,

Commencing at monument "HORSE" referenced above,

THENCE N 59deg52'55"W 597.03' to an E.C.C.W. found for the S.E.C. of this tract and this POINT OF BEGINNING,

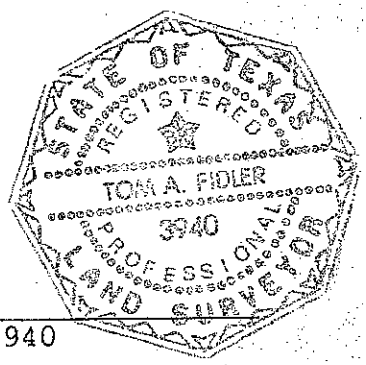
THENCE S 67deg37'19"W 10.93' along the S.B.L. of this tract to an E.C.C.W. found for this tract's S.W.C. ,

THENCE N 22deg14'24"W 10.92' along the W.B.L. of this tract to an E.C.C.W. found for this tract's N.W.C. ,

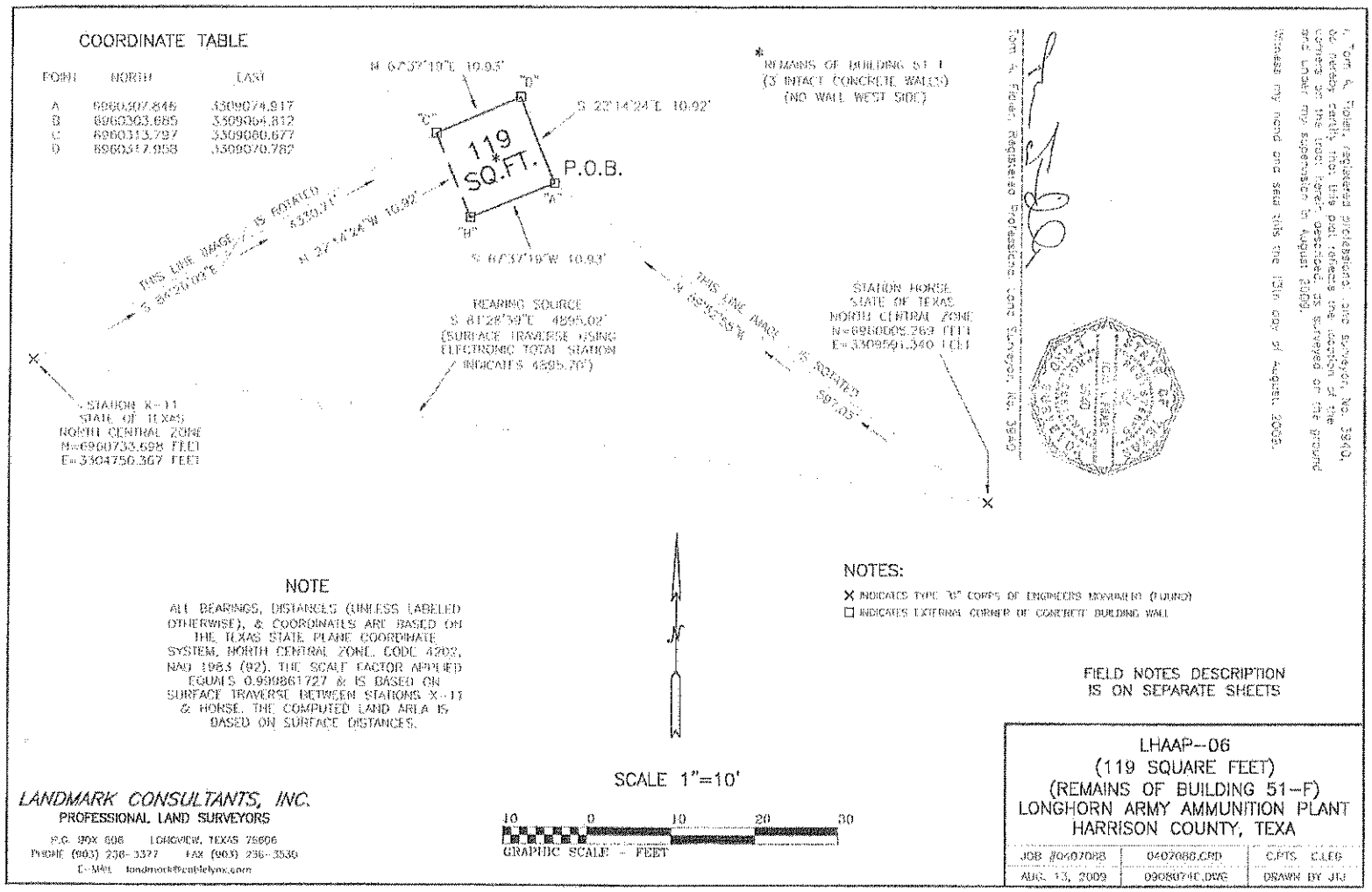
THENCE N 67deg37'19"E 10.93' along the N.B.L. of this tract to an E.C.C.W. found for this tract's N.E.C. ,

THENCE S 22deg14'24"E 10.92' along the E.B.L. of this tract to this POINT OF BEGINNING. This tract contains 119 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940


COORDINATE TABLE
POINT NORTH EAST
A 6960307.846 3309074.917
B 6960303.685 3309066.812
C 6960313.797 3309060.677
D 6960317.958 3309070.782
N 67°37'19"E 10.93'
S 22°14'24"E 10.92'
S 67°37'19"W 10.93'
N 22°14'24"W 10.92'
119 SQ.FT.
P.O.B.
"A"
"B"
"C"
"D"
REMAINS OF BUILDING 51-F
(3 INTACT CONCRETE WALLS)
(NO WALL WEST SIDE)
THIS LINE IMAGE IS ROTATED S 89°20'02"E 6530.71'
THIS LINE IMAGE IS ROTATED S 89°20'02"E 597.05'
BEARING SOURCE
S 81°28'39"E 4895.02'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 4895.70')
STATION X-11
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6960733.698 FEET
E=3304756.367 FEET
STATION HORSE
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6960005.269 FEET
E=3309591.340 FEET
I, Jon A. Tobin, registered professional land surveyor, do hereby certify that this plat represents the location of the tract shown hereon as surveyed by me on the ground and under my supervision in August 2009.
Witness my hand and seal this 13th day of August, 2009.
Jon A. Tobin, Registered Professional Land Surveyor No. 5360
NOTE
ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.99986727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & HORSE. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.
N
SCALE 1"=10'
10 0 10 20 30
GRAPHIC SCALE - FEET
NOTES:
X INDICATES TYPE "B" CORPS OF ENGINEERS MONUMENT (FOUND)
□ INDICATES EXTERNAL CORNER OF CONCRETE BUILDING WALL
FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS
LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 238-3377 FAX (903) 236-3536
E-MAIL landmark@cableone.com
LHAAP--06
(119 SQUARE FEET)
(REMAINS OF BUILDING 51--F)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXA
JOB #0407088 0407088.CRD CPTS CLED
AUG. 13, 2009 0908074C.DWG DRAWN BY JAT

LHAAP-07

NOTICE OF NONRESIDENTIAL LAND USE FOR LHAAP-07 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

2010-000005556

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005556 **Receipt No:** 1006195 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-07, is the area of a demolished building location known as Building 50-G located within the Plant 3 production area of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-07 is not itself considered an NPL site. Environmental activities at LHAAP-07 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-07 (Building 50-G) was the former drum processing building which consisted of a wooden frame building 30 feet by 100 feet in size set on a concrete pad located within the boundary of LHAAP-47. Beginning in 1985, Building 50-G had a separate bay (20 by 30 feet in size) used as a washdown area for empty drums and casting equipment used in ammunition production. The washdown area was an above-grade concrete vault where empty drums were rinsed with hot water and spent sulfuric acid neutralized with limestone. The wastes handled included solvents, oils, and organic liquids. The site ceased operation in 1995. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd,

Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-07 parcel is 3,078 square foot, more or less, or 0.07066 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-07 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-07. Contaminants in soil samples from LHAAP-07 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-07 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-07 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10 th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

Notary Public in and for the State of Texas,
County of Harrison

NOTARY PUBLIC STATE OF TEXAS
ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-07" TRACT
(REMAINS OF DEMOLISHED BUILDING 50-G)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-07" being defined by the four external corners of the concrete foundation stem wall of demolished Building 50-G in the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-07" being more particularly described as follows:

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "HORSE" (N=6960008.269 feet E=3309591.340 feet). Said traverse indicates a surface distance of 4895.70 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation E.C.C.F.S.W. indicates External Corner of Concrete Foundation Stem Wall,

Commencing at monument "HORSE" referenced above,

THENCE N 87deg11'48"W 103.14' to an E.C.C.F.S.W. found for the S.E.C. of this tract and this POINT OF BEGINNING,

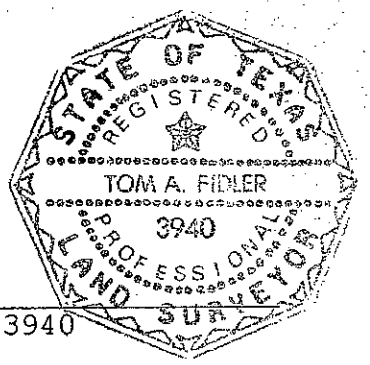
THENCE S 69deg02'55"W 30.36' along the S.B.L. of this tract to an E.C.C.F.S.W. found for this tract's S.W.C. ,

THENCE N 21deg59'26"W 101.90' along the W.B.L. of this tract to an E.C.C.F.S.W. found for this tract's N.W.C. , and being S 82deg14'17"E 4714.65' from monument "X-11" referenced above,

THENCE N 71deg43'04"E 30.53' along the N.B.L. of this tract to an E.C.C.F.S.W. found for this tract's N.E.C. ,

THENCE S 21deg55'35"E 100.48' along the E.B.L. of this tract to this POINT OF BEGINNING. This tract contains 3,078 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

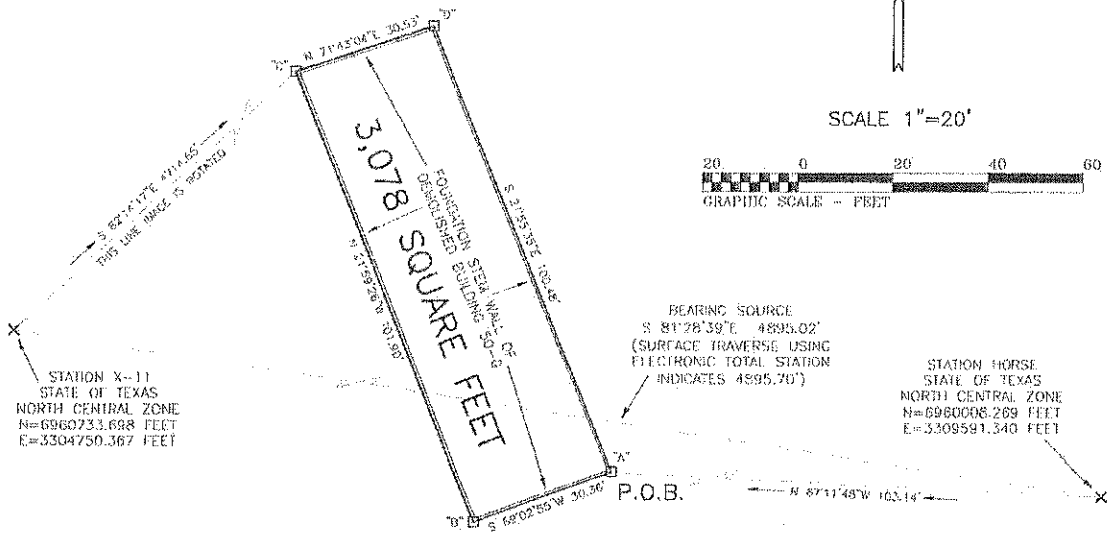
NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)

☐ INDICATES EXTERNAL CORNER OF FOUNDATION STEM WALL

COORDINATE TABLE

POINT	NORTH	EAST
A	6960013.313	3309488.323
B	6960002.458	3309459.972
C	6960096.944	3309421.815
D	6960106.521	3309450.803



SCALE 1"=20'

20 0 20 40 60

GRAPHIC SCALE - FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August, 2009.

Witness my hand and seal this the 13th day of August, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEET

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & HORSE. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

LHAAP-07
(3,078 SQUARE FEET)
(REMAINS OF BUILDING 50-G)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	B.PTS B.LOG
AUG. 13, 2009	0908074B.DWG	DRAWN BY JTJ

LHAAP-08

NOTICE OF NONRESIDENTIAL LAND USE FOR LHAAP-08 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

2011-000003377

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

NOTICE

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 03/24/2011 03:52 PM **Document Number:** 2011-000003377 **Receipt No:** 1103745 **Amount:** $ 32.00 **By:** Lauren Boyd, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT CDU OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

AARON WILLIAMS EC-ER
1645 SOUTH 101ST EAST AVENUE

TULSA, OK 74128

STATE OF TEXAS HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remedial investigation of the land described herein. The site, LHAAP-08, the former Sewage Treatment Plant, operated from 1942 to 1997. LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-08 is not itself considered an NPL site. Environmental activities at LHAAP-08 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-08 included stabilization ponds, Dunbar filters, sludge drying beds, and an Imhoff tank. The plant received storm water, boiler blow down, laundry waste, vehicle wash rack waste, and effluent from film development at the X-ray facility. Treated effluent was discharged into Goose Prairie Creek and Caddo Lake. Soil and groundwater investigations in 2000, 2001, and 2005 included sampling for explosives compounds, metals, semivolatile organic compounds, volatile organic compounds, dioxins and furans, pesticides and PCBs. Soil results included detections of low levels of metals, perchlorate and dioxin. Low levels of metals, dioxin and furan compounds and perchlorate were detected in groundwater. An assessment of risk to exposure to soil and groundwater at LHAAP-08, based on the

nonresidential use scenario, indicated that potential human health risks are within the acceptable range established by EPA. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-08 parcel is a 2.974 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-08 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-08. Contaminants in soil samples from LHAAP-08 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-08 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-08 is consistent with the non-residential use scenario evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multifamily residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through
12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 25 th day of January, ~~2010~~ 2011.

BEFORE ME, on this the 25 th day of Jan 2011, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 25 day of January,

Notary Public in and for the State of Texas,
County of Harrison

NOTARY PUBLIC STATE OF TEXAS
ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP–08" TRACT
(PROPOSED INDUSTRIAL USE NOTIFICATION AREA)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP–08" being 2.974 acre of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP–08" being more particularly described as follows :

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998636625, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "IGNATIUS–1" (N=6957090.304 feet E=3311081.788 feet) and "IGNATIUS–2" (N=6955582.752 feet E=3311851.704 feet). Said traverse indicates a surface distance of 1693.005 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940", and the abbreviation C.N.I.B.C. indicates concrete nail in bottle cap.

Commencing at monument "IGNATIUS–1" referenced above,

THENCE N 52deg56'26"W 814.32' to an I.R.O.P.C. set for the Southmost corner of this tract and this POINT OF BEGINNING,

THENCE N 28deg08'32"W 374.05' along the S.W. B.L. of this tract to an I.R.O.P.C. set for this tract's Westmost corner,

THENCE N 62deg03'14"E 348.01' along the N.W. B.L. of this tract to a C.N.I.B.C. set (in the asphalt pavement of South Houston Road) for this tract's Northmost corner,

THENCE S 27deg43'38"E 328.00' along the N.E. B.L. of this tract to a C.N.I.B.C. set (in the asphalt pavement of South Houston Road) for the North end of a curve,

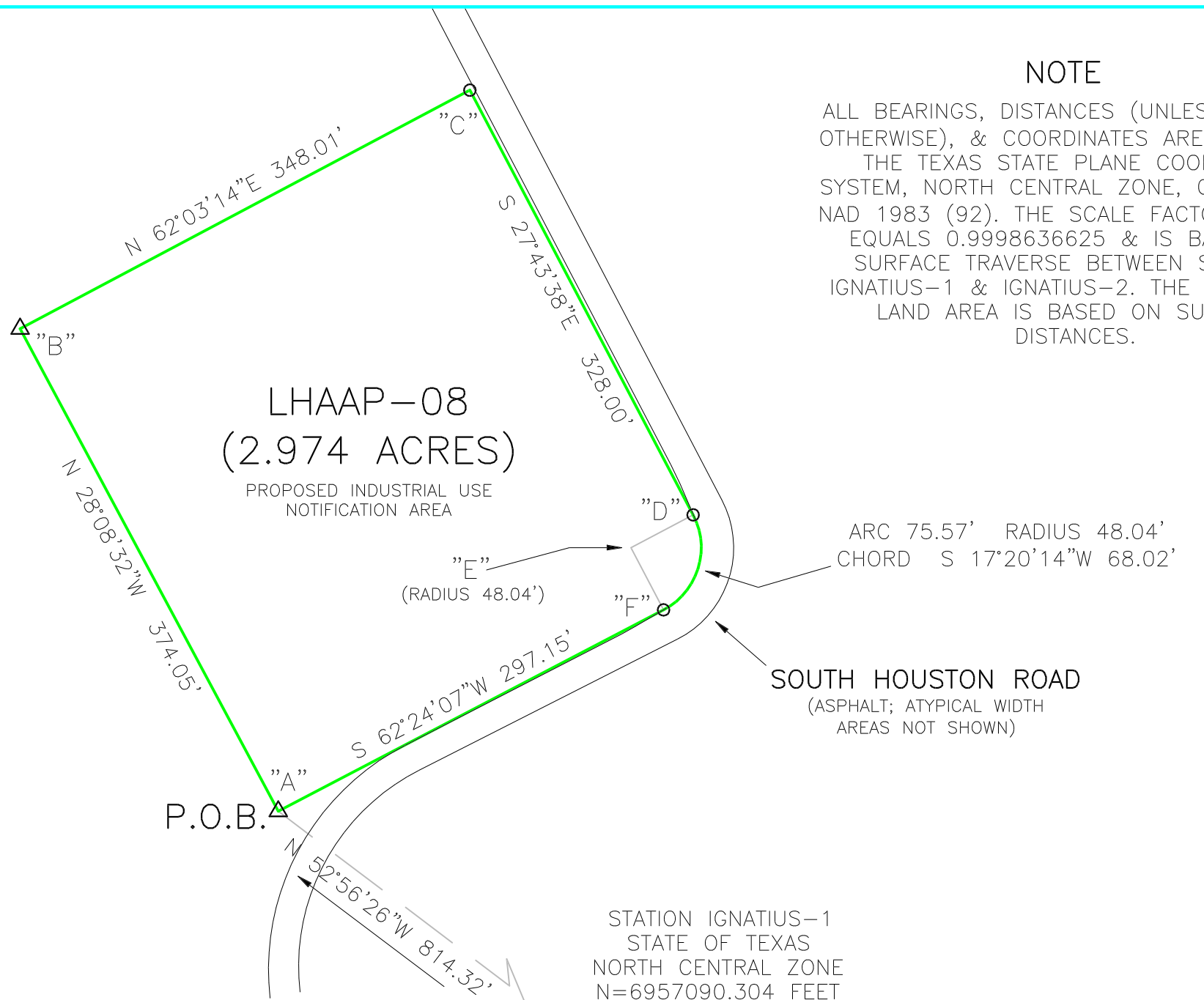
THENCE along a curve to the right (having a radius of 48.04' and an arc length of 75.57', being subtended by a chord of S 17deg20'14"W 68.02') to a C.N.I.B.C. set (in the asphalt pavement of South Houston Road) for the South end of said curve,

THENCE S 62deg24'07"W 297.15' along the S.E. B.L. of this tract to this POINT OF BEGINNING, containing 2.974 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

Tom A. Fidler

Tom A. Fidler, R.P.L.S. Number 3940



ARC 75.57' RADIUS 48.04'
CHORD S 17°20'14"W 68.02'

SOUTH HOUSTON ROAD
(ASPHALT; ATYPICAL WIDTH
AREAS NOT SHOWN)

STATION IGNATIUS-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957090.304 FEET
E=3311081.788 FEET

BEARING SOURCE
S 27°03'13.2"E 1692.774'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1693.005')

STATION IGNATIUS-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6955582.752 FEET
E=3311851.704 FEET

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998636625 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS IGNATIUS-1 & IGNATIUS-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

SCALE 1"=100'

100 0 100 200 300
GRAPHIC SCALE - FEET

COORDINATE TABLE

POINT	NORTH	EAST
A	6957581.048	3310431.952
B	6957910.879	3310255.527
C	6958073.970	3310562.954
D	6957783.633	3310715.561
E	6957761.282	3310673.037
F	6957718.708	3310695.292

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in July 2008.

Witness my hand and seal this the 29th day of July, 2008

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- O INDICATES CONCRETE NAIL IN BOTTLE CAP (SET IN ASPHALT)
- △ INDICATES 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- ——— INDICATES BOUNDARY OF PROPOSED INDUSTRIAL USE NOTIFICATION AREA

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

LHAAP-8
(2.974 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

00194674

JOB #0407088	0407088.CRD	0605063F.DWG
07/29/2008	0605063.CRD	DRAWN BY JTJ

LHAAP-12, 12-1

LUC INSPECTION AND MAINTENANCE LOG

March 2, 2015

LUC Inspection and Maintenance Log – LHAAP 12

Date	Inspected by:	Inspection / Maintenance Activities					Corrective action or repairs required?	Repairs / Action Taken
		Protect landfill cover integrity				Prevent human exposure to groundwater		
		Vegetative Cover maintained: i.e. grass mowed	Fence and signage maintained	Observance of landfill cover degradation –e.g. desiccation cracks, erosion, or gullying	Continued compliance verified for no digging or disturbance of landfill cover or contents	Verified no withdrawal or use of groundwater (other than environmental testing)		

LHAAP-12, 12-2

LUCs FROM FINAL REMEDIAL DESIGN ADDENDUM

March 2, 2015

FINAL

REMEDIAL DESIGN ADDENDUM
LANDFILL 12 (LHAAP-12)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared for
U.S. Army Corps of Engineers
Tulsa District
1645 South 101st Avenue
Tulsa, Oklahoma

Prepared by
Shaw Environmental, Inc.
3010 Briarpark Drive, Suite 400
Houston, Texas 77042

Contract Number DACA56-94-D-0020
Task Order No. 0109

June 2007

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4.0 Land Use Controls for the Site

The LUCs to be implemented by the Army or its representatives for LHAAP-12 include:

- Maintenance of the integrity of the landfill cap, including, at a minimum, repairs to desiccation cracks, erosion, or gullying upon observance.
- Maintenance of a vegetative cover on the landfill cap including regular mowing.
- Maintenance of fence line and signage around landfill cap.
- Prohibition of any activities that would affect the integrity of cap.
- Prohibition of any activities that would cause exposure to the contaminated groundwater.

Although groundwater monitoring is not a LUC, it was included as a component of the remedy for LHAAP-12 identified in the 2006 ROD to evaluate the effectiveness of the landfill cap (Shaw, 2006b). The groundwater monitoring plan is included in **Appendix A**.

6.0 Remedy Implementation Actions

6.1 Land Use Control Implementation Actions

Until LHAAP-12 is transferred, the Army or its representatives will be responsible for LUC implementation, maintenance, inspection, reporting and enforcement. The Army shall address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable. If periodic LUC inspections and maintenance are required to address site-specific risks, the Army will be responsible for making the results available to the appropriate regulators.

As a condition of property transfer, the Army may require the transferee to assume responsibility for various implementation actions, as indicated below. Although the Army may transfer responsibility for various implementation actions, the Army shall retain its responsibility for remedy integrity. This means that the Army is responsible for addressing substantive violations of performance objectives that would undermine the Army's CERCLA remedy. The Army also will be responsible for: 1) incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation; 2) recording survey plat and notice of restrictions for both the landfill cap and cover system boundary at the Harrison County Courthouse; 3) recording groundwater use restriction and survey plat at the Harrison County Courthouse; and 4) notifying Texas Department of Licensing and Regulation of the groundwater restriction which includes the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the Army, the USEPA, and the TCEQ.

The following LUC implementation actions shall be undertaken by the Army in order to ensure that the aforementioned LUC performance objectives for LHAAP 12 are met and maintained:

6.1.1 Comprehensive Base-wide Land Use Control Management Plan

Within 30 days of receiving USEPA and TCEQ approval of this RD Addendum, the Army will develop a Comprehensive Base-wide LUC Management Plan which shall initially consist of this document and a survey plat showing the locations where the LHAAP-12 LUCs are applied. The purpose of this Comprehensive Base-wide LUC Management Plan is to ensure the all site-specific LUCs are compiled into one comprehensive location for both pre-transfer use by the installation and for post-transfer use by the transferee. This document is also accessible to regulators, the local government and the public. The Army will locate the Comprehensive Base-wide LUC Management Plan in the City of Marshall Public Library to accompany LHAAP's Administrative Record.

As LUC RD documents for additional environmental sites are approved by USEPA and TCEQ, the Army shall likewise add those documents and survey plats to the Comprehensive Base-wide LUC Management Plan as well as update the previous copy of the plan placed in the City of Marshall Public Library.

6.1.2 Site Inspections and Reporting

Beginning with finalization of this RD Addendum, the Army will undertake annual physical inspections and reporting to confirm continued compliance with all LUC objectives. The Army will provide USEPA and TCEQ with an annual LUC Compliance Inspection document consistent with the form attached hereto as **Appendix B**. In addition, should any deficiency(ies) be found during the annual inspection, the Army will provide to USEPA and TCEQ along with the document, a separate written explanation indicating the specific deficiency(ies) found and what efforts or measures have or will be taken to correct those deficiencies. Upon transfer, such responsibilities may shift to the transferee via appropriate provisions placed in the Environmental Condition of Property (ECOP). The need to continue annual inspections will be revisited at five year reviews.

6.1.3 Notice of Planned Property Conveyances

Planned conveyance of LHAAP-12 acreage is to U.S. Fish and Wildlife Service for incorporation into the Caddo Lake National Wildlife Refuge. The Army shall provide notice to USEPA and TCEQ of such intended conveyance. The notice shall describe the mechanism by which LUCs will continue to be implemented, maintained, inspected, reported, and enforced.

6.1.4 Opportunity to Review Text of Intended Land Use Controls

The Army will produce an ECOP for LHAAP-12, but before executing the letter of transfer, the Army will provide USEPA and TCEQ with a draft copy of that ECOP so that they may have reasonable opportunity, before document execution, to review all LUC-related provisions.

6.1.5 Notification Should Action(s) Which Interfere with Land Use Control Effectiveness Be Discovered Subsequent to Conveyance

Should the Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objectives, the Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 6.1.6** below, the Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

6.1.6 Land Use Control Enforcement

Should the LUC remedy reflected in this LUC RD fail, the Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These

actions may range from informal resolutions with the owner or violator, to the institution of judicial action under the auspices of Texas property law or CERCLA. Alternatively, should the circumstances warrant such, the Army could choose to exercise its response authorities under CERCLA, and then seek cost recovery after the fact from the person(s) or entity(ies) who violated a given LUC. Should the Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the Army will notify these agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUCs.

6.1.7 Modification or Termination of Land Use Controls

The Army shall not, without USEPA concurrence, make a significant modification to, or terminate a LUC, or make a land use change inconsistent with the LUC objectives and use assumptions of the selected remedy. Likewise, the Army shall seek prior USEPA concurrence before commencing actions that may impact remedy integrity. In the case of an emergency action, the Army shall obtain prior USEPA concurrence as appropriate to the exigencies of the situation.

The LUCs shall remain in effect until such time as the Army and USEPA agree that the concentrations of hazardous substances have been reduced to levels that allow for unlimited exposure and unrestricted use. When this occurs, the LUCs will be terminated as needed. The decision to terminate LUCs will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action completion report. If the property has been transferred and a determination by the Army and USEPA has been made to terminate one or more of the LUCs, the Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

6.2 Monitored Natural Attenuation Implementation Actions

Implementation actions include development of a groundwater monitoring plan, monitoring, and reporting. Groundwater monitoring will be conducted to monitor the effectiveness of MNA in reducing contaminant concentrations over time. Monitoring will also be conducted to evaluate plume migration and ensure that TCE-contaminated groundwater does not impact nearby surface water at unacceptable levels. The Groundwater Monitoring Plan, attached as **Appendix A**, describes the wells, their locations, analytical parameters, and the frequency of the monitoring.

Annual reports will be prepared to document the monitoring program. The first year annual report will include a review of the first four quarters of data which include natural attenuation parameters and provide an evaluation for the evidence of MNA as a remedial method. The TCEQ provides guidance for MNA as a remedial action in *Monitored Natural Attenuation*

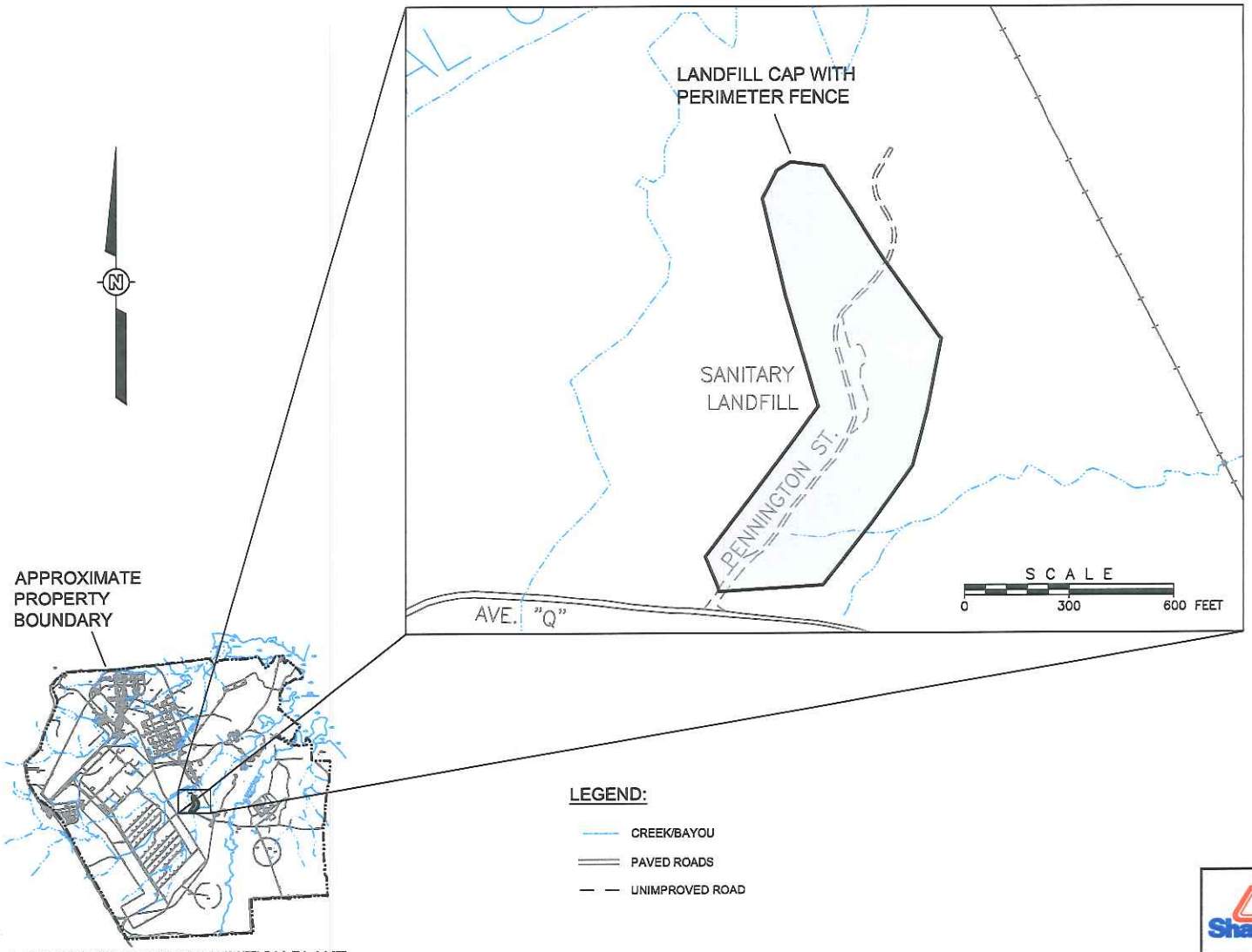


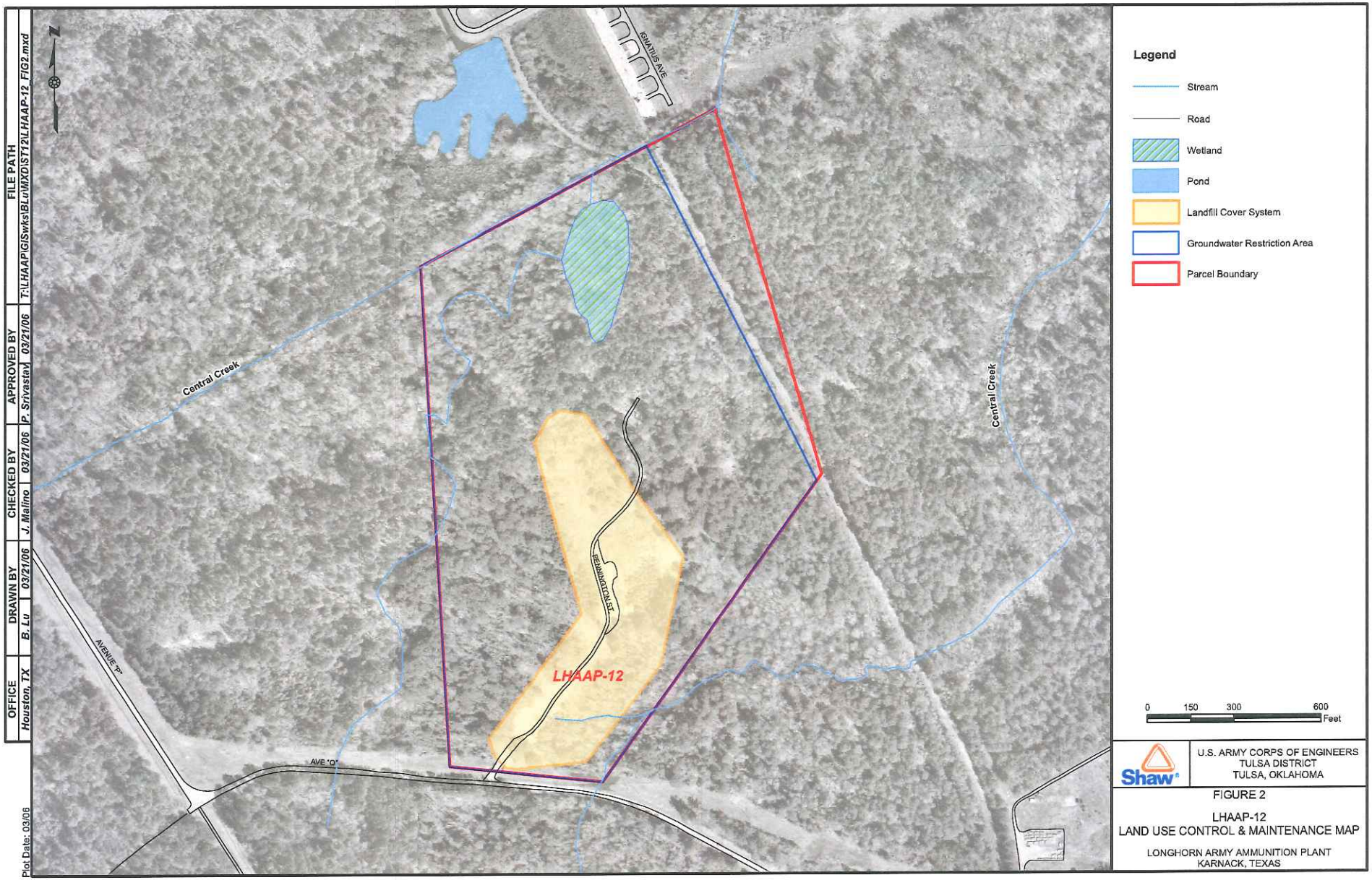
IMAGE	X-REF	OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
----	----	Houston, Texas	D. DAY 2/14/04	K. EVERETT 6/30/05	P. SRIVASTAV 6/30/05	845714-B44

PLOT DATE: 7/05/05
FORMAT REVISION 3/25/99

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

FIGURE 1
SITE LOCATION MAP
LHAAP-12
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00194684


Legend
Stream
Road
Wetland
Pond
Landfill Cover System
Groundwater Restriction Area
Parcel Boundary
LHAAP-12
Central Creek
Central Creek
IGMITIUS AVE
REMINGTON ST
AVENUE "P"
AVE "O"
0 150 300 600
Feet
N
OFFICE
Houston, TX
DRAWN BY
B. Lu 03/21/06
CHECKED BY
J. Malino 03/21/06
APPROVED BY
P. Srivastav 03/21/06
FILE PATH
T:\LHAAP\GIS\wrks\BLu\MXD\ST12\LHAAP-12_FIG2.mxd
Plot Date: 03/06
U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA
FIGURE 2
LHAAP-12
LAND USE CONTROL & MAINTENANCE MAP
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00194685

Appendix B

Sample Annual Land Use Control Compliance Inspection Documentation

Sample Annual Land Use Control Compliance Inspection Documentation

In accordance with the Remedial Design Addendum dated _____ for LHAAP-12, an inspection of site was conducted by _____ [indicate transferee] on_____.

A summary of land use control mechanisms is as follows:

- Land use and restriction covenants included in ECOP – [Indicate whether the ECOP is on file with the notice of transfer]
- Groundwater restriction – [Indicate whether groundwater restrictions are still required at LHAAP-12]

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-12
- No reuse activity at LHAAP-12 that would adversely affect the integrity of the landfill cap
- The fence and posted signs are properly maintained at LHAAP-12
- The vegetative cover is properly maintained over the landfill
- Landfill cap is properly maintained with no evidence of erosion, cracking, settlement, or other damage to engineered components

I, the undersigned, do document that the inspection was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title _____

Signature: _____

Completed annual compliance inspection forms, with relevant annual compliance certification forms, shall be sent no later than March 1 of each year for the previous calendar year.

U.S. Department of the Army
TCEQ
USEPA Region 6

LHAAP-12, 12-3

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-12 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROLS AT LHAAP-12

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The remediation site is a capped landfill located on the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-12. The site is included in TCEQ Notice of Registration No. 30990 as Unit Number 001. LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-12 were performed in accordance with the FFA requirements.

The landfill was used intermittently for the disposal of industrial solid waste, possibly containing small quantities of hazardous constituents generated at LHAAP. A Record of Decision (ROD) for LHAAP-12 was signed by USEPA in 1995 establishing the construction of a cap as an interim remedial action for the site to mitigate potential risks posed by the burial of landfill waste. Construction of the landfill cap was completed in 1998. The final remedy consists of land use controls (LUCs) in conjunction with monitored natural attenuation as documented in the Final ROD signed by USEPA on July 24, 2006. The site was not remediated to levels suitable for unrestricted use. LUCs at LHAAP-12 are required to ensure the integrity of the landfill cap and cover system and prevent human exposure to contaminated groundwater. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the

Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-12 parcel is a 50.541 acre tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A. Within the LHAAP-12 parcel are designated LUC boundaries including a 9.429 acre tract, more or less, and a 45.939 acre tract, more or less, as described in Exhibit A. The LUC boundaries are also presented in the attached Figure 1.

Future use of the parcel is intended as a national wildlife refuge consistent with non-residential use. The United States Department of the Army has undertaken careful environmental study of the LHAAP-12 site and concluded that the LUCs set forth below are required to ensure protection of human health and the environment.

(1) **Landfill Restriction**. A closed non-hazardous landfill (LHAAP-12) of approximately 7 acres is located within the 9.429 acre tract. The landfill restriction boundary consists of the 7-acre capped landfill and an area extending to the surrounding fence. LUCs have been established to protect the integrity of the remedy. No activity shall be conducted or permitted that would damage the integrity of the landfill cover (i.e. digging or disturbing the existing cover or contents of the landfill). The LUCs will remain in place for perpetuity unless otherwise removed by the U.S. Army per agreement with the USEPA and TCEQ.

(2) **Residential Use Restriction**. The residential use restriction boundary consists of the 9.429 acre-tract, more or less, and includes the 7-acre capped landfill and an area extending to the surrounding fence. This tract shall be used solely for the purpose of a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

(3) **Groundwater Restriction**. The groundwater use restriction boundary consists of the 45.939 acre tract, more or less, and extends beyond the landfill

boundary. Groundwater underlying this land is contaminated with trichloroethene (TCE) and other volatile organic compounds and shall not be accessed or used for any purpose without the prior written approval of U.S. Army, the USEPA and the TCEQ. A LUC restricting the use of groundwater has been established for the protection of human health. The U.S. Army will notify the Texas Department of Licensing and Regulation of the groundwater restriction which includes prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval by the U.S. Army, the USEPA and the TCEQ. The LUC will remain in place until applicable or relevant and appropriate requirements (ARARs) as established in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulation 300) are met. Due to the potential for TCE-contaminated groundwater to migrate, monitored natural attenuation will be implemented to assure that TCE-contaminated groundwater will not migrate to nearby surface water at levels that may present an unacceptable risk to human health and the environment. The monitoring and reporting associated with this remedy will continue until ARARs are achieved.

The owner of the site is the Department of the Army, and its address where more specific information may be obtained from is as follows:

ATTN: DAIM-BD-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 13th day of June, 2007.

BEFORE ME, on this the 13th day of June, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 13 day of June, 2007.

NOTARY PUBLIC STATE OF TEXAS
LYNDA G. HAYS
Notary Public State of Texas
COMM. EXP. 5-02-2010

Lynda G. Hays
Notary Public in and for the State of Texas,
County of Harrison

Doc Bk Vol Pg
7009064 OR 3640 4

EXHIBIT A

Doc Bk Vol Pg
7009064 OR 00194693

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999918513 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS 2-95 & 3-95. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES

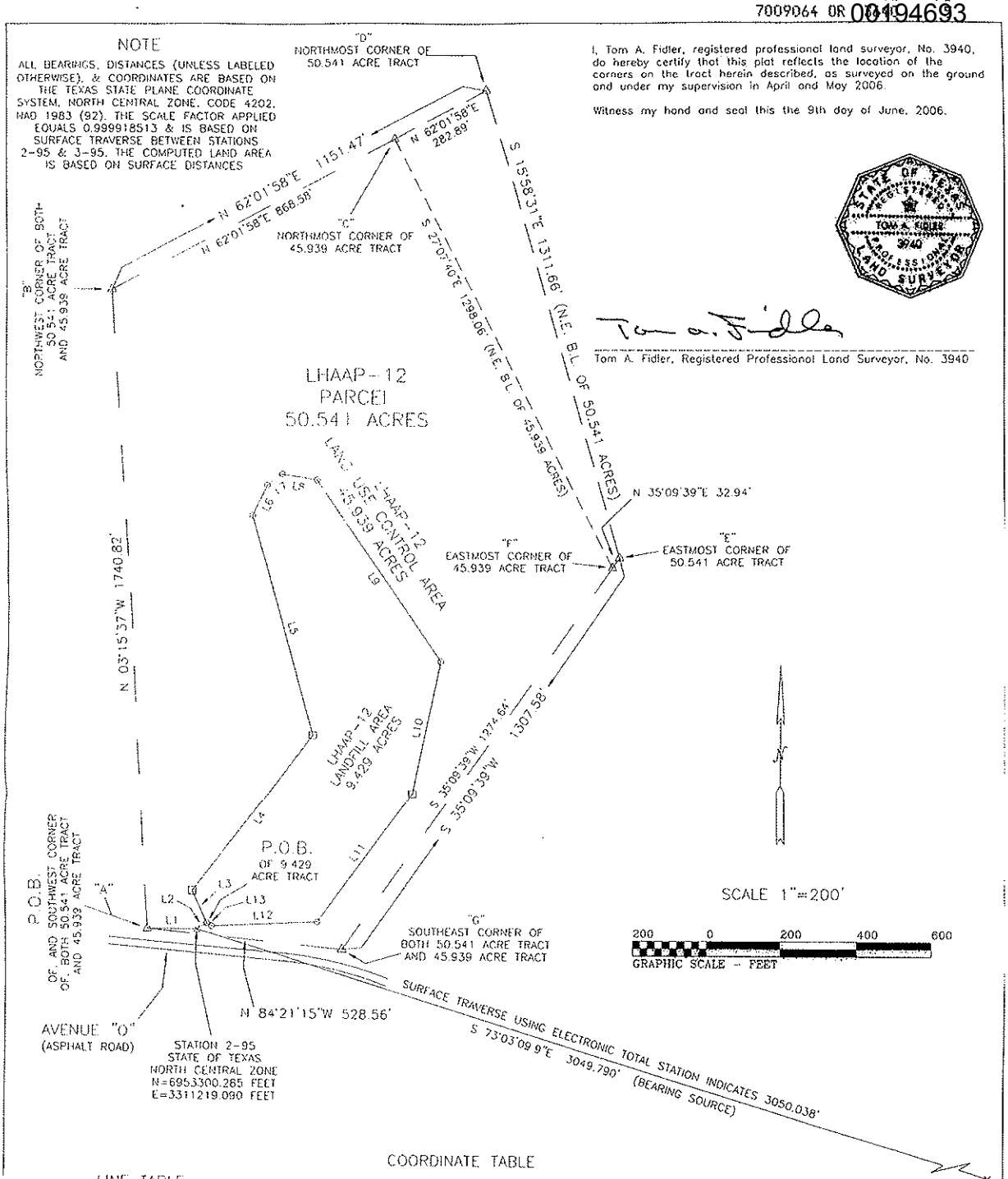
I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in April and May 2006.

Witness my hand and seal this the 9th day of June, 2006.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940



LINE TABLE

COURSE	BEARING	DISTANCE
L1	S 89°52'35"W	132.09'
L2	N 58°35'33"E	31.72'
L3	N 23°52'43"W	96.81'
L4	N 37°07'57"E	537.87'
L5	N 15°28'17"W	618.92'
L6	N 26°16'28"E	90.81'
L7	N 54°00'30"E	50.67'
L8	S 81°02'29"E	96.24'
L9	S 34°25'01"E	596.16'
L10	S 12°11'35"W	370.18'
L11	S 36°09'00"W	434.64'
L12	S 87°15'04"W	286.47'
L13	N 57°18'20"W	15.33'

COORDINATE TABLE

POINT	NORTH	EAST
A	6953300.000	3311087.000
B	6955038.000	3310988.000
C	6955445.333	3311755.144
D	6955578.000	3312005.000
E	6954317.000	3312366.000
F	6954290.070	3312347.030
G	6953248.000	3311613.000

NOTES:

- O INDICATES 12" DIAMETER WOODEN FENCE CORNER POST (FOUND)
- □ INDICATES 10" DIAMETER WOODEN FENCE CORNER POST (FOUND)
- × INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- △ INDICATES 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET IN CONCRETE)
- ——— INDICATES BARBED WIRE FENCE AND PERIMETER OF 9.429 ACRE TRACT
- — — — INDICATES PERIMETER OF 50.541 ACRE TRACT ONLY
- — · — · — INDICATES PERIMETER OF 45.939 ACRE TRACT ONLY
- ——— INDICATES PERIMETER OF BOTH 50.541 ACRE TRACT AND 45.939 ACRE TRACT

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

SHEET 1 OF 4

50.541 ACRES
45.939 ACRES
9.429 ACRES
LONGHORN army AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	0605063A.DWG
06/09/2006	0605063.CRD	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
"LHAAP-12 PARCEL"
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The hereinafter described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-12 Parcel" being 50.541 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-12 Parcel" being more particularly described as follows:

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999918513, and is based on surface traverse (using electronic total station) between type "G" Corps of Engineers monuments "2-95"(N=6953300.285 feet & E=3311219.090 feet) and "3-95"(N=6952411.298 feet & E=3314136.438 feet). Said traverse indicates a surface distance of 3050.038 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940".

Commencing at the monument "2-95" referenced above,

THENCE S 89deg52'35"W 132.09' to an I.R.O.P.C. set in concrete for the S.W.C. of this tract and this POINT OF BEGINNING,

THENCE N 03deg15'37"W 1740.82' along the W.B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Northwest corner,

THENCE N 62deg01'58"E 1151.47' along the N.W. B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Northmost corner,

THENCE S 15deg58'31"E 1311.66' along the N.E. B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Eastmost corner,

THENCE S 35deg09'39"W 1307.58' along the S.E. B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Southeast corner,

THENCE N 84deg21'15"W 528.56' along the S.B.L. of this tract to this POINT OF BEGINNING, containing 50.541 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

Tom A. Fidler, R.P.L.S. Number 3940

FIELD NOTES DESCRIPTION OF
"LHAAP-12 LAND USE CONTROL AREA"
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The hereinafter described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-12 Land Use Control Area" being 45.939 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said "LHAAP-12 Land Use Control Area" being more particularly described as follows:

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999918513, and is based on surface traverse (using electronic total station) between type "G" Corps of Engineers monuments "2-95"(N=6953300.285 feet & E=3311219.090 feet) and "3-95"(N=6952411.298 feet & E=3314136.438 feet). Said traverse indicates a surface distance of 3050.038 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940".

Commencing at the monument "2-95" referenced above,

THENCE S 89deg52'35"W 132.09' to an I.R.O.P.C. set in concrete for the S.W.C. of this tract and this POINT OF BEGINNING,

THENCE N 03deg15'37"W 1740.82' along the W.B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Northwest corner,

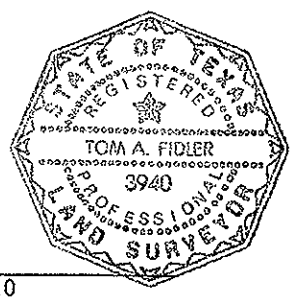
THENCE N 62deg01'58"E 868.58' along the N.W. B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Northmost corner,

THENCE S 27deg07'40"E 1298.06' along the N.E. B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Eastmost corner,

THENCE S 35deg09'39"W 1274.64' along the S.E. B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Southeast corner,

THENCE N 84deg21'15"W 528.56' along the S.B.L. of this tract to this POINT OF BEGINNING, containing 45.939 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

FIELD NOTES DESCRIPTION OF
"LHAAP-12 LANDFILL AREA"
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The hereinafter described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-12 Landfill Area" being 9.429 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said "LHAAP-12 Landfill Area" being more particularly described as follows:

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999918513, and is based on surface traverse (using electronic total station) between type "G" Corps of Engineers monuments "2-95"(N=6953300.285 feet & E=3311219.090 feet) and "3-95"(N=6952411.298 feet & E=3314136.438 feet). Said traverse indicates a surface distance of 3050.038 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940".

Commencing at the monument "2-95" referenced above,

THENCE N 58deg35'33"E 31.72' to a 12" diameter wooden fence corner post found for a Southwest corner of this tract and this POINT OF BEGINNING,

THENCE generally along a barbed wire fence the following eleven courses,

N 23deg52'43"W 96.81' to a 10" diameter wooden fence corner post found for the Westmost corner of this tract,

N 37deg07'57"E 537.87' to a 10" diameter wooden fence corner post,

N 15deg28'17"W 618.92' to a 12" diameter wooden fence corner post,

N 26deg16'28"E 90.81' to a 12" diameter wooden fence corner post,

N 54deg00'30"E 50.67' to a 12" diameter wooden fence corner post found for the Northmost corner of this tract,

SHEET 4b OF 4

S 81deg02'29"E 96.24' to a 12" diameter wooden fence corner post,

S 34deg25'01"E 596.16' to a 12" diameter wooden fence corner post found for the Eastmost corner of this tract,

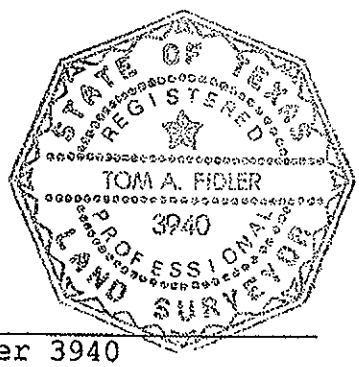
S 12deg11'35"W 370.18' to a 10" diameter wooden fence corner post,

S 36deg09'00"W 434.64' to a 12" diameter wooden fence corner post,

S 87deg15'04"W 286.47' to a 12" diameter wooden fence corner post,

N 57deg18'20"W 15.33' to this POINT OF BEGINNING, containing 9.429 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

Doc Bk Vol Pg
7009064 OR 3640 10

FIGURE 1

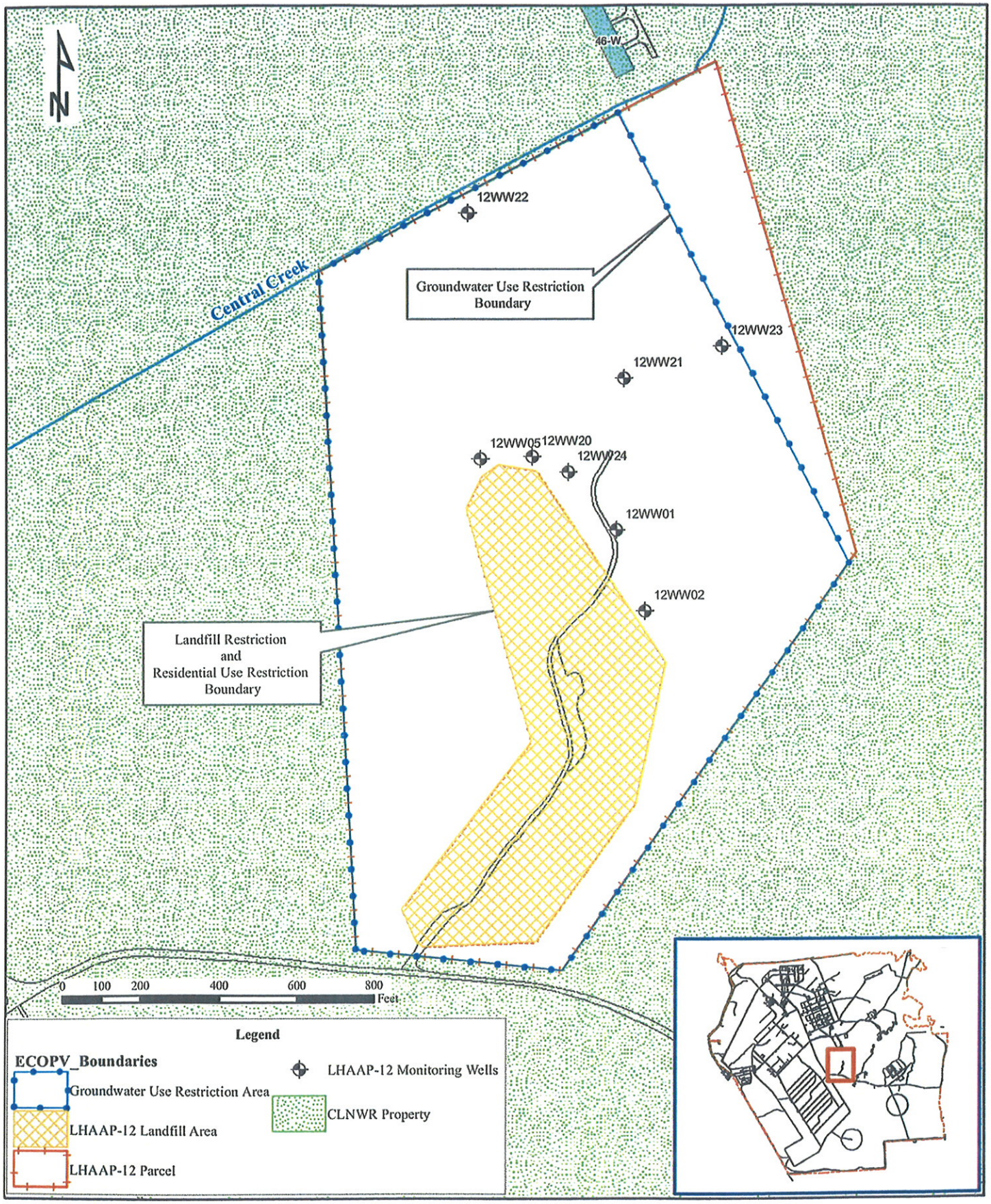


FIGURE 1

Land Use Control Boundaries

00194700

Doc	Bk	Vol	Pg
7009064	OR	3640	12

STATE OF TEXAS COUNTY OF HARRISON

I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the volume and page of the named records of:

Harrison County

as stamped hereon by me.

Jun 13,2007

HONORABLE PATSY COX, COUNTY CLERK
Harrison County

LHAAP-12, 12-4

LAND USE CONTROL COMPLIANCE INSPECTION FORM

March 2, 2015

LHAAP-12, Landfill 12 Parcel
Annual Land Use Control Compliance Certification

Land use controls (LUC) at LHAAP-12 in the Landfill 12 Parcel:

• Land use restriction – Prohibition of any activities that would affect the integrity of the cap (i.e. no digging or disturbing the existing cover or contents of the landfill) and of residential use or residential development of the property

• Groundwater use restriction – Prohibition of any activities that would cause exposure to contaminated groundwater (i.e. no withdrawal or use of groundwater for other than environmental monitoring and testing)

Compliance with land use controls:

• No use of groundwater or installation of new groundwater wells (except that required for environmental monitoring and testing), or tampering with existing wells at LHAAP-12

• No reuse activity at LHAAP-12 that would adversely affect the integrity of the landfill cap (i.e no digging or disturbing the existing cover or contents of the landfill) and cap protective components (fencing and signage), and no residential use or residential development of the property

Inspection: In accordance with the LHAAP-12 Remedial Design Addendum dated 21 June 2007, an inspection of LHAAP-12 was conducted by _____ on_____ to visually confirm compliance with the LUCs.

I, the undersigned, do document that the inspection was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title _____

Signature: _____

Completed annual compliance form, to be kept on file at the Administrative Office of the Caddo Lake National Wildlife Refuge by the Refuge staff and available to EPA, TCEQ and Army upon request. The certification shall be conducted no later than March 1 of each year for the previous calendar year.

LHAAP-19

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-19 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

2013-000013785

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

MISCELLANEOUS

5 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 11/14/2013 04:23 PM **Document Number:** 2013-000013785 **Receipt No:** 1313735 **Amount:** $ 28.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

AARON WILLIAMS
1645 SOUTH 100 FIRST EAST AVE

TULSA, OK 74128

STATE OF TEXAS
HARRISON COUNTY

INDUSTRIAL SOLID WASTE
CERTIFICATION OF REMEDIATION

KNOW ALL MEN BY THESE PRESENT THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-19, is a C&D Landfill located within the former Longhorn Army Ammunition Plant (LHAAP) in the northeast corner of Harrison County, Texas approximately 14 miles northeast of Marshall, Texas, and approximately 40 miles west of Shreveport, Louisiana. LHAAP was placed on the National Priorities (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-19 is not itself considered an NPL site. The TCEQ, the lead regulatory agency concurs that the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 3.

The C&D landfill, designated LHAAP-19, covers a 7.91 acre tract of land. The maximum depth of the landfill is believed to be less than 15 feet below ground surface. The C&D landfill was sporadically active from 1985 until recent closure activities were conducted. The C&D landfill was permitted by rule to receive non-friable asbestos and other demolition debris. During periods of activity, the monthly disposal rate ranged from 35 to 400 cubic yards of waste. The C&D landfill (formerly referred to as LHAAP-26) was evaluated in 1988. From the landfill evaluation dated 1988, and the buildings description dated 2004, it is concluded that all of the materials deposited in this landfill were what is normally classified as Construction and Demolition Debris (C&D) consisting of wood and metal studs, corrugated metal walls and roofs, concrete rubble, steel re-bar, dry-wall, transite (non-friable asbestos) siding, cardboard, Class 2 paper, packing, plastics, foil, wood packaging, wood debris, bricks, cement and other inert constituents. Records provided by the site manager indicate that hazardous materials such as friable asbestos were disposed of in other permitted landfills. Based on this information and certification of process knowledge by the owner, this landfill is classified as Non-Hazardous Class 2. The final closure assessment report and its supporting documentation demonstrate that the threat to human health or the environment is at or below those required for Risk Reduction Standard Number 2. However, due to the fact that waste was left in place, a cap was constructed to cover the footprint of the landfill and closure of the landfill meets Risk Reduction Standard Number 3.

Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The Texas Commission on Environmental Quality requires certain persons to provide certification and/or recordation in the real property records to notify the public of the conditions of the land and/or the

occurrence of remediation. This certification is not a representation or warranty by the Texas Commission on Environmental Quality of the suitability of this land for any purpose.

II

Being a 7.91 acre tract of land situated in Harrison County, Texas, being out of and a part of a 8,493 acres tract of land known as the former Longhorn Army Ammunition Plant, situated between Highway 43 at Karnack, Texas, and the southwestern shore of Caddo Lake, and being more particularly described by metes and bounds as follows:

(All coordinates shown here on are NAD 83, Texas State Plane North Central Zone 4202, based on GPS Static Processing verified with OPUS).

Beginning at the northwest corner of the herein described tract with coordinates of North: 6951971.54, East: 3316288.74, from which an iron pin set for a GPS Base Point with coordinates of North 6951987.74, East 3316281.35 bears N 24-31-50 E a distance of 17.81 feet;

Thence N 78-23-54 E, 504.61 feet to a point for an angle point with coordinates of North: 6952073.02, East: 3316783.04

Thence S 52-47-27 E, 137.20 feet to a point for an angle point with coordinates of North: 6951990.05, East: 3316892.31;

Thence S 44-12-24 E, 108.04 feet to a point for an angle point with coordinates of North: 6951912.60, East: 3316967.64;

Thence S 01-33-58 W, 110.10 feet to a point for an angle point with coordinates of North: 6951802.55, East: 3316964.63;

Thence S 11-28-04 W, 121.11 feet to a point for an angle point with coordinates of North: 6951683.85, East: 3316940.56;

Thence S 17-11-28 W, 349.04 feet to a point for the southeast corner of the herein described tract with coordinates of North: 6951350.41, East: 3316837.39;

Thence N 89-11-23 W, 294.12 feet to a point for the southwest corner of the herein described tract with coordinates of North: 6951354.57, East: 3316543.30;

Thence N 22-57-01 W, 332.88 feet to an angle point with coordinates of North: 6951661.10, East: 3316413.50;

Thence N 21-53-42 W , 334.57 feet to the place of beginning and containing 7.91 acres of land according to a survey made on the ground on November 12, 2009 by Ace Surveying, Inc.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-19 site and the TCEQ concluded that no further investigation or remedial action is required for LHAAP-19.

Limited monitoring will take place in the form of inspections of the landfill cap and any maintenance required to maintain the cap integrity for a period of five years. The Army shall correct, as needed, erosion of cover material, lack of vegetative growth, and subsidence or ponding of water. If any of these problems occur after the end of the five-year post-closure period or persist for longer than the first five years of post-closure care, the owner or operator shall be responsible for their correction until all problems have been adequately resolved. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multifamily residences;

child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

Institutional controls placed on the property to ensure appropriate future use include: (1) Use must remain non-residential as described above; and (2) No activity shall be conducted or permitted that would damage the integrity of the landfill cover (i.e. unauthorized digging or disturbing the existing cover or contents of the landfill). These restrictions will be placed in the deed transferring any part of the property out of federal ownership.

III

The owner of the site is the Department of the Army and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington, D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 14th day of December 2013.

STATE OF TEXAS
COUNTY OF Gregg

BEFORE ME, on this the 14th day of Nov, 2013, personally appeared Rose M. Zeiler, of The United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

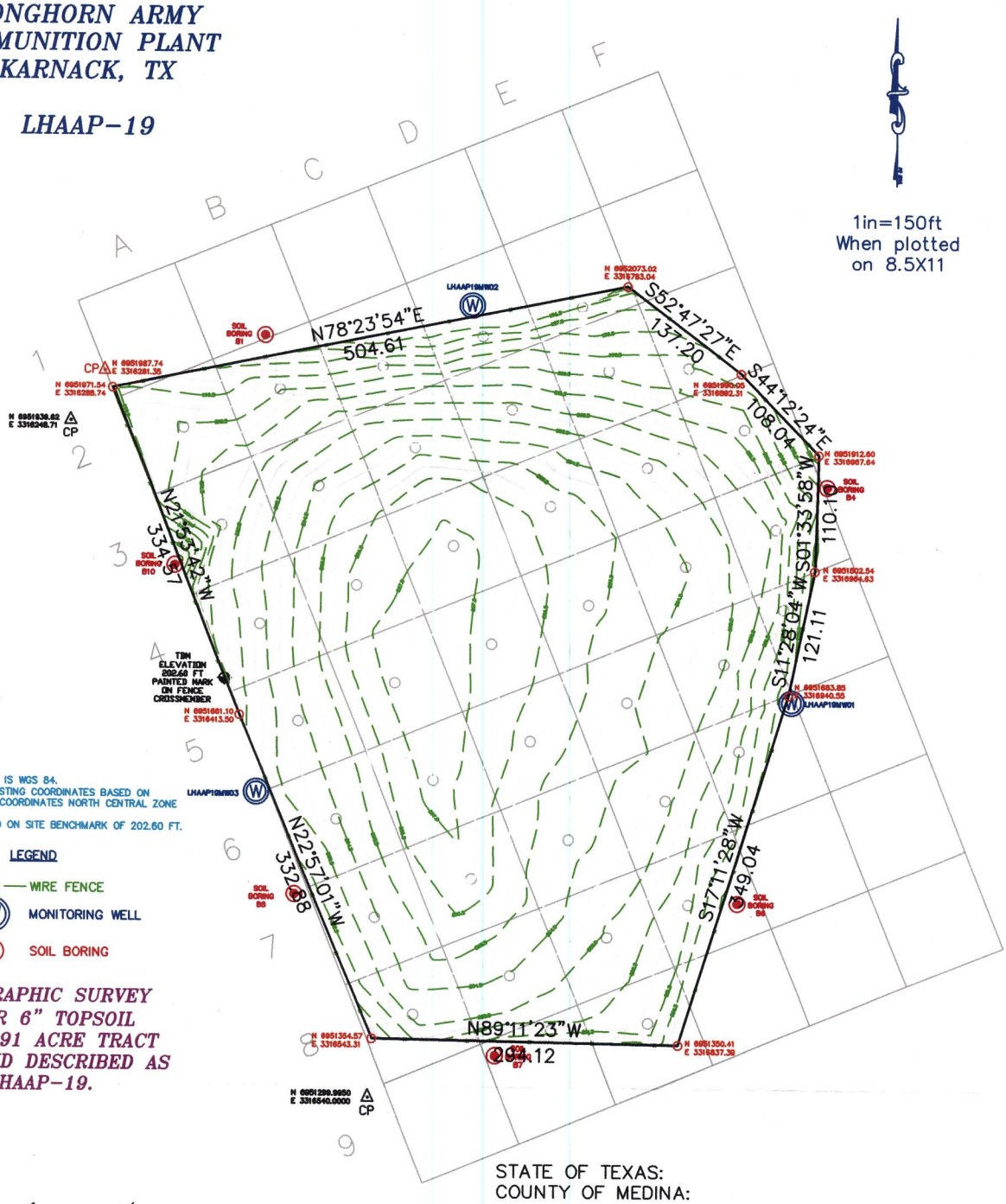
GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 14th day of Nov, 2013.

Notary Public in and for the State of Texas,
County of Harrison

BRENDA McBRIDE
Notary Public State of Texas
COMM. EXP. 5-4-2014

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TX

LHAAP-19



1in=150ft
When plotted
on 8.5X11

NOTES:
1) BASIS OF BEARING IS WGS 84.
2) NORTHING AND EASTING COORDINATES BASED ON TEXAS STATE PLANE COORDINATES NORTH CENTRAL ZONE #4202, NAD83.
3) ELEVATIONS BASED ON SITE BENCHMARK OF 202.60 FT.

LEGEND

— x — WIRE FENCE

MONITORING WELL

SOIL BORING

TOPOGRAPHIC SURVEY AFTER 6" TOPSOIL OF A 7.91 ACRE TRACT OF LAND DESCRIBED AS LHAAP-19.

Ace Surveying, Inc.
P. O. BOX 597
DEVINE, TEXAS 78016
830-334-7264
830-665-5796 FAX
acesurveying@sbcglobal.net

STATE OF TEXAS
REGISTERED
RHONDA K. BUTLER
5409
PROFESSIONAL
LAND SURVEYOR

STATE OF TEXAS:
COUNTY OF MEDINA:

I, RHONDA K. BUTLER, DO HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM AN ACTUAL SURVEY MADE ON THE GROUND BY MEN WORKING UNDER MY SUPERVISION.

RHONDA K. BUTLER
REGISTERED PROFESSIONAL LAND SURVEYOR #5409

SURVEYED: NOVEMBER 12, 2009
FILE NO: ALAMO 1, KARNACK

LHAAP-35/36

NOTICE OF NONRESIDENTIAL LAND USE AT SUMPS/WASTE RACK SUMP LOCATIONS (LHAAP-35/36) FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

2012-000000706

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000706 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump094 (called Sump 094 on the attached Exhibit A) is part of LHAAP-35/36. Sump094 is a former sump location near Building 16-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump094 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump094) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump094 parcel is 64 square feet, more or less, or 0.00146 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump094 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump094 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump094 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump094 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the ____th day of _____, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 094
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 64.0 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

THENCE N 07deg59'31"W 569.56' to a point for the Southmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following four courses :

(01) N 37deg59'57"W 8.00' to a point for the Westmost corner of this tract,
(02) N 52deg00'03"E 8.00' to a point for the Northmost corner of this tract,
(03) S 37deg59'57"E 8.00' to a point for the Eastmost corner of this tract,
(04) S 52deg00'03"W 8.00' to this POINT OF BEGINNING.

This tract contains 64.0 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

Tom A. Fidler, R.P.L.S. Number 3940

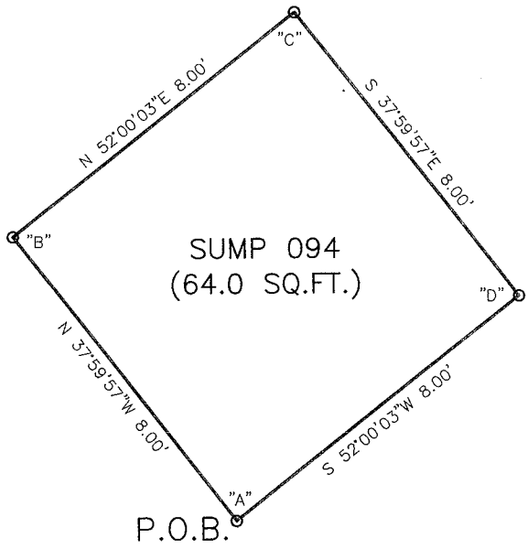
LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP



COORDINATE TABLE

POINT	NORTH	EAST
A	6959071.485	3314200.311
B	6959077.789	3314195.385
C	6959082.715	3314201.689
D	6959076.411	3314206.615

SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE - FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 14, 2011.

N 07°59'31"W 569.56'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 094
(64.0 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	H.PTS H.LEG
03/14/2011	1103025H.DWG	DRAWN BY JTJ

00194715

2012-000000707

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000707 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump095 (called Sump 095 on the attached Exhibit A) is part of LHAAP-35/36. Sump095 is a former sump location near Building 34-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump095 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump095) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump095 parcel is 69.6 square feet, more or less, or 0.00159 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump095 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump095 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump095 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump095 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM- ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 095
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 69.6 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

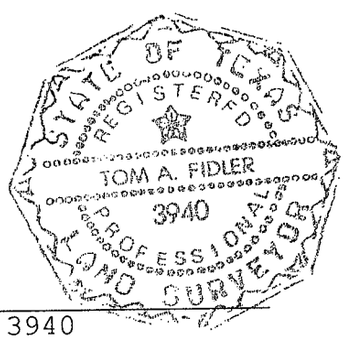
THENCE N 43deg48'28"E 725.22' to a point for the Southmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following eight courses :

(01)	N 37deg59'57"W	12.00'	to a point for tract corner,
(02)	S 52deg00'03"W	3.10'	to a point for tract corner,
(03)	N 37deg59'57"W	6.00'	to a point for the Westmost corner of this tract,
(04)	N 52deg00'03"E	8.00'	to a point for the Northmost corner of this tract,
(05)	S 37deg59'57"E	6.00'	to a point for tract corner,
(06)	S 52deg00'03"W	3.10'	to a point for tract corner,
(07)	S 37deg59'57"E	12.00'	to a point for the Eastmost corner of this tract,
(08)	S 52deg00'03"W	1.80'	to this POINT OF BEGINNING.

This tract contains 69.6 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

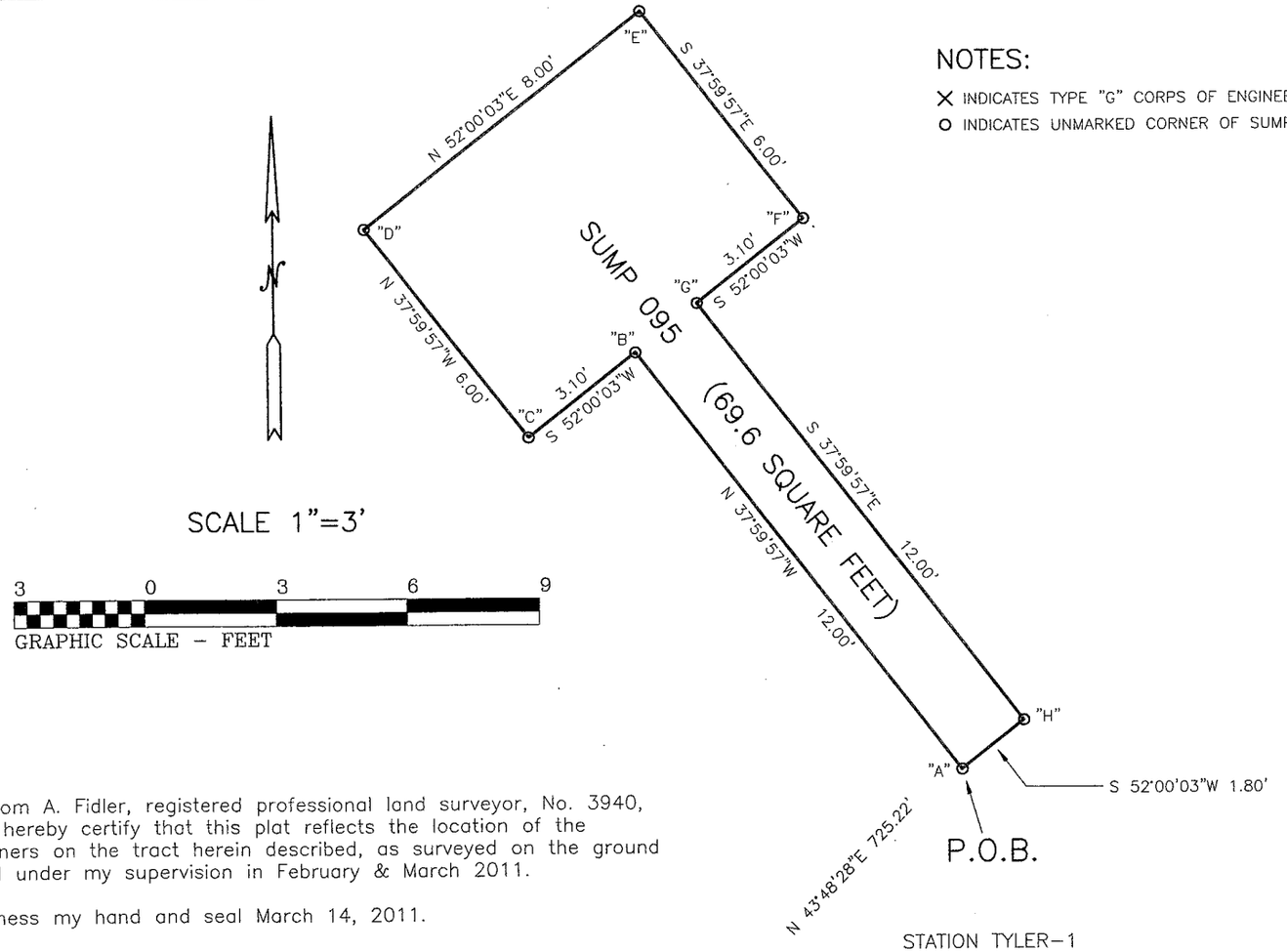


Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP



NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6959030.826	3314781.526
B	6959040.282	3314774.138
C	6959038.373	3314771.695
D	6959043.101	3314768.001
E	6959048.027	3314774.305
F	6959043.299	3314777.999
G	6959041.390	3314775.556
H	6959031.934	3314782.944

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 14, 2011.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEET

SUMP 095
(69.6 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	F.PTS F.LEG
03/14/2011	1103025F.DWG	DRAWN BY JTJ

00194721

2012-000000708

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000708 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump096 (called Sump 096 on the attached Exhibit A) is part of LHAAP-35/36. Sump096 is a former sump location near Building 34-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump096 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump096) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump096 parcel is 64 square feet, more or less, or 0.00146 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump096 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump096 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump096 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump096 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM- ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 096
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 64.0 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

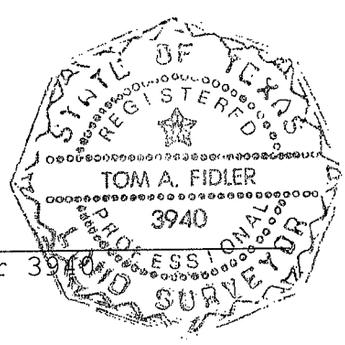
THENCE N 36deg34'53"E 696.04' to a point for the Southmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following four courses :

(01) N 37deg59'57"W 8.00' to a point for the Westmost corner of this tract,
(02) N 52deg00'03"E 8.00' to a point for the Northmost corner of this tract,
(03) S 37deg59'57"E 8.00' to a point for the Eastmost corner of this tract,
(04) S 52deg00'03"W 8.00' to this POINT OF BEGINNING.

This tract contains 64.0 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

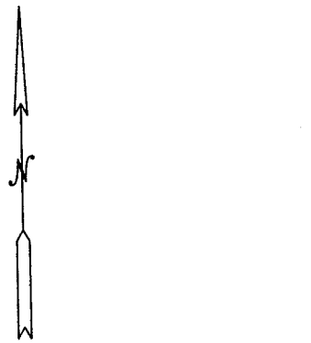


Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

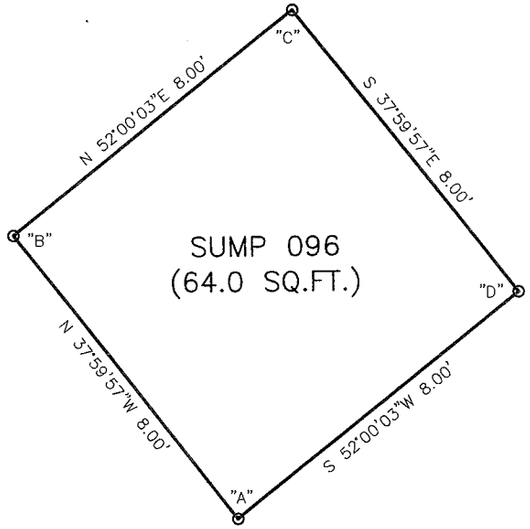
NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP



SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE – FEET



P.O.B.

N 36°34'53"E 696.04'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6959066.385	3314694.311
B	6959072.689	3314689.385
C	6959077.615	3314695.689
D	6959071.311	3314700.615

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 14, 2011.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 096
(64.0 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	G.PTS G.LEG
03/14/2011	1103025G.DWG	DRAWN BY JTJ

00194727

2012-000000709

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000709 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump097 (called Sump 097 on the attached Exhibit A) is part of LHAAP-35/36. Sump097 is a former sump location near Building 38-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump097 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump097) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump097 parcel is 76.6 square feet, more or less, or 0.00175 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump097 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump097 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump097 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump097 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30 th day of June, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 097
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 76.6 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

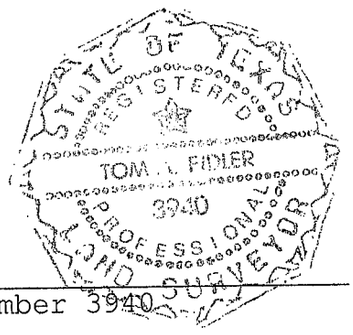
THENCE N 33deg53'28"E 842.86' to this POINT OF BEGINNING, said point being at the Southmost corner of the external face of the concrete which defines this sump,

THENCE along the external face of the concrete which defines this sump the following four courses, each course ending at a corner of the external face of said concrete :

(01)	N 58deg18'32"W	6.20',	being this sump's Westmost corner,
(02)	N 37deg53'34"E	12.45',	being this sump's Northmost corner,
(03)	S 58deg06'49"E	6.18',	being this sump's Eastmost corner,
(04)	S 37deg47'39"W	12.43',	being the aforementioned POINT OF BEGINNING.

This tract contains 76.6 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

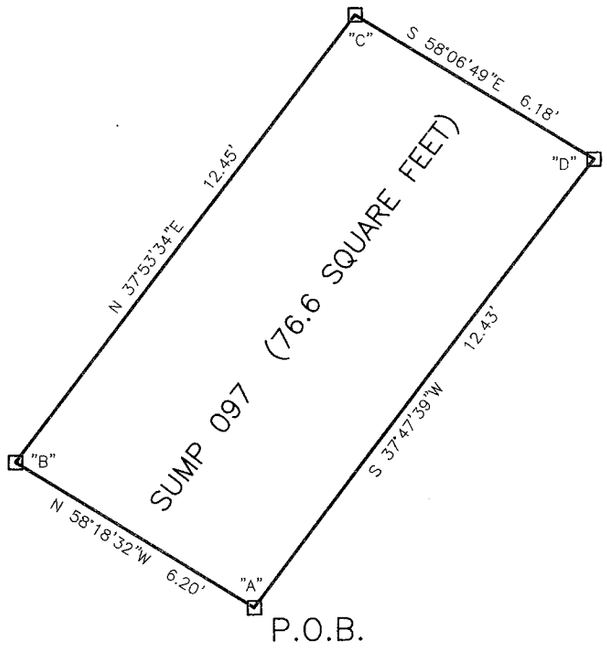
LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

NOTES:

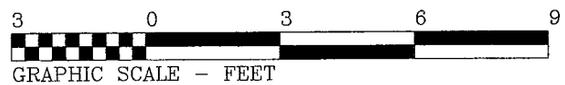
- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES CORNER OF EXTERNAL FACE OF CONCRETE
- O INDICATES UNMARKED POINT



COORDINATE TABLE

POINT	NORTH	EAST
A	6959207.120	3314749.495
B	6959210.377	3314744.219
C	6959220.206	3314751.868
D	6959216.943	3314757.113

SCALE 1"=3'



I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 4, 2011.

N 33°53'28"E 842.86'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 097
(76.6 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	Z.PTS Z.LEG
MAR. 4, 2011	0908074Z.DWG	DRAWN BY JTJ

00194733

2012-000000710

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000710 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump098 (called Sump 098 on the attached Exhibit A) is part of LHAAP-35/36. Sump098 is a former sump location near Building 38-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump098 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump098) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump098 parcel is 39.4 square feet, more or less, or 0.0009 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump098 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump098 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump098 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump098 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 098
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 39.4 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

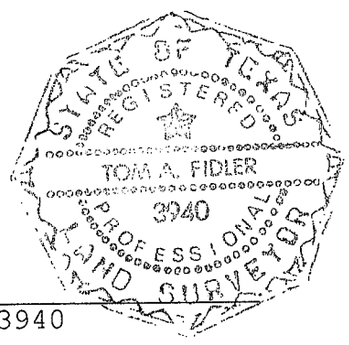
THENCE N 28deg58'18"E 815.98' to this POINT OF BEGINNING, said point being at the Southmost corner of the external face of the concrete which defines this sump,

THENCE along the external face of the concrete which defines this sump the following four courses, each course ending at a corner of the external face of said concrete :

(01)	N 51deg59'37"W	9.74',	being this sump's Westmost corner,
(02)	N 43deg01'55"E	4.05',	being this sump's Northmost corner,
(03)	S 52deg06'01"E	9.75',	being this sump's Eastmost corner,
(04)	S 43deg15'56"W	4.07',	being the aforementioned POINT OF BEGINNING.

This tract contains 39.4 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

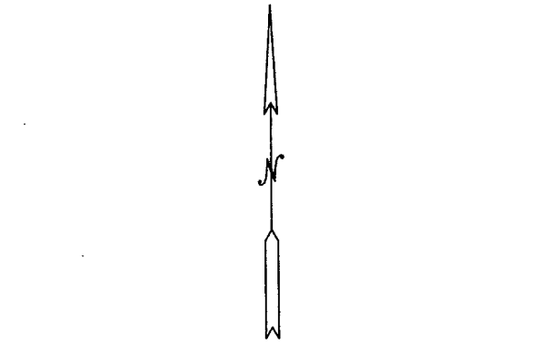


Tom A. Fidler, R.P.L.S. Number 3940

NOTES:

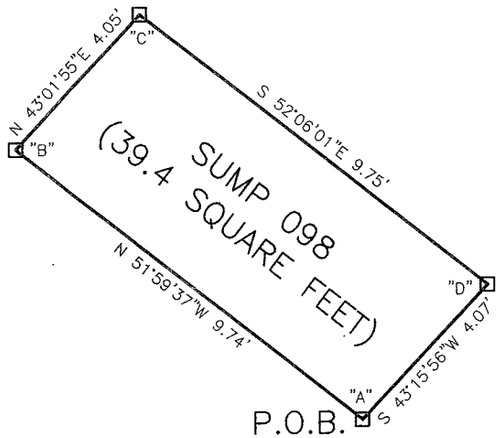
X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
□ INDICATES CORNER OF EXTERNAL FACE OF CONCRETE
O INDICATES UNMARKED POINT

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com



SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE – FEET



NOTE

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COORDINATE TABLE

POINT	NORTH	EAST
A	6959221.331	3314674.744
B	6959227.327	3314667.072
C	6959230.288	3314669.837
D	6959224.296	3314677.534

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 4, 2011.

N 28°58'18"E 815.98'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 098
(39.4 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	Y.PTS Y.LEG
MAR. 4, 2011	0908074Y.DWG	DRAWN BY JTJ

00194739

2012-000000711

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6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000711 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump099 (called Sump 099 on the attached Exhibit A) is part of LHAAP-35/36. Sump099 is a former sump location near Building 38-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump099 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump099) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump099 parcel is 48 square feet, more or less, or 0.0011 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump099 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump099 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump099 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump099 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30 th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 099
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 48.0 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

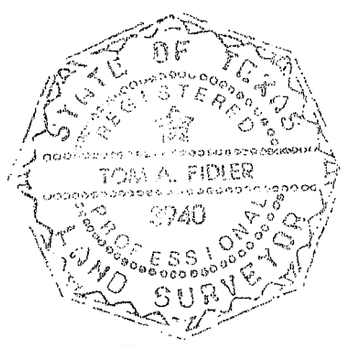
THENCE N 27deg36'35"E 879.49' to a point for the Southmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following four courses :

(01) N 37deg59'57"W 8.00' to a point for the Westmost corner of this tract,
(02) N 52deg00'03"E 6.00' to a point for the Northmost corner of this tract,
(03) S 37deg59'57"E 8.00' to a point for the Eastmost corner of this tract,
(04) S 52deg00'03"W 6.00' to this POINT OF BEGINNING.

This tract contains 48.0 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTE

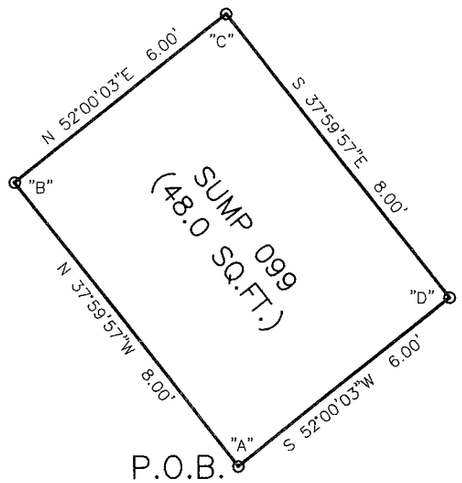
ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

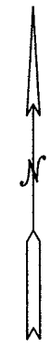
NOTES

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP

COORDINATE TABLE

POINT	NORTH	EAST
A	6959286.801	3314687.099
B	6959293.105	3314682.173
C	6959296.799	3314686.901
D	6959290.495	3314691.827





SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE - FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 14, 2011.

N 27°36'35"E 879.49'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 099
(48.0 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	J.PTS J.LEG
03/14/2011	1103025J.DWG	DRAWN BY JTJ

00194745

2012-000000712

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000712 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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I

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LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump100) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump100 parcel is 80 square feet, more or less, or 0.00183 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump100 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump100 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump100 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump100 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of JUNE, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 100
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 80.0 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

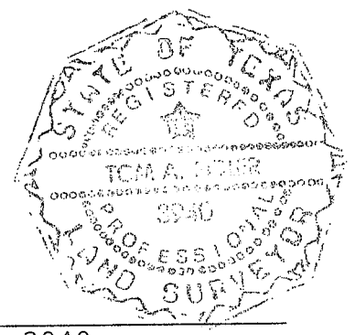
THENCE N 23deg52'16"E 995.90' to a point for the Southmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following four courses :

(01) N 37deg59'57"W 8.00' to a point for the Westmost corner of this tract,
(02) N 52deg00'03"E 10.00' to a point for the Northmost corner of this tract,
(03) S 37deg59'57"E 8.00' to a point for the Eastmost corner of this tract,
(04) S 52deg00'03"W 10.00' to this POINT OF BEGINNING.

This tract contains 80.0 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

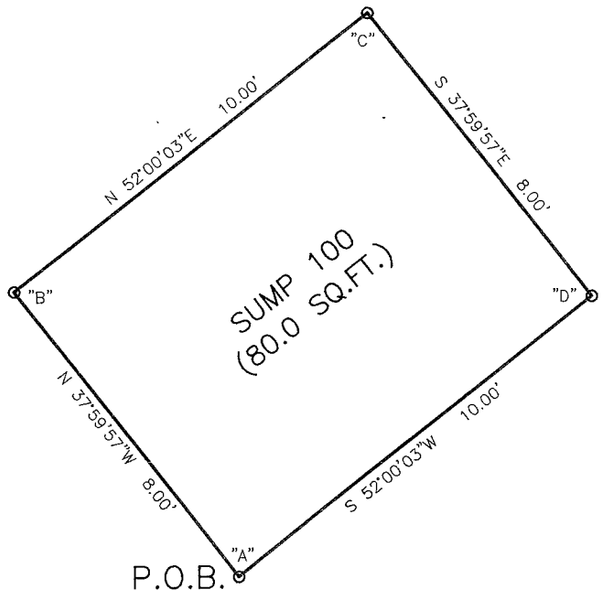


Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

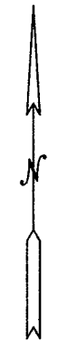
NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.



NOTES

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP



COORDINATE TABLE

POINT	NORTH	EAST
A	6959418.170	3314682.523
B	6959424.474	3314677.597
C	6959430.630	3314685.477
D	6959424.326	3314690.403

SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE – FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 14, 2011.

N 23°52'16"E 995.90'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 100
(80.0 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	K.PTS K.LEG
03/14/2011	1103025K.DWG	DRAWN BY JTJ

00194751

2012-000000713

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000713 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump101 (called Sump 101 on the attached Exhibit A) is part of LHAAP-35/36. Sump101 is a former sump location near Building 45-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump101 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump101) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump101 parcel is 67 square feet, more or less, or 0.00153 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump101 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump101 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump101 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump101 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30 th day of June, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 101
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 67.0 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

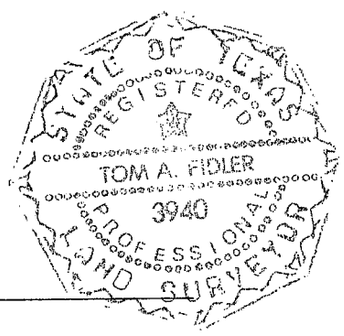
THENCE N 27deg18'47"E 1027.58' to this POINT OF BEGINNING, said point being at the Southmost corner of the external face of the concrete which defines this sump,

THENCE along the external face of the concrete which defines this sump the following four courses, each course ending at a corner of the external face of said concrete :

(01)	N 38deg59'52"W	11.24',	being this sump's Westmost corner,
(02)	N 57deg48'20"E	5.99',	being this sump's Northmost corner,
(03)	S 39deg05'42"E	11.26',	being this sump's Eastmost corner,
(04)	S 57deg59'19"W	6.01',	being the aforementioned POINT OF BEGINNING.

This tract contains 67.0 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

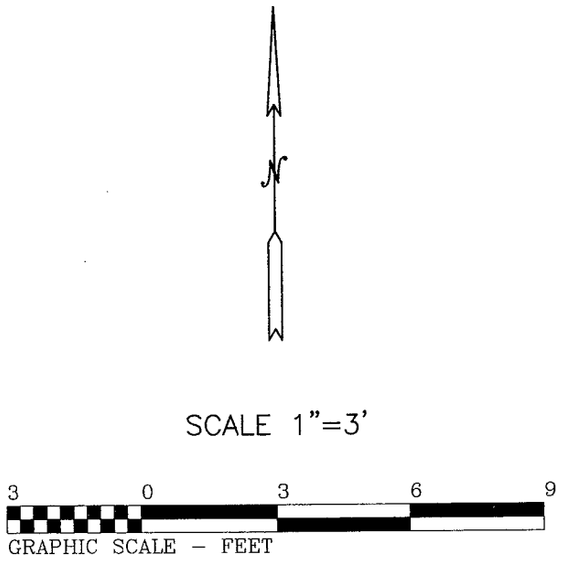


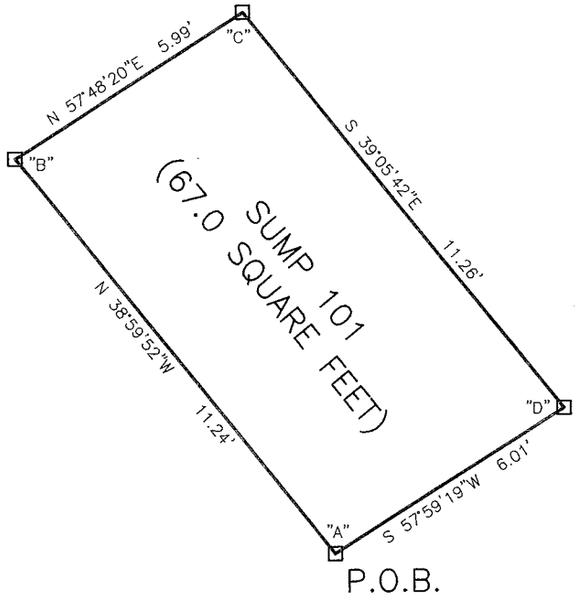
Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- ☐ INDICATES CORNER OF EXTERNAL FACE OF CONCRETE
- O INDICATES UNMARKED POINT





NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6959420.476	3314751.003
B	6959429.211	3314743.930
C	6959432.404	3314749.001
D	6959423.663	3314756.102

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 4, 2011.

N 27°18'47"E 1027.58'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 101
(67.0 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	A.PTS A.LEG
MAR. 4, 2011	1103025A.DWG	DRAWN BY JTJ

00194757

2012-000000714

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000714 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump102 (called Sump 102 on the attached Exhibit A) is part of LHAAP-35/36. Sump102 is a former sump location near Building 16-T physically located within site boundary of LHAAP-35C(53) of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump102 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump102) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the

Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump102 parcel is 154.4 square feet, more or less, or 0.00354 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump102 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump102 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump102 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump102 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 102
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 154.4 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-2" referenced above,

THENCE S 17deg29'41"E 550.28' to a point for the Northmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following ten courses :

(01)	S 15deg52'38"E	7.67'	to a point for the Eastmost corner of this tract,
(02)	S 74deg07'22"W	6.94'	to a point for tract corner,
(03)	N 15deg52'38"W	5.54'	to a point for tract corner,
(04)	S 74deg07'22"W	12.94'	to a point for tract corner,
(05)	S 36deg37'46"W	24.51'	to a point for tract corner,
(06)	S 53deg22'14"E	7.10'	to a point for tract corner,
(07)	S 36deg37'46"W	2.10'	to a point for the Southmost corner of this tract,
(08)	N 53deg22'14"W	9.25'	to a point for the Westmost corner of this tract,
(09)	N 36deg37'46"E	27.31'	to a point for tract corner,
(10)	N 74deg07'22"E	20.63'	to this POINT OF BEGINNING.

This tract contains 154.4 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTES:

× INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1116.219')

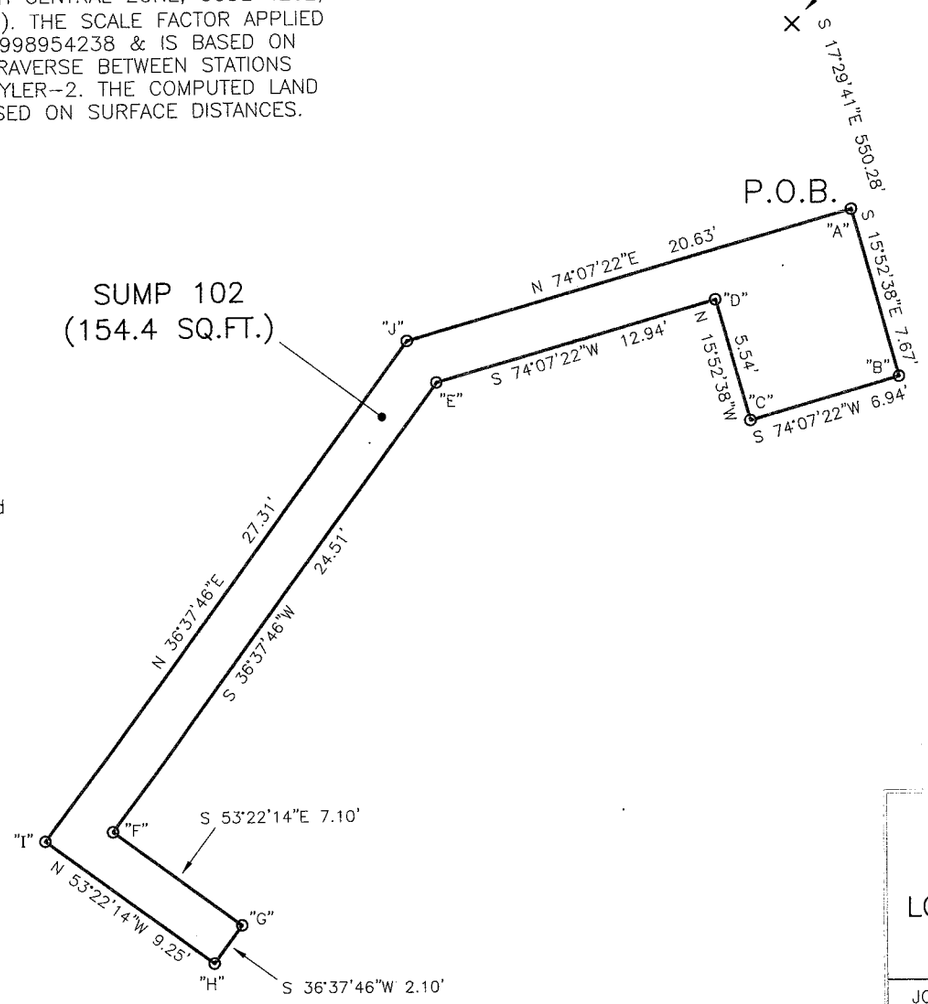
STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

SCALE 1"=6'

6 0 6 12 18
GRAPHIC SCALE – FEET



COORDINATE TABLE

POINT	NORTH	EAST
A	6957307.354	3315333.565
B	6957299.975	3315335.664
C	6957298.077	3315328.991
D	6957303.409	3315327.474
E	6957299.870	3315315.030
F	6957280.203	3315300.409
G	6957275.965	3315306.110
H	6957274.278	3315304.856
I	6957279.797	3315297.433
J	6957301.711	3315313.725

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 11, 2011.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

SUMP 102
(154.4 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #1101007	0407088.CRD	B.PTS B.LEG
MAR. 11, 2011	1103025B.DWG	DRAWN BY JTJ

00194763

2012-000000715

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000715 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump103 (called Sump 103 on the attached Exhibit A) is part of LHAAP-35/36. Sump103 is a former sump location near Building 16-T physically located within site boundary of LHAAP-35C(53) of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump103 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump103) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the

Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump103 parcel is 209.1 square feet, more or less, or 0.0048 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump103 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump103 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump103 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump103 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 103
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 209.1 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-2" referenced above,

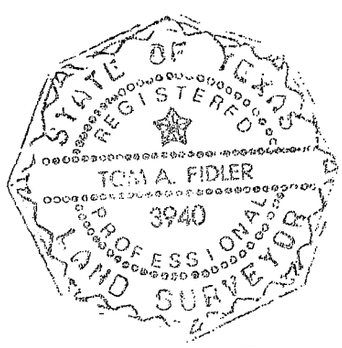
THENCE S 20deg31'34"E 601.43' to a point for the Northmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following ten courses :

(01)	S 16deg10'14"E	10.01'	to a point for the Eastmost corner of this tract,
(02)	S 73deg49'46"W	9.99'	to a point for tract corner,
(03)	N 16deg10'14"W	2.67'	to a point for tract corner,
(04)	S 36deg37'46"W	27.57'	to a point for the Southmost corner of this tract,
(05)	N 53deg22'14"W	29.02'	to a point for the Westmost corner of this tract,
(06)	N 36deg37'46"E	2.10'	to a point for tract corner,
(07)	S 53deg22'14"E	27.18'	to a point for tract corner,
(08)	N 36deg37'46"E	26.86'	to a point for tract corner,
(09)	N 16deg10'14"W	5.03'	to a point for tract corner,
(10)	N 73deg49'46"E	9.99'	to this POINT OF BEGINNING.

This tract contains 209.1 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 11, 2011.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@coblelynx.com

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

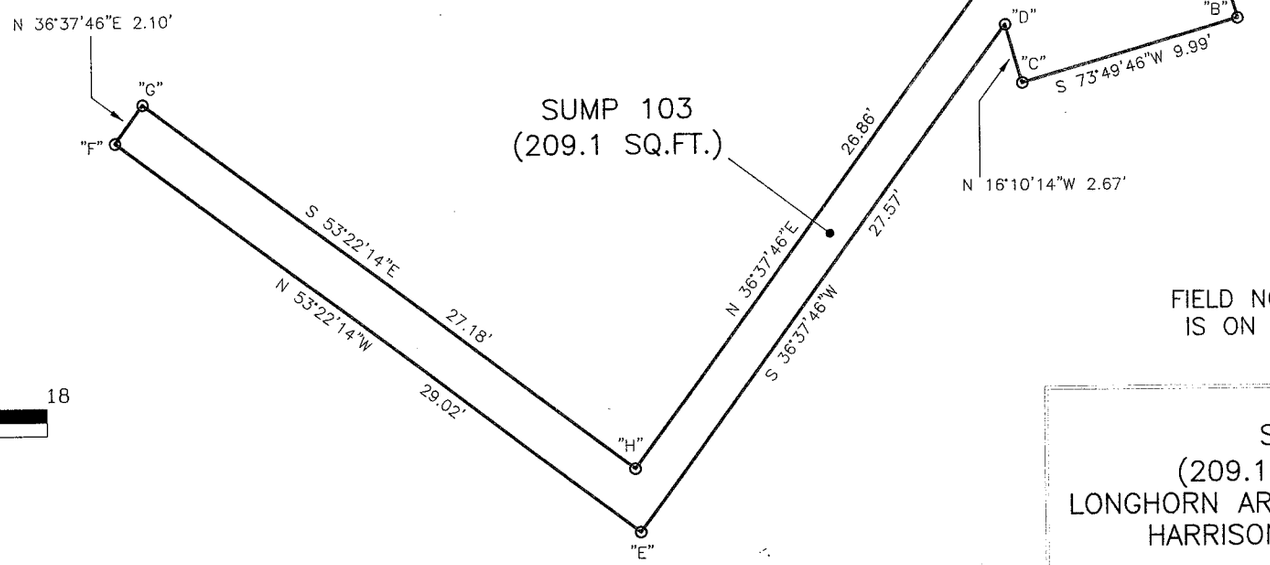
STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

NOTE

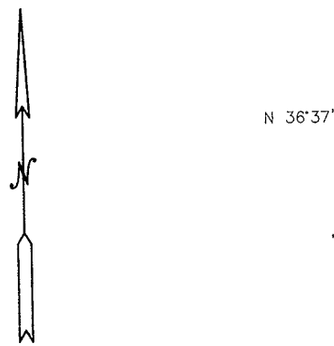
ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

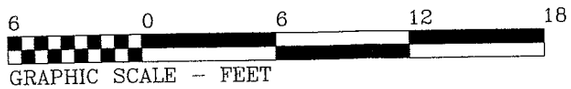
POINT	NORTH	EAST
A	6957268.937	3315379.021
B	6957259.319	3315381.810
C	6957256.536	3315372.213
D	6957259.104	3315371.468
E	6957236.982	3315355.021
F	6957254.297	3315331.731
G	6957255.984	3315332.985
H	6957239.765	3315354.800
I	6957261.320	3315370.825
J	6957266.154	3315369.424



FIELD NOTES DESCRIPTION IS ON SEPARATE SHEET



SCALE 1"=6'



NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)

O INDICATES UNMARKED CORNER OF SUMP

SUMP 103
(209.1 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #1101007	0407088.CRD	C.PTS C.LEG
MAR. 11, 2011	1103025C.DWG	DRAWN BY JTJ

00194769

2012-000000716

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MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000716 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump104 (called Sump 104 on the attached Exhibit A) is part of LHAAP-35/36. Sump104 is a former sump location near Building 16-T physically located within site boundary of LHAAP-35C(53) of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump104 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump104) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the

Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump104 parcel is 149.2 square feet, more or less, or 0.00342 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump104 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump104 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump104 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump104 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of JUNE, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 104
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 149.2 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-2" referenced above,

THENCE S 09deg38'40"E 580.62' to a point for the Northmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following eight courses :

(01)	S 53deg22'14"E	23.26'	to a point for the Eastmost corner of this tract,
(02)	S 36deg37'46"W	2.24'	to a point for tract corner,
(03)	N 53deg22'14"W	20.93'	to a point for tract corner,
(04)	S 36deg37'46"W	24.04'	to a point for the Southmost corner of this tract,
(05)	N 53deg22'14"W	7.69'	to a point for the Westmost corner of this tract,
(06)	N 36deg37'46"E	7.70'	to a point for tract corner,
(07)	S 53deg22'14"E	5.37'	to a point for tract corner,
(08)	N 36deg37'46"E	18.58'	to this POINT OF BEGINNING.

This tract contains 149.2 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

Tom A. Fidler, R.P.L.S. Number 3940

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 11, 2011.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

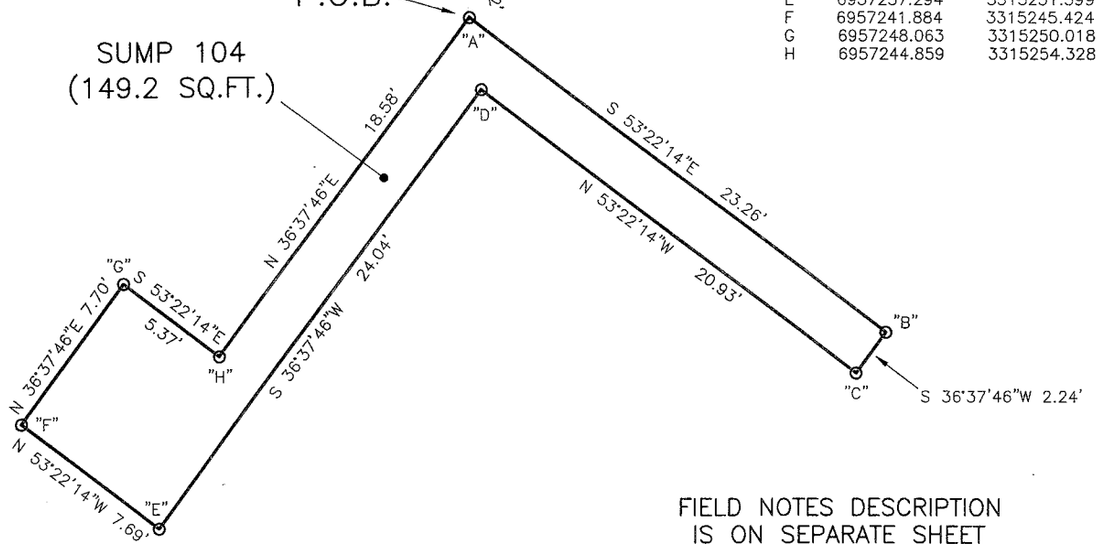
BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

S 09°38'40"E 580.62'

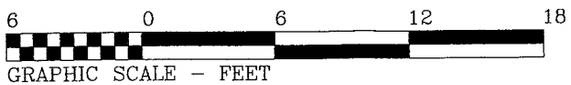
COORDINATE TABLE

POINT	NORTH	EAST
A	6957259.767	3315265.412
B	6957245.891	3315284.077
C	6957244.097	3315282.743
D	6957256.587	3315265.943
E	6957237.294	3315251.599
F	6957241.884	3315245.424
G	6957248.063	3315250.018
H	6957244.859	3315254.328



FIELD NOTES DESCRIPTION IS ON SEPARATE SHEET

SCALE 1"=6'



NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

SUMP 104
(149.2 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #1101007	0407088.CRD	D.PTS D.LEG
MAR. 11, 2011	1103025D.DWG	DRAWN BY JTJ

00194775

2012-000000717

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000717 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump105 (called Sump 105 on the attached Exhibit A) is part of LHAAP-35/36. Sump105 is a former sump location near Building 16-T physically located within site boundary of LHAAP-35C(53) of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump105 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump105) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump105 parcel is 201.7 square feet, more or less, or 0.00463 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump105 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump105 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump105 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump105 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30 th day of June, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 105
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 201.7 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-2" referenced above,

THENCE S 13deg17'42"E 623.38' to a point for the Northmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following eight courses :

(01)	S 53deg22'14"E	26.51'	to a point for the Eastmost corner of this tract,
(02)	S 36deg37'46"W	15.65'	to a point for tract corner,
(03)	S 53deg22'14"E	8.85'	to a point for tract corner,
(04)	S 36deg37'46"W	10.63'	to a point for the Southmost corner of this tract,
(05)	N 53deg22'14"W	10.86'	to a point for tract corner,
(06)	N 36deg37'46"E	24.04'	to a point for tract corner,
(07)	N 53deg22'14"W	24.50'	to a point for the Westmost corner of this tract,
(08)	N 36deg37'46"E	2.24'	to this POINT OF BEGINNING.

This tract contains 201.7 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

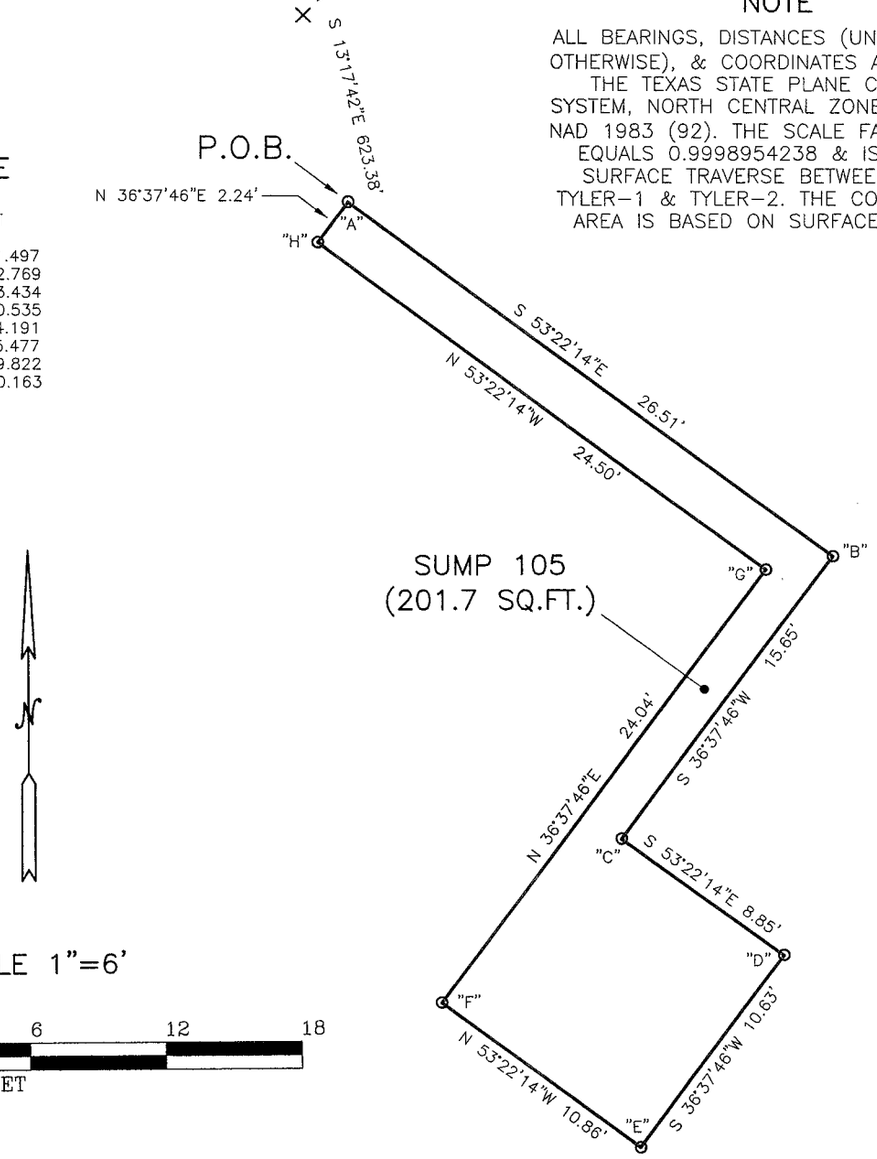
S 13°17'42"E 623.38'

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6957225.505	3315311.497
B	6957209.690	3315332.769
C	6957197.135	3315323.434
D	6957191.856	3315330.535
E	6957183.323	3315324.191
F	6957189.801	3315315.477
G	6957209.095	3315329.822
H	6957223.711	3315310.163



SCALE 1"=6'

6 0 6 12 18
GRAPHIC SCALE - FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 11, 2011.

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

SUMP 105
(201.7 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #1101007	0407088.CRD	E.PTS E.LEG
MAR. 11, 2011	1103025E.DWG	DRAWN BY JTJ

2012-000000718

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000718 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump123 (called Sump 123 on the attached Exhibit A) is part of LHAAP-35/36. Sump123 is a former sump location near Building 18-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump123 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump123) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump123 parcel is 60 square feet, more or less, or 0.00137 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump123 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump123 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump123 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump123 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 123
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 60.0 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

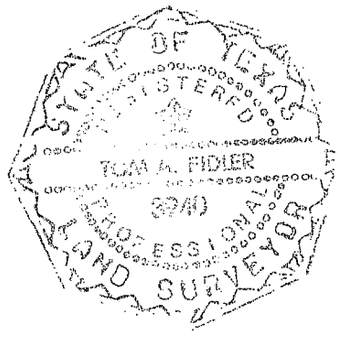
THENCE N 07deg59'31"W 569.56' to a point for the Southmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following four courses :

(01) N 37deg59'57"W 6.00' to a point for the Westmost corner of this tract,
(02) N 52deg00'03"E 10.00' to a point for the Northmost corner of this tract,
(03) S 37deg59'57"E 6.00' to a point for the Eastmost corner of this tract,
(04) S 52deg00'03"W 10.00' to this POINT OF BEGINNING.

This tract contains 60.0 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

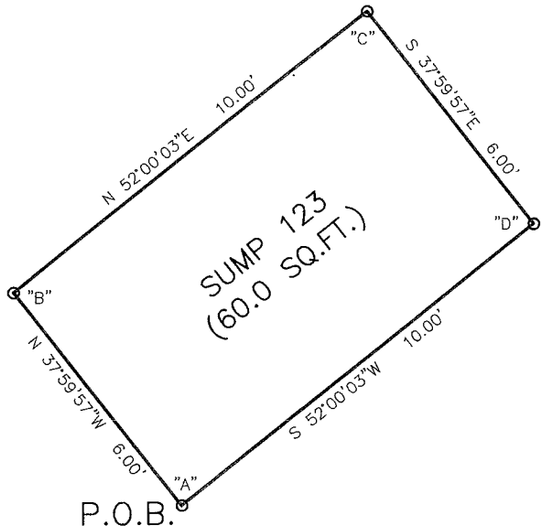
LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

NOTES

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP



COORDINATE TABLE

POINT	NORTH	EAST
A	6959122.758	3314187.907
B	6959127.486	3314184.213
C	6959133.642	3314192.093
D	6959128.914	3314195.787

SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE - FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 14, 2011.

N 08°28'00"W 622.08'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 123
(60.0 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	I.PTS I.LEG
03/14/2011	1103025I.DWG	DRAWN BY JTJ

00194787

2012-000000719

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000719 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. WRSump001 (called W.R. Sump 001 on the attached Exhibit A) is part of LHAAP-35/36. WRSump001 is a former waste rack sump location near Building 34-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36 of which WRSump001 is a part is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2, no further action.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps were also associated with wash racks (waste rack sumps including WRSump001) where containers were cleaned and stored. Further information may be found in the

Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The WRSump001 parcel is 57.1 square feet, more or less, or 0.00131 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the WRSump001 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from WRSump001 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of WRSump001 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of WRSump001 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
W.R. SUMP 001
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 57.1 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

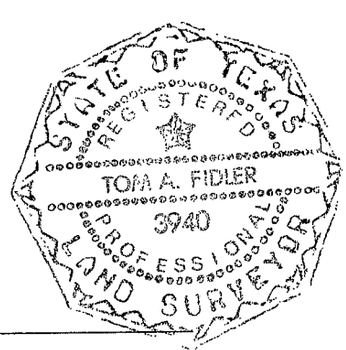
THENCE N 42deg37'08"E 700.32' to this POINT OF BEGINNING, said point being at the Southmost corner of the external face of the concrete wall which defines this sump,

THENCE along the external face of the concrete wall which defines this sump the following twelve courses, each course ending at a corner of the external face of said concrete wall :

(01)	N 36deg36'16"W	4.50',	
(02)	N 51deg51'25"E	1.07',	
(03)	N 38deg08'35"W	2.46',	
(04)	S 63deg07'08"W	0.85',	
(05)	N 38deg08'35"W	7.98',	being this sump's Westmost corner,
(06)	N 51deg51'25"E	3.70',	being this sump's Northmost corner,
(07)	S 39deg59'44"E	8.17',	
(08)	S 52deg07'09"W	1.00',	
(09)	S 39deg59'44"E	2.34',	
(10)	N 50deg00'16"E	1.14',	
(11)	S 39deg59'44"E	4.67',	being this sump's Eastmost corner,
(12)	S 52deg10'33"W	4.68',	being the aforementioned POINT OF BEGINNING.

This tract contains 57.1 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

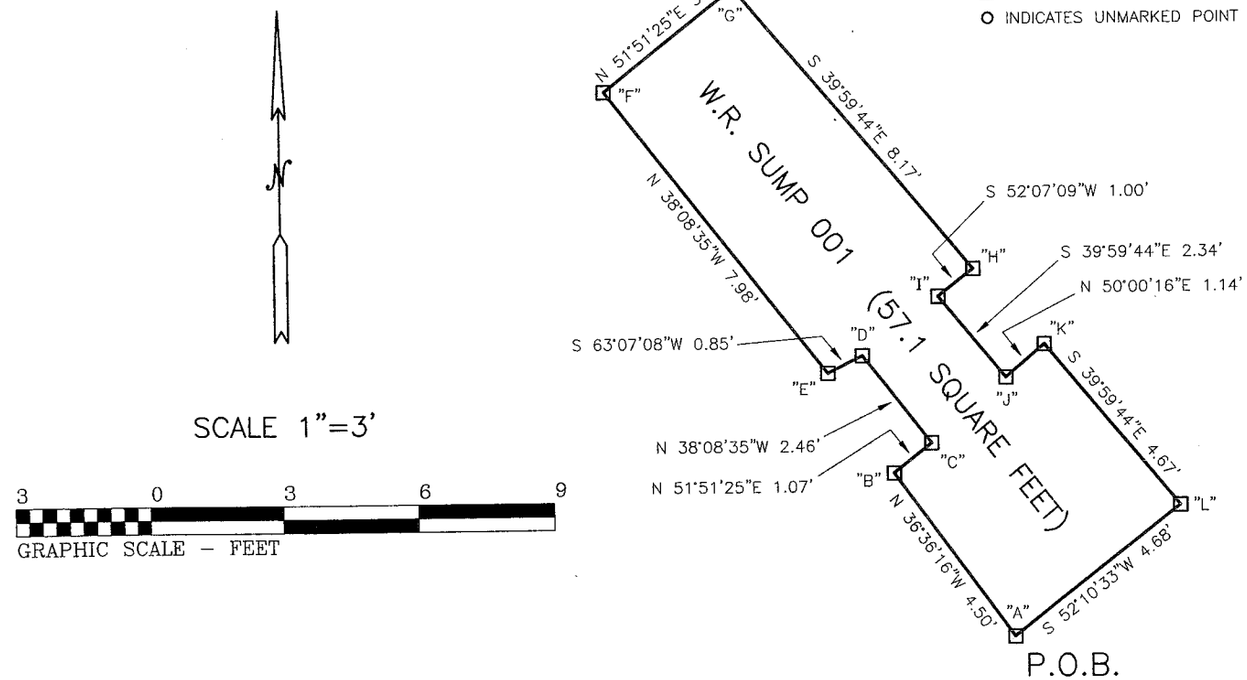


Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES CORNER OF EXTERNAL FACE OF CONCRETE WALL
- O INDICATES UNMARKED POINT



NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6959022.804	3314753.696
B	6959026.415	3314751.014
C	6959027.074	3314751.854
D	6959029.012	3314750.332
E	6959028.627	3314749.573
F	6959034.899	3314744.647
G	6959037.183	3314747.555
H	6959030.925	3314752.805
I	6959030.313	3314752.018
J	6959028.519	3314753.523
K	6959029.252	3314754.396
L	6959025.676	3314757.396
M	6959022.804	3314753.696

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 1, 2011.

N 42°37'08"E 700.32'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

W.R. SUMP 001
(57.1 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	W.PTS W.LEG
MAR. 1, 2011	0908074W.DWG	DRAWN BY JTJ

00194793

2012-000000720

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000720 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. WRSump002 (called W.R. Sump 002 on the attached Exhibit A) is part of LHAAP-35/36. WRSump002 is a former waste rack sump location near Building 38-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which WRSump002 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2, no further action.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps were also associated with wash racks (waste rack sumps including WRSump002) where containers were cleaned and stored. Further information may be found in the

Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The WRSump002 parcel is 61.1 square feet, more or less, or 0.00140 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the WRSump002 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from WRSump002 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of WRSump002 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of WRSump002 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
W.R. SUMP 002
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 61.1 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

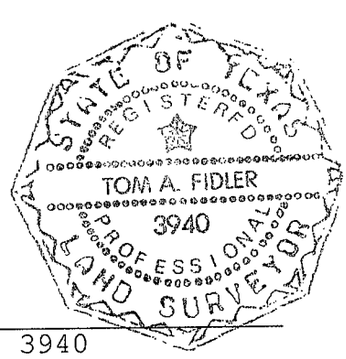
THENCE N 27deg03'19"E 797.78' to this POINT OF BEGINNING, said point being at the Southmost corner of the external face of the concrete wall which defines this sump,

THENCE along the external face of the concrete wall which defines this sump the following twelve courses, each course ending at a corner of the external face of said concrete wall :

(01)	N 50deg15'02"W	4.01',	being this sump's Westmost corner,
(02)	N 38deg19'51"E	7.83',	
(03)	S 58deg29'13"E	0.84',	
(04)	N 41deg11'11"E	3.09',	
(05)	N 51deg30'19"W	1.32',	
(06)	N 40deg19'40"E	4.55',	being this sump's Northmost corner,
(07)	S 54deg31'45"E	4.65',	being this sump's Eastmost corner,
(08)	S 38deg16'58"W	4.65',	
(09)	N 53deg12'50"W	1.23',	
(10)	S 39deg42'05"W	3.32',	
(11)	S 51deg04'42"E	0.79',	
(12)	S 38deg16'58"W	7.89',	being the aforementioned POINT OF BEGINNING.

This tract contains 61.1 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

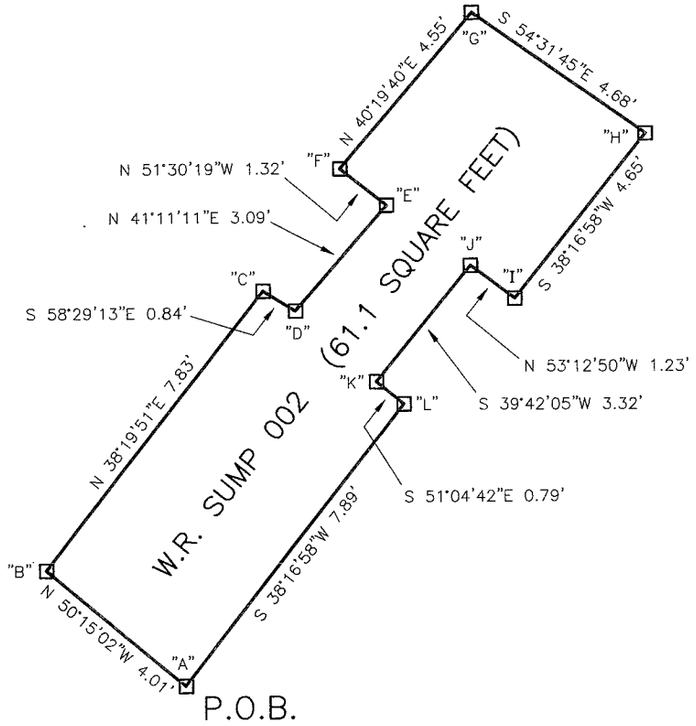
LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES CORNER OF EXTERNAL FACE OF CONCRETE WALL
- O INDICATES UNMARKED POINT



COORDINATE TABLE

POINT	NORTH	EAST
A	6959217.937	3314642.369
B	6959220.500	3314639.287
C	6959226.642	3314644.143
D	6959226.201	3314644.863
E	6959228.524	3314646.896
F	6959229.343	3314645.866
G	6959232.815	3314648.814
H	6959230.097	3314652.628
I	6959226.443	3314649.744
J	6959227.177	3314648.763
K	6959224.624	3314646.643
L	6959224.129	3314647.256
M	6959217.937	3314642.369

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

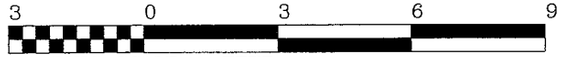
Witness my hand and seal March 1, 2011.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

N 27°03'19"E 797.78'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

SCALE 1"=3'



FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

W.R. SUMP 002
(61.1 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	X.PTS X.LEG
MAR. 1, 2011	0908074X.DWG	DRAWN BY JTJ

00194799

2012-000000721

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000721 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. WRSump003 (called W.R. Sump 003 on the attached Exhibit A) is part of LHAAP-35/36. WRSump003 is a former waste rack sump location near Building 16-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which WRSump003 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2, no further action.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps were also associated with wash racks (waste rack sumps including WRSump003) where containers were cleaned and stored. Further information may be found in the

Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The WRSump003 parcel is 69.5 square feet, more or less, or 0.00159 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the WRSump003 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from WRSump003 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of WRSump003 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of WRSump003 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30 th day of June, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
W.R. SUMP 003
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 69.5 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

THENCE N 00deg06'48"W 643.61' to this POINT OF BEGINNING, said point being at the Southmost corner of the external face of the concrete wall which defines this sump,

THENCE along the external face of the concrete wall which defines this sump the following twelve courses, each course ending at a corner of the external face of said concrete wall :

(01)	N 37deg49'35"W 4.09',	being this sump's	Westmost corner,
(02)	N 48deg49'52"E 10.08',		
(03)	S 40deg22'17"E 0.96',		
(04)	N 51deg37'59"E 1.64',		
(05)	N 32deg53'50"W 1.27',		
(06)	N 49deg58'25"E 4.65',	being this sump's	Northmost corner,
(07)	S 41deg50'19"E 4.65',	being this sump's	Eastmost corner,
(08)	S 43deg56'08"W 4.79',		
(09)	N 44deg10'19"W 1.61',		
(10)	S 52deg56'11"W 1.74',		
(11)	S 39deg31'31"E 1.01',		
(12)	S 49deg33'58"W 10.21',	being the aforementioned POINT OF BEGINNING.	

This tract contains 69.5 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

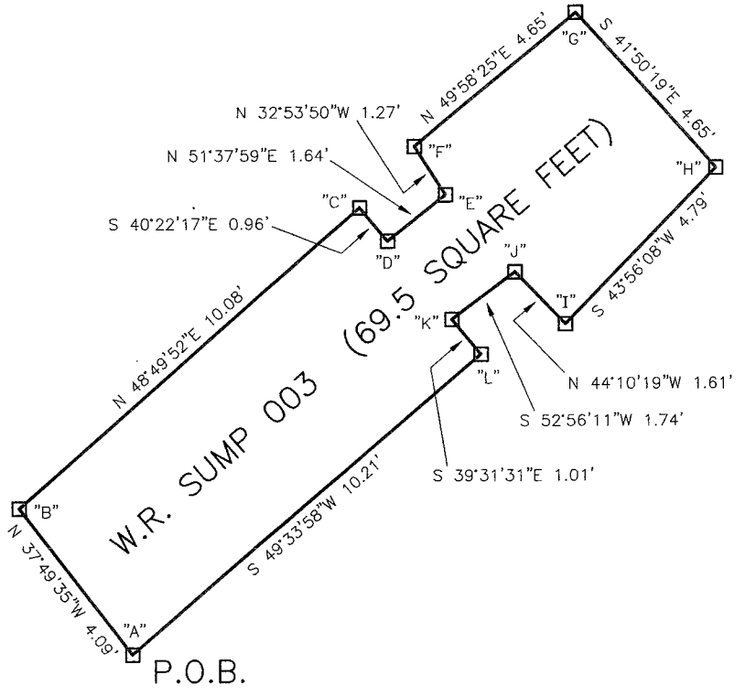
STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.



NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES CORNER OF EXTERNAL FACE OF CONCRETE WALL
- O INDICATES UNMARKED POINT

COORDINATE TABLE

POINT	NORTH	EAST
A	6959151.071	3314278.227
B	6959154.302	3314275.719
C	6959160.937	3314283.306
D	6959160.202	3314283.931
E	6959161.221	3314285.218
F	6959162.288	3314284.528
G	6959165.278	3314288.088
H	6959161.816	3314291.188
I	6959158.365	3314287.863
J	6959159.516	3314286.744
K	6959158.468	3314285.356
L	6959157.691	3314285.996

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 1, 2011.

N 00°06'48"W 643.61'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE - FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

W.R. SUMP 003
(69.5 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	V.PTS V.LEG
MAR. 1, 2011	0908074V.DWG	DRAWN BY JTJ

00194805

LHAAP-37, 37-1

LUCs FROM FINAL REMEDIAL DESIGN

March 2, 2015

FINAL
REMEDIAL DESIGN
LHAAP-35B (37), CHEMICAL LABORATORY AND LHAAP-67, ABOVEGROUND STORAGE TANK FARM
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared by

U.S. Army Corps of Engineers
Tulsa District
1645 South 101st East Avenue
Tulsa, Oklahoma

August 1, 2011

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4.0 Land Use Controls for the Site

The LUCs to be implemented by the Army or its representatives for LHAAP-35B(37) and LHAAP-67 to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health include:

- Ensure no withdrawal or use of groundwater beneath the sites for anything other than environmental monitoring and testing until cleanup goals are met

Notification of the groundwater use restriction will accompany all transfer documents and will be recorded at the Harrison County Courthouse in accordance with Texas Administrative Code (TAC) Title 30, §335.566.The LUC addresses the areas of LHAAP-35B(37) and LHAAP-67 that include groundwater plumes at LHAAP-35B(37) and LHAAP-67 with levels of contamination that require implementation of a remedy (see **Section 2.0**). The U.S. Army is responsible for implementing, maintaining, monitoring, reporting on, and enforcing the LUC.

U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of an LUC objective at this site after it has transferred. U.S. Army shall obtain USEPA and TCEQ concurrence prior to termination or significant modification of the LUC, or implementation of a change in land use inconsistent with the LUC objectives and use assumptions of the remedy. Although not a remedy, the land use assumption for LHAAP-35B(37) and LHAAP-67 forms the basis for the remedy. The reasonably anticipated future use of the site as part of a national wildlife refuge is consistent with an industrial risk exposure scenario. Notification of the land use assumption of this site will be made in transfer documentation, will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566 and compliance with the use assumption will be documented in the Five-Year Review reports.

6.2 Land Use Control Implementation Actions

The Army or its representatives will be responsible for LUC implementation and certification, reporting and enforcement. The Army shall address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable.

As a condition of property transfer, the Army may require the transferee to assume responsibility for various implementation actions, as indicated below. Although the Army may transfer responsibility for various implementation actions, the Army shall retain its responsibility for remedy integrity. This means that the Army is responsible for addressing substantive violations of performance objectives that would undermine the Army's CERCLA remedy. The Army also will be responsible for: 1) incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation; 2) recording groundwater use restriction and survey plat at the Harrison County Courthouse; and 3) notifying Texas Department of Licensing and Regulation of the groundwater restriction which includes the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the Army, the USEPA, and the TCEQ. The following LUC implementation actions shall be undertaken by the Army in order to ensure that the aforementioned LUC performance objectives for LHAAP-35B(37) and LHAAP-67 are met and maintained:

6.2.1 Comprehensive Land Use Control Management Plan

Within 30 days of receiving USEPA and TCEQ approval of this RD, the Army will incorporate this document into the Comprehensive LUC Management Plan. The Comprehensive LUC Management Plan consists of LHAAP RD documents and a survey plat showing the locations where LUCs being implemented at LHAAP are applied. The purpose of this Comprehensive LUC Management Plan is to ensure all site specific LUCs are compiled into one comprehensive location for both pre-transfer use by the installation and for post-transfer use by the transferee. This document is also accessible to regulators, the local government and the public. The Comprehensive LUC Management Plan is located in the Marshall Public Library to accompany LHAAP's Administrative Record. As LUC RD documents for additional environmental sites are approved by USEPA and TCEQ, the Army shall likewise add those documents and survey plats to the Comprehensive LUC Management Plan as well as update the previous copy of the plan placed in the Marshall Public Library.

6.2.2 Site Certifications and Reporting

Beginning with finalization of this RD, the Army will undertake annual certifications to confirm continued compliance with the LUC objectives. The Army will retain the annual LUC Compliance Certification documents in the project files for incorporation into the Five-Year Review Reports, and these documents will be made available to USEPA and TCEQ upon request. The certification form will be consistent with the form attached as **Appendix B**. In addition, should any violations be found during the annual certification, the Army will provide to USEPA and TCEQ along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations**.** Upon transfer, such responsibilities may shift to the transferee via

appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental transfer document. The need to continue annual certifications will be revisited at Five-Year Reviews.

6.2.3 Notice of Planned Property Conveyances

The Army shall provide notice to USEPA and TCEQ of plans to convey LHAAP-35B(37) and LHAAP-67 acreage. The notice shall describe the mechanism by which LUCs will continue to be implemented, maintained, inspected, reported, and enforced.

6.2.4 Opportunity to Review Text of Intended Land Use Controls

Army will provide a copy of the groundwater use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. In addition, the Army will produce an ECP or other environmental document for transfer of LHAAP-35B(37) and LHAAP-67, but before executing transfer, the Army will provide USEPA and TCEQ with a draft copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before document execution, to review all LUC-related provisions.

6.2.5 Notification Should Action(s) Which Interfere with Land Use Control Effectiveness Be Discovered Subsequent to Conveyance

Should the Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objectives, the Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 6.2.6** below, the Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

6.2.6 Land Use Control Enforcement

Should the LUC remedy reflected in this LUC RD fail, the Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the owner or violator, to the institution of judicial action under the auspices of Texas property law or CERCLA. Alternatively, should the circumstances warrant such, the Army could choose to exercise its response authorities under CERCLA, and then seek cost recovery after the fact from the person(s) or entity(ies) who violated a given LUC. Should the Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the Army will notify these agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUCs.

6.2.7 Modification or Termination of Land Use Controls

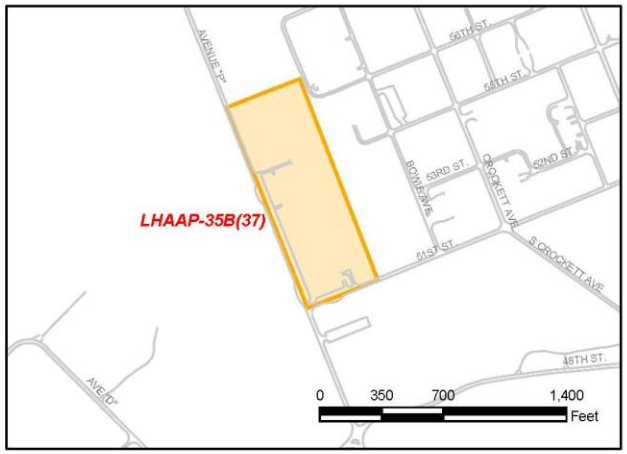
The Army shall not, without USEPA and TCEQ concurrence, make a significant modification to, or terminate a LUC, or make a land use change inconsistent with the LUC objectives and use assumptions of the selected remedy. Likewise, the Army shall seek prior USEPA and TCEQ concurrence before commencing actions that may impact remedy integrity. In the case of an emergency action, the Army shall obtain prior USEPA and TCEQ concurrence as appropriate to the exigencies of the situation.

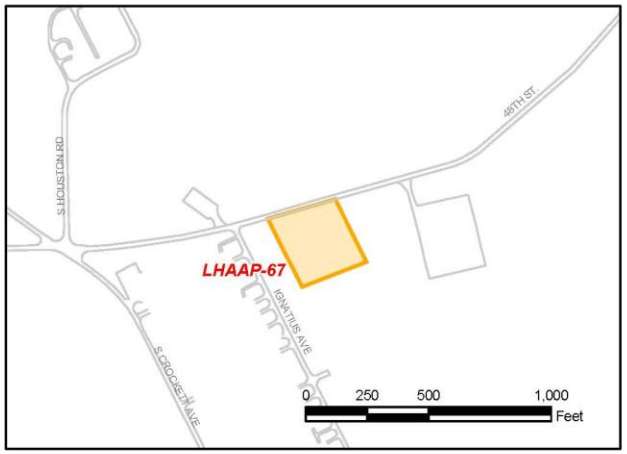
The LUCs shall remain in effect until such time as the Army, TCEQ and USEPA agree that the concentrations of COCs have met cleanup levels. When this occurs, the LUCs will be terminated as needed. The decision to terminate LUCs will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action completion report. If the property has been transferred and a determination by the Army, TCEQ and USEPA has been made to terminate one or more of the LUCs, the Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

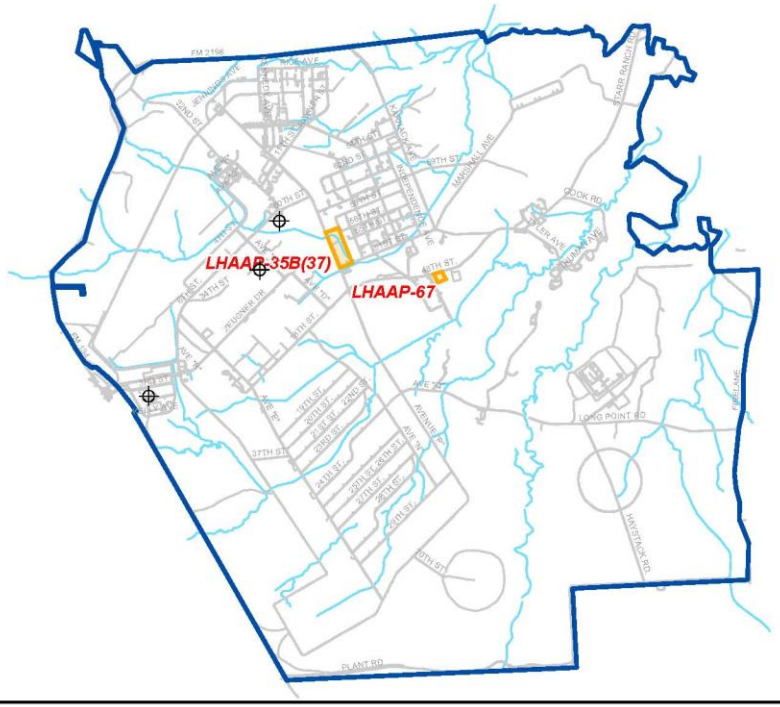
6.3 Monitored Natural Attenuation Implementation Actions

Implementation actions include installation of additional monitoring wells, plugging and abandonment of monitoring wells not designated for long-term monitoring, implementation of a groundwater monitoring plan, monitoring, and reporting. The project schedule and cost summary for implementation actions are provided in **Appendix H**. Groundwater monitoring will be conducted to monitor the effectiveness of MNA in reducing contaminant concentrations over time. Monitoring will also be conducted to evaluate plume migration and ensure that chlorinated solvents-contaminated groundwater does not impact nearby surface water at unacceptable levels. Surface water sampling will be conducted to confirm contaminated groundwater is not migrating to surface water. The Groundwater Monitoring Plan, attached as **Appendix A**, describes the wells, their locations, analytical parameters, the frequency of the monitoring, surface water sampling, and presents a list of the monitored constituents and their respective MCLs. Groundwater monitoring and surface water sampling conducted at LHAAP-35B(37) and LHAAP-67 will follow the Health and Safety Plan (**Appendix E**), the Contractor Quality Control Plan (**Appendix F**), the Chemical Data Acquisition Plan (**Appendix G**), Field Activities (**Appendix C**) and Field Procedures (**Appendix D**) as contained in the appendices of the Remedial Design LHAAP-35B(37) and LHAAP-67.

Annual reports will be prepared for any year in which sampling occurs to document the monitoring program. The first year's annual report will include a review of the first four quarters of data, which include natural attenuation parameters and provide an evaluation for the evidence of MNA as a remedial method and a review of the first year's surface water sample data. The TCEQ provides guidance for MNA as a remedial action in *Monitored Natural Attenuation Demonstrations* (Texas Natural Resource Conservation Commission [TNRCC], RG-366/TRRP-33, October 2001). Although LHAAP is being addressed under the Risk Reduction Standards rather than Texas Risk Reduction Program (TRRP), this guidance is comparable to USEPA guidance and may be used as a guideline for the evaluation of the groundwater data. TRRP guidance specifies recommended lines of evidence to document the occurrence of natural attenuation at a site. For the first annual report, primary and secondary lines of evidence will be evaluated to document that attenuation is occurring at LHAAP-35B(37) and LHAAP-67. The primary line







LEGEND

- Road
- Stream
- Site
- Approximate LHAAP Boundary
- LHAAP Water Supply Well

LEGEND

- Approximate LHAAP Boundary
- Road
- Stream
- Site
- LHAAP Water Supply Well

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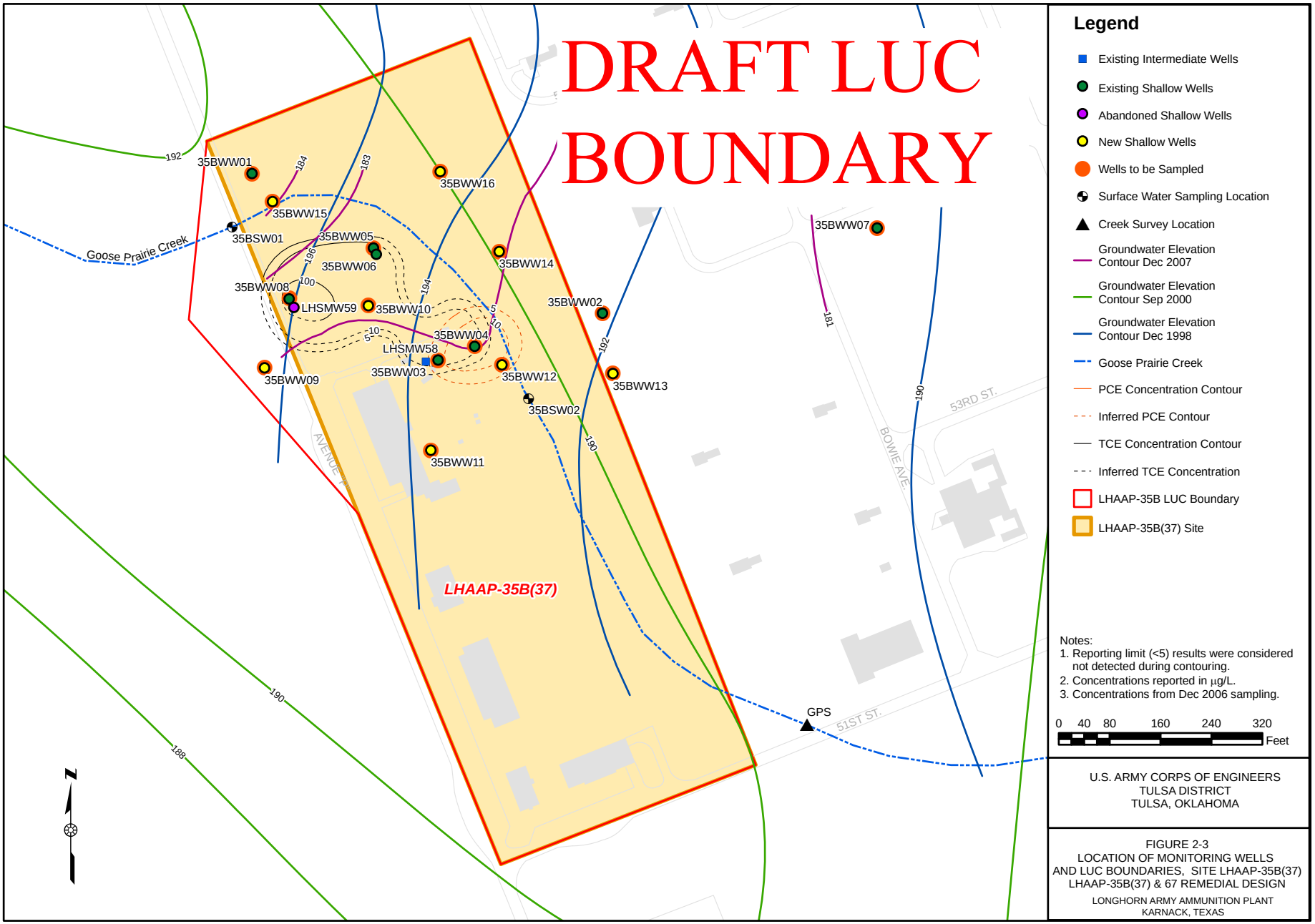
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-2
SITE LOCATION MAP
REMEDIAL DESIGN
LHAAP-35B(37) AND LHAAP-67, GROUP 4
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS



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Appendix B

Sample Annual Land Use Control Compliance Certification Documentation

Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design Addendum dated _____ for LHAAP-35B(37), a certification of site was conducted by _____ [indicate transferee] on_____.

A summary of land use control mechanisms is as follows:

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

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

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

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

Completed annual compliance certification forms shall be sent no later than March 1 of each year for the previous calendar year.

U.S. Department of the Army
TCEQ
USEPA Region 6

LHAAP-37, 37-2

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-35B (37) FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

LHAAP-37, 37-3

LAND USE CONTROL COMPLIANCE INSPECTION FORM

March 2, 2015

Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated 8/1/11 for LHAAP-35B (37), a certification of site was conducted by _____ [indicate transferee] on _____.

A summary of land use control mechanisms is as follows:

- Groundwater restriction - restriction of the use of groundwater to environmental monitoring and testing until cleanup goals are met. [Indicate whether groundwater restrictions are still required at LHAAP-35B (37)]

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

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

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

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

LHAAP-46, 46-1

LUCs FROM FINAL REMEDIAL DESIGN

March 2, 2015

Final
Remedial Design
LHAAP-46, Plant 2 Area, Group 4
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for U.S. Army Corps of Engineers – Tulsa District
1645 South 101st, East Avenue
Tulsa, Oklahoma 74128

Prepared by Shaw Environmental, Inc.
1401 Enclave Parkway, Suite 250
Houston, Texas 77077

Contract No. W912QR-04-D-0027, Task Order No. DS02
Shaw Project No. 117591
Rev 0
September 2011

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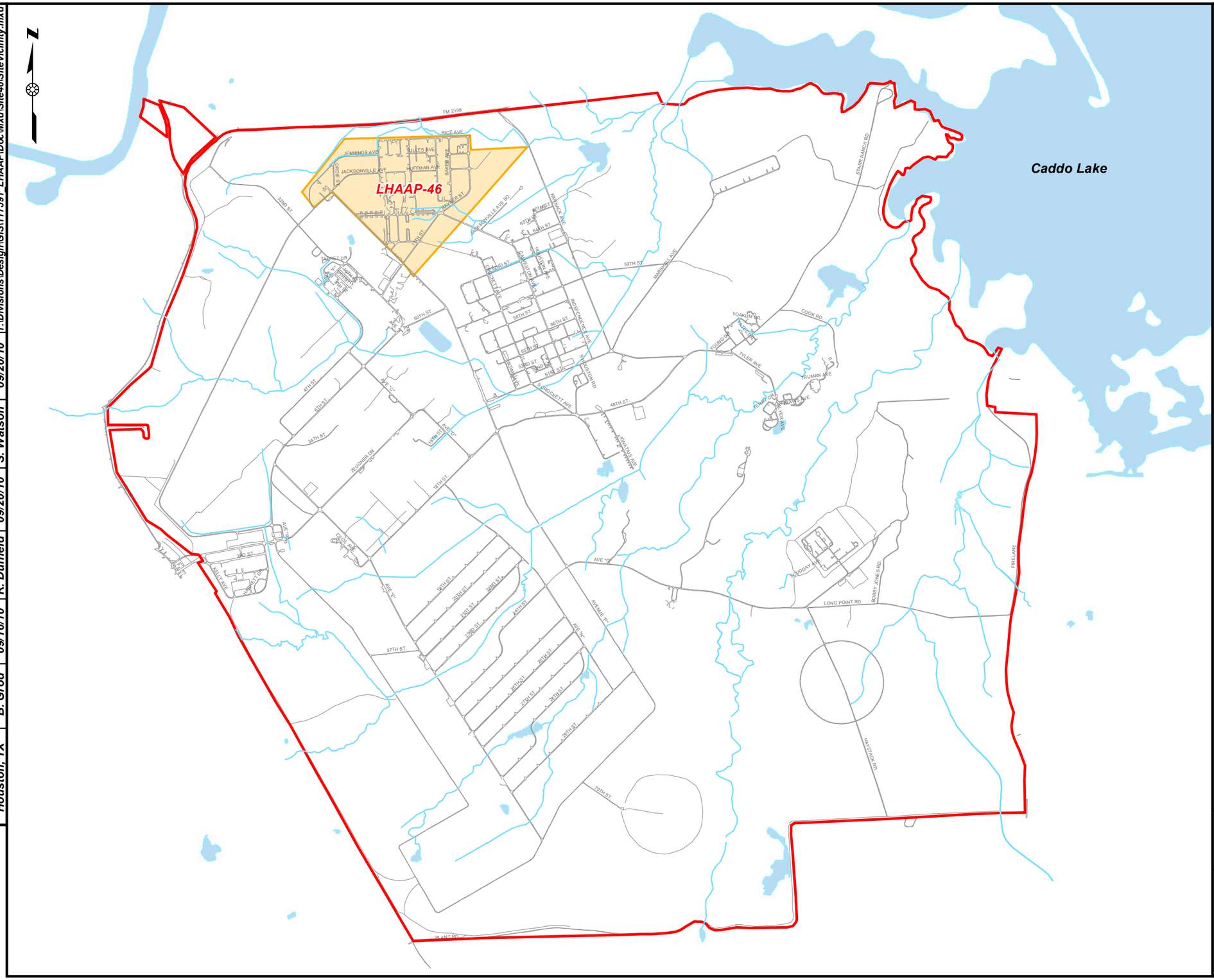

LEGEND

- Stream
- Road
- Site
- Lake
- LHAAP Boundary

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FIGURE 1-2

SITE VICINITY MAP
LHAAP-46, REMEDIAL DESIGN

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

2.0 LAND USE CONTROL

The objective of the LUC at LHAAP-46 is to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the sites for anything other than environmental monitoring and testing until cleanup goals are met Notification of the groundwater use restriction will accompany all transfer documents and will be recorded at the Harrison County Courthouse in accordance with Texas Administrative Code (TAC) Title 30, §335.566. **Appendix A** provides sample LUC compliance certification documentation.

The LUC addresses the area of LHAAP-46 that includes two groundwater plumes at LHAAP-46 with levels of contamination that require implementation of a remedy (see **Section 1.3**). The U.S. Army is responsible for implementing, maintaining, monitoring, reporting on, and enforcing the LUC.

U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of an LUC objective at this site after it has transferred. U.S. Army shall obtain USEPA and Texas Commission on Environmental Quality (TCEQ) concurrence prior to termination or significant modification of the LUC, or implementation of a change in land use inconsistent with the LUC objectives and use assumptions of the remedy. Although not a remedy, the land use assumption for LHAAP-46 forms the basis for the remedy. The future use of the site as part of a national wildlife refuge is consistent with an industrial risk exposure scenario. Notification of the land use assumption of this site will be made in transfer documentation and will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566. Compliance with the use assumption will be documented in the five-year review reports.

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4.0 LAND USE CONTROL DESIGN AND IMPLEMENTATION PLAN

This section describes the LUC design and implementation activities for LHAAP-46. The activities will result in a surveyed and recorded groundwater use restriction boundary and an operation and maintenance plan for the LUC.

The objective of the LUC at LHAAP-46 is to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the sites for anything other than environmental monitoring and testing until cleanup goals are met. Notification of the groundwater use restriction will accompany all transfer documents. The U.S. Army is responsible for long-term implementation, maintenance, inspection, reporting, and enforcement of the LUC.

The LUC will address the area of LHAAP-46 that includes two groundwater plumes with levels of contamination that require implementation of a remedy (see **Section 1.3**). The Land Use Control Operation and Maintenance (LUC O&M) Plan will identify the measures required for the monitoring and enforcement of the groundwater use restriction.

Upon review and concurrence of this RD, the LUC O&M Plan will be coordinated with regulators, finalized and distributed as part of the Comprehensive LUC Management Plan.

4.1 Land Use Control Implementation

The U.S. Army will undertake the following actions to implement the groundwater restriction LUC for LHAAP-46:

- Define the Area of the Groundwater Use Restriction. The groundwater use restriction boundary will be defined based on the review of the first round of groundwater sampling data in conjunction with historic data. The extent of plume will be bounded by a buffer and may extend to natural groundwater and surface water boundaries.
- Survey the LUC Boundary. The proposed boundary will be finalized after all wells are installed and sampled. Concurrence by USEPA and TCEQ will be obtained, and the LUC boundary will be surveyed by a State-licensed surveyor. A legal description of the surveyed area will be appended to the survey plat.
- Record the LUC in Harrison County. The LUC plat, legal description and groundwater use restriction language will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.56.

- Notify the Texas Department of Licensing and Regulation of the LUC. The Texas Department of Licensing and Regulation will be notified of the groundwater restriction which includes the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the U.S. Army, the USEPA, and the TCEQ. The survey plat, legal boundary and description of the groundwater restriction, in conjunction with a locator map, will be provided in hard and electronic copy.

- Develop the LUC O&M Plan. A LUC O&M Plan for LHAAP-46 will be developed. It will include the elements presented in **Section 4.2** below, the county recordation of the LUC survey plat, legal description and restriction language and the annual inspection/certification form.

4.2 Land Use Control Operation and Maintenance

The U.S. Army or its representatives will be responsible for the operation and maintenance of the LHAAP-46 LUC. This includes certification, reporting and enforcement activities. The U.S. Army shall address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable. To facilitate long-term operation and maintenance of the groundwater use restriction LUC remedy, U.S. Army will develop a plan that will encompass the elements described in the following subsections.

4.2.1 Site Certification and Reporting

Beginning with finalization of this RD and approval of the annual inspection form, the U.S. Army will undertake annual inspections and certify continued compliance with the LUC objectives. The U.S. Army, or the transferee after transfer, will retain the annual LUC Inspection/Certification documents in the project files for incorporation into the Five Year Review Reports, and these documents will be made available to USEPA and TCEQ upon request. In addition, should any violations be found during the annual certification, the U.S. Army will provide to USEPA and TCEQ along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations. The need to continue annual certifications will be revisited at five year reviews.

4.2.2 Notice of Planned Property Conveyances

The U.S. Army shall provide notice to USEPA and TCEQ of plans to convey the LHAAP-46 acreage. The notice shall describe the mechanism by which the LUC will continue to be implemented, maintained, inspected, reported, and enforced. Upon transfer, such responsibilities may shift to the transferee via appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental document for transfer. Although the U.S. Army may transfer responsibility for various implementation actions, the

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U.S. Army shall retain its responsibility for remedy integrity. This means that the U.S. Army is responsible for addressing substantive violations of the LUC performance objective that would undermine the U.S. Army's CERCLA remedy. The U.S. Army also will be responsible for incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation.

4.2.3 Opportunity to Review Text of Intended Land Use Controls

U.S. Army will provide a copy of the groundwater use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. USEPA will also receive a copy for review. In addition, the U.S. Army will produce an ECP or other environmental document for transfer of LHAAP-46, but before executing transfer, the U.S. Army will provide USEPA and TCEQ with a copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before transfer, to review all LUC-related provisions.

4.2.4 Notification Should Action(s) which Interfere with Land Use Control Effectiveness be Discovered Subsequent to Conveyance

Should the U.S. Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objective, the U.S. Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 4.2.5** below, the U.S. Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the U.S. Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

4.2.5 Land Use Control Enforcement

Should the LUC remedy reflected in this LUC RD fail, the U.S. Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the U.S. Fish and Wildlife Service or its lessee, to the institution of judicial action against nonfederal third parties. Alternatively, should the circumstances warrant such, the U.S. Army could choose to exercise its response authorities under CERCLA. Should the U.S. Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the U.S. Army may notify those agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUC.

4.2.6 Modification or Termination of Land Use Controls

The U.S. Army shall not, without USEPA and TCEQ concurrence, make a significant modification to, or terminate a LUC, or make a land use change inconsistent with the LUC objective. Likewise, the U.S. Army shall seek prior USEPA and TCEQ concurrence before commencing actions that may impact remedy integrity. In the case of an emergency action, the U.S. Army shall obtain prior USEPA and TCEQ concurrence as appropriate to the exigencies of the situation.

The LUCs shall remain in effect until such time as the U.S. Army and USEPA agree that the concentrations of COCs have met cleanup levels. When this occurs, the LUC will be terminated as needed. The decision to terminate the LUC will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action completion report. If the property has been transferred and a determination by the U.S. Army and USEPA has been made to terminate the LUC, the U.S. Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

4.2.7 Comprehensive Land Use Control Management Plan

Upon finalization of the LUC O&M Plan a copy will be inserted into the Comprehensive LUC Management Plan for Longhorn. The Comprehensive LUC Management Plan figure and table will be updated to reflect the inclusion of LHAAP-46.

The Comprehensive LUC Management Plan consists of LHAAP RD documents and a survey plat showing the locations where LUCs being implemented at LHAAP are applied. The purpose of this Comprehensive LUC Management Plan is to ensure all site-specific LUCs are compiled into one comprehensive location for both pre-transfer use by the installation and for post-transfer use by the transferee. This document will be provided to USEPA and TCEQ, and will also be accessible to the local government and the public. The Comprehensive LUC Management Plan is located in the Marshall Public Library to accompany LHAAP's Administrative Record.

The land use assumption of industrial reuse as part of a national wildlife refuge forms the basis for the remedy at LHAAP-46 and this land use assumption will be in included in the Comprehensive LUC Management Plan with supporting documentation.

LHAAP-46, 46-2

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-46 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

2014-000013307

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

NOTICE

8 Pages

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COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

AECOM
ATTN: AMANDA LAGARDE (FEDEX ENV)
112 E PECAN ST., SUITE 400
SAN ANTONIO, TX 78205

STATE OF TEXAS HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROL AT LHAAP-46

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed remedial activities at the land described herein. The remediation site is in a former industrial area, located on the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-46 (Plant 2 Area). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-46 were performed in accordance with the FFA requirements.

The LHAAP-46 site was used for production of pyrotechnic and illumination devices until 1997. A Record of Decision (ROD) for LHAAP-46 was signed by U.S. Army and USEPA with TCEQ concurrence in 2010 establishing the final remedy which consists of land use control (LUC) in conjunction with monitored natural attenuation (MNA). The LUC will ensure protection of human health by restricting the use of groundwater to environmental monitoring and testing only. MNA will be implemented to establish confidence in attenuation trends and verify that the constituents of concern (COCs) are stable or shrinking and will not migrate to nearby surface water at levels that may present an unacceptable risk to human health or the environment. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at

the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-46 parcel is a 190 acre tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A. Within the LHAAP-46 parcel are designated LUC boundaries including a 63.772-acre tract, more or less, as described in Exhibit A. The LUC boundaries are also presented in the attached Figure 1.

Future use of the parcel is intended as a national wildlife refuge consistent with non-residential use. The United States Department of the Army has undertaken careful environmental study of the LHAAP-46 site and concluded that the LUC set forth below is required to ensure protection of human health and the environment.

(1) Groundwater Restriction. The groundwater use restriction boundary consists of the 63.772-acre tract, more or less. Groundwater underlying this land is contaminated with trichloroethene (TCE) and other volatile organic compounds (VOCs) and shall not be accessed or used for any purpose without the prior written approval of the U.S. Army, the USEPA, and the TCEQ. A LUC restricting the use of groundwater has been established for the protection of human health. The U.S. Army will notify the Texas Department of Licensing and Regulation of the groundwater restriction which includes prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval by the U.S. Army, the USEPA, and the TCEQ. A restriction against the residential use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE).

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 20 th day of November, 2014.

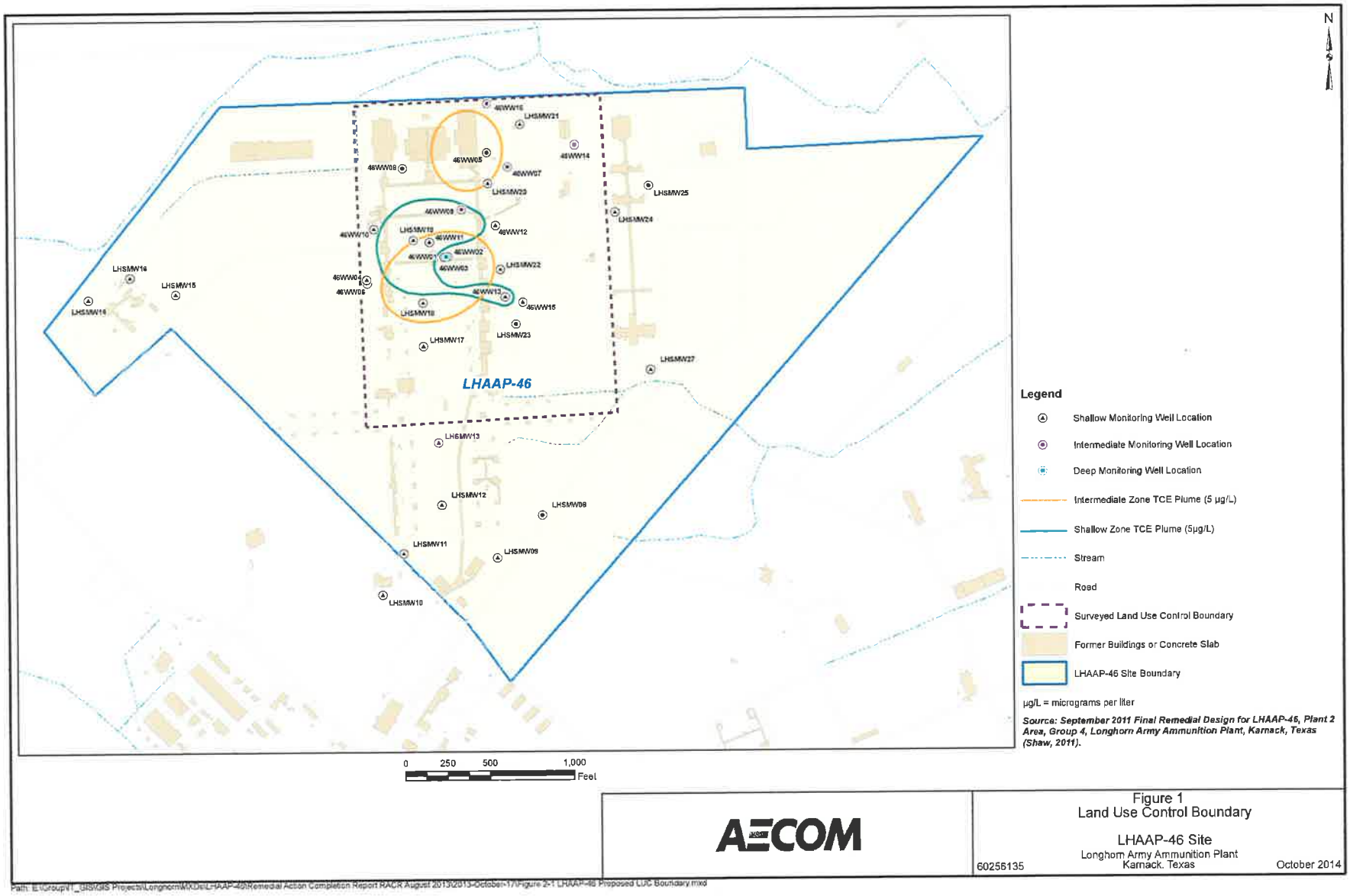
BEFORE ME, on this the 20 th day of November, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 20 day of November, 2014.

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 03-17-2015

Notary Public in and for the State of Texas,
County of Harrison

EXHIBIT A



FIELD NOTES DESCRIPTION OF
"LHAAP-46" LAND USE CONTROL AREA
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, "LHAAP-46" Land Use Control Area being 63.772 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), "LHAAP-46" Land Use Control Area being more particularly described as follows :

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861858, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "HORSE" (N=6960008.269 feet E=3309591.340 feet). Said traverse indicates a surface distance of 4895.701 feet between said monuments. The computed land area is based on grid distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940" .

Commencing at monument "X-11" referenced above,

THENCE N 36deg34'22"E 1386.89' to a concrete nail set (in white paint on asphalt) for the S.W.C. of this tract and this POINT OF BEGINNING,

THENCE N 01deg52'33"W 1886.35' along the W.B.L. of this tract to an I.R.O.P.C. set (in a 6' tall chain link fence running Easterly and Westerly) for this tract's N.W.C. ,

THENCE along said fence, which defines the Northerly Boundary Lines of this tract, the following eleven courses :

(01) N 86deg41'48"E 82.30' to a fence corner post,
(02) N 39deg20'47"E 18.62' to a bent fence corner post,
(03) N 86deg29'33"E 97.31' to a fence corner post,
(04) S 38deg05'14"E 19.89' to a fence corner post,
(05) N 87deg17'05"E 337.52' to a point in said fence,
(06) N 87deg22'07"E 699.24' to a point in said fence,
(07) N 87deg22'02"E 139.25' to a fence corner post,
(08) S 59deg03'44"E 20.98' to a fence corner post,
(09) N 86deg53'55"E 29.32' to a fence corner post,
(10) N 55deg19'37"E 21.12' to a fence corner post,
(11) N 86deg05'43"E 16.55' to an I.R.O.P.C. set in said fence for this tract's N.E.C. ,

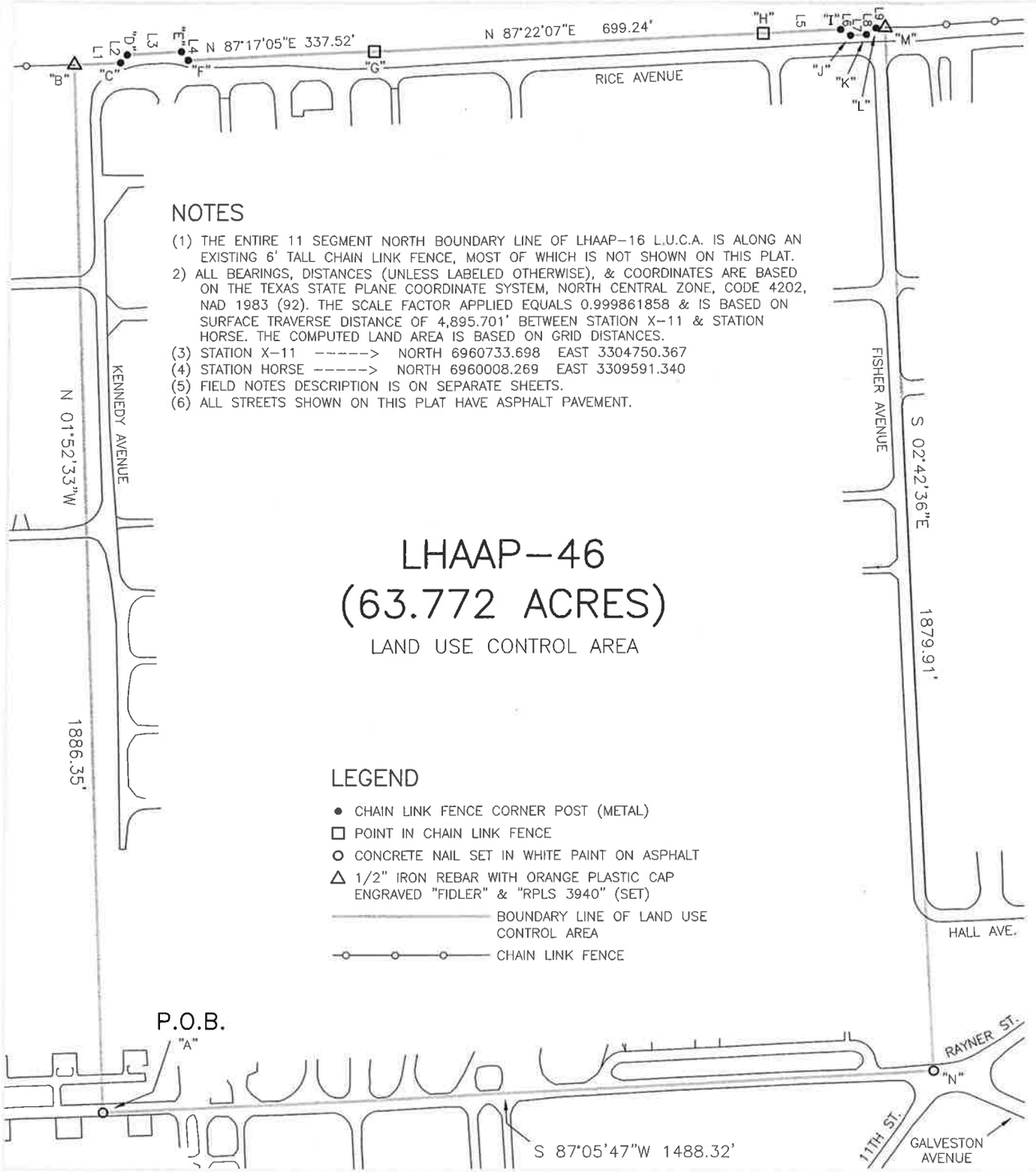
THENCE S 02deg42'36"E 1879.91' along the E.B.L. of this tract to a concrete nail set (in white paint on asphalt) for this tract's S.E.C., from which monument "HORSE" referenced above bears S 52deg51'46"E 3171.37',

THENCE S 87deg05'47"W 1488.32' along the S.B.L. of this tract to this POINT OF BEGINNING. This tract contains 63.772 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

Tom A. Fidler, R.P.L.S. Number 3940

00194837



NOTES

(1) THE ENTIRE 11 SEGMENT NORTH BOUNDARY LINE OF LHAAP-16 L.U.C.A. IS ALONG AN EXISTING 6' TALL CHAIN LINK FENCE, MOST OF WHICH IS NOT SHOWN ON THIS PLAT.
2) ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861858 & IS BASED ON SURFACE TRAVERSE DISTANCE OF 4,895.701' BETWEEN STATION X-11 & STATION HORSE. THE COMPUTED LAND AREA IS BASED ON GRID DISTANCES.
(3) STATION X-11 -----> NORTH 6960733.698 EAST 3304750.367
(4) STATION HORSE -----> NORTH 6960008.269 EAST 3309591.340
(5) FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS.
(6) ALL STREETS SHOWN ON THIS PLAT HAVE ASPHALT PAVEMENT.

LHAAP-46
(63.772 ACRES)
LAND USE CONTROL AREA

LEGEND

- ● CHAIN LINK FENCE CORNER POST (METAL)
- □ POINT IN CHAIN LINK FENCE
- ○ CONCRETE NAIL SET IN WHITE PAINT ON ASPHALT
- △ 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- BOUNDARY LINE OF LAND USE CONTROL AREA
- CHAIN LINK FENCE

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in October, 2014.

Witness my hand and seal this the 20th day of October, 2014.

STATE OF TEXAS REGISTERED TOM A. FIDLER 3940 PROFESSIONAL LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

LINE TABLE

LINE	BEARING	DISTANCE
L1	N 86°41'48"E	82.30'
L2	N 39°20'47"E	18.62'
L3	N 86°29'33"E	97.31'
L4	S 38°05'14"E	19.89'
L5	N 87°22'02"E	139.25'
L6	S 59°03'44"E	20.98'
L7	N 86°53'55"E	29.32'
L8	N 55°19'37"E	21.12'
L9	N 86°05'43"E	16.55'

N

SCALE 1"=200'

200 0 200 400 600
GRAPHIC SCALE - FEET

COORDINATE TABLE

POINT	NORTH	EAST
A	6961847.512	3305576.740
B	6963732.849	3305514.995
C	6963737.591	3305597.161
D	6963751.988	3305608.964
E	6963757.942	3305706.095
F	6963742.285	3305718.366
G	6963758.275	3306055.508
H	6963790.379	3306754.008
I	6963796.775	3306893.111
J	6963785.987	3306911.111
K	6963787.573	3306940.387
L	6963799.588	3306957.756
M	6963800.715	3306974.265
N	6961922.907	3307063.146

LHAAP-46 L.U.C.A.
(63.772 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	U.PTS U.LEG
10/20/2014	1103025U.DWG	DRAWN BY JTJ

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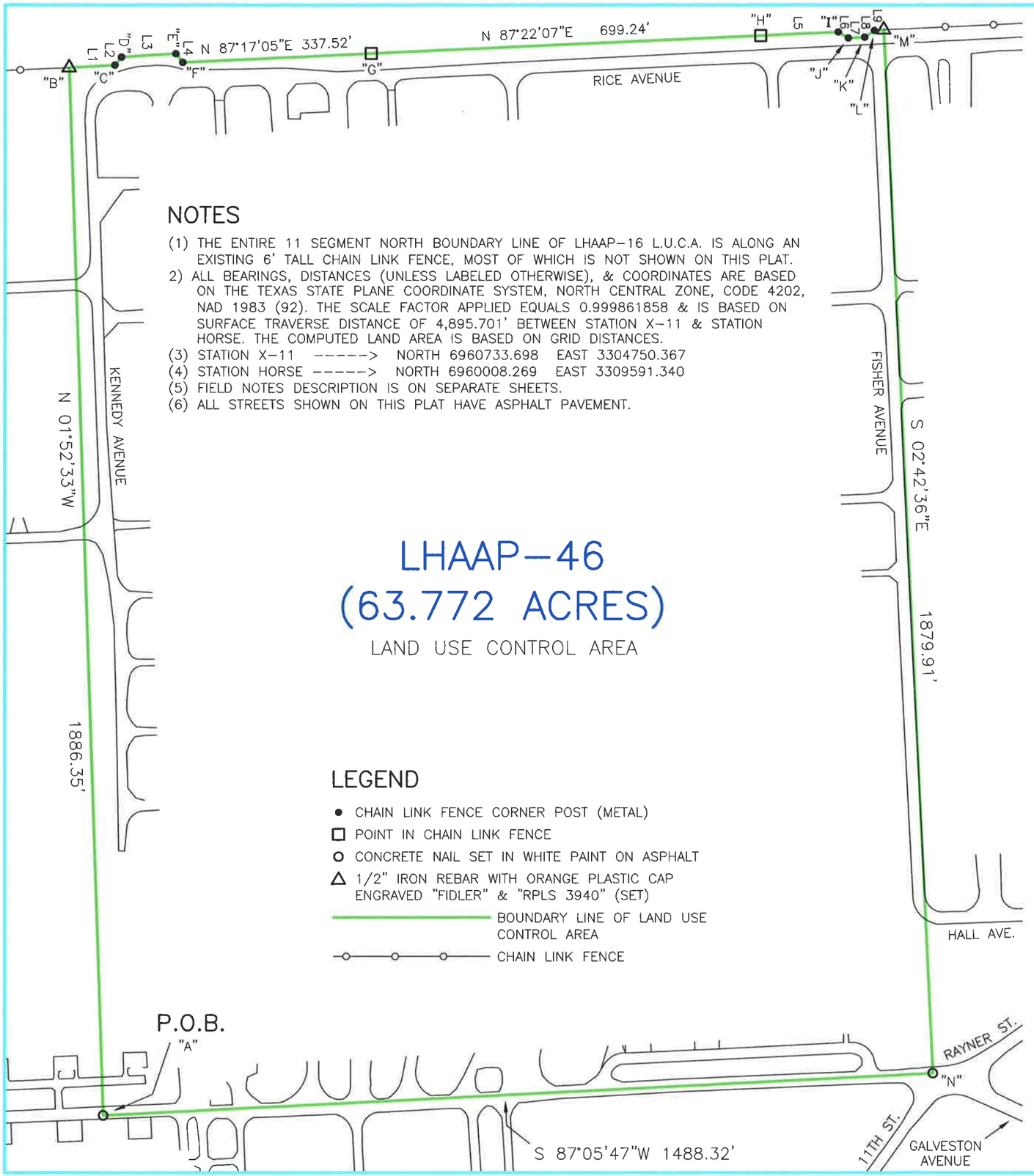

LHAAP-46
(63.772 ACRES)
LAND USE CONTROL AREA

NOTES

(1) THE ENTIRE 11 SEGMENT NORTH BOUNDARY LINE OF LHAAP-16 L.U.C.A. IS ALONG AN EXISTING 6' TALL CHAIN LINK FENCE, MOST OF WHICH IS NOT SHOWN ON THIS PLAT.
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(3) STATION X-11 -----> NORTH 6960733.698 EAST 3304750.367
(4) STATION HORSE -----> NORTH 6960008.269 EAST 3309591.340
(5) FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS.
(6) ALL STREETS SHOWN ON THIS PLAT HAVE ASPHALT PAVEMENT.

LEGEND

- ● CHAIN LINK FENCE CORNER POST (METAL)
- □ POINT IN CHAIN LINK FENCE
- ○ CONCRETE NAIL SET IN WHITE PAINT ON ASPHALT
- △ 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- BOUNDARY LINE OF LAND USE CONTROL AREA
- CHAIN LINK FENCE

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I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in October, 2014.

Witness my hand and seal this the 20th day of October, 2014.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

LINE TABLE

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GRAPHIC SCALE - FEET

COORDINATE TABLE

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G	6963758.275	3306055.508
H	6963790.379	3306754.008
I	6963796.775	3306893.111
J	6963785.987	3306911.111
K	6963787.573	3306940.387
L	6963799.588	3306957.756
M	6963800.715	3306974.265
N	6961922.907	3307063.146

LHAAP-46 L.U.C.A.
(63.772 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	U.PTS U.LEG
10/20/2014	1103025U.DWG	DRAWN BY JTJ

LHAAP-46, 46-3

LAND USE CONTROL COMPLIANCE INSPECTION FORM

March 2, 2015

Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated 9/30/11 for LHAAP-46 a certification of site was conducted by _____ [indicate transferee] on _____.

A summary of land use control mechanisms is as follows:

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

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

- No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-46.

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

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

LHAAP-49

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-49 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

2012-000000704

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000704 **Receipt No:** 1200645 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas, in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. LHAAP-49 is a former Acid Storage location at the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA) became effective on December 30, 1991. LHAAP-49 is considered an NPL listed site, and remedial activities at LHAAP-49 were performed in accordance with the FFA requirements.

LHAAP-49 is located in the west-central portion of LHAAP. LHAAP-49 is the former Acid Storage Area, which was used from 1942 to 1945 for storage and formulation of acids and acid mixtures in support of trinitrotoluene production during World War II. Nitric acid and sulfuric acid were manufactured and handled in large quantities in this area. A no further action Record of Decision for LHAAP-49 was signed by USEPA in 2010 establishing no remedy was required. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or

in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

LHAAP-49 is a 30.540 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of LHAAP-49 and USEPA and TCEQ concluded that no further investigation or action is required.

Limited monitoring of LHAAP-49 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-49 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 21 th day of July, 2011.

BEFORE ME, on this the 21 th day of July, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 21 day of July, 2011.

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 03-17-2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
LHAAP-49
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 30.540 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998768897, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "HMX-3" (N=6956487.252 feet E=3303483.509 feet) and "HMX-5" (N=6958206.213 feet E=3305201.721 feet). Said traverse indicates a surface distance of 2430.748 feet between said monuments. The computed land area is based on grid (State Plane) distances.

BEGINNING at a 60d nail set for the Southmost corner of this tract, said nail being in asphalt pavement at the intersection of 6th Street and 4th Street, from which nail the monument "HMX-3" referenced above bears N 09deg00'02"E 74.61' ,

THENCE N 46deg42'14"W crossing some of said asphalt pavement, then generally along 4th Street's Northeast edge of asphalt, then crossing a curved section of 4th Street's asphalt, and continuing beyond 4th Street's asphalt, for a total distance of 509.81', to a 60d nail set for the Southmost West corner of this tract,

THENCE N 45deg04'42"E eventually crossing 4th Street's asphalt, then generally along 4th Street's Southeast edge of asphalt, for a total distance of 1323.80', to a 60d nail set (in the Southeast edge of said asphalt pavement) for the Westerly reentrant corner of this tract,

THENCE N 45deg22'03"W crossing 4th Street's asphalt pavement and continuing for a total distance of 308.18' to a point (in the Southeasterly edge of flowing water [May 3, 2011] of Goose Prairie Creek) for the Northmost West corner of this tract, from which point a 1/2" iron rod with Tom Fidler orange plastic cap set for reference bears S 45deg22'03"E 11.34', said rod being at the top of the Southeasterly bank of Goose Prairie Creek,

THENCE N 47deg40'44"E 331.25' along a N.W. B.L. of this tract to a point (in the Southeasterly edge of flowing water [May 3, 2011] of Goose Prairie Creek) for the Westmost North corner of this tract, from which point a 1/2" iron rod with Tom Fidler orange plastic cap set for reference bears S 44deg45'45"E 13.46', said rod being at the top of the Southeasterly bank of Goose Prairie Creek,

THENCE S 44deg45'45"E along a N.E. B.L. of this tract, and eventually crossing 4th Street's asphalt pavement, for a total distance of 292.85' to a 60d nail set in the Southeast edge of said asphalt pavement for the Northerly reentrant corner of this tract,

THENCE N 44deg47'09"E generally along 4th Street's Southeast edge of asphalt pavement, then entering said pavement at the

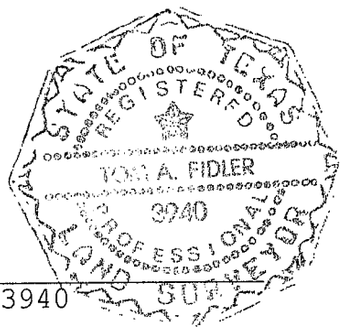
intersection of 4th Street and Avenue "C", for a total distance of 781.21' to a 60d nail set in said asphalt pavement for the Eastmost North corner of this tract,

THENCE S 45deg47'29"E crossing some of said pavement, then generally along the Southwest edge of the asphalt pavement of Avenue "C", then entering said pavement at the intersection of Avenue "C" and 6th Street, for a total distance of 507.27' to a 60d nail set for the Eastmost corner of this tract, from which the monument "HMX-5" referenced above bears N 13deg12'58"E 77.94' ,

THENCE S 44deg55'17"W crossing some of said pavement, then generally along the Northwest edge of the asphalt pavement of 6th Street, then entering said pavement at the aforementioned intersection of 6th Street and 4th Street, for a total distance of 2424.55' to this POINT OF BEGINNING.

This tract contains 30.540 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
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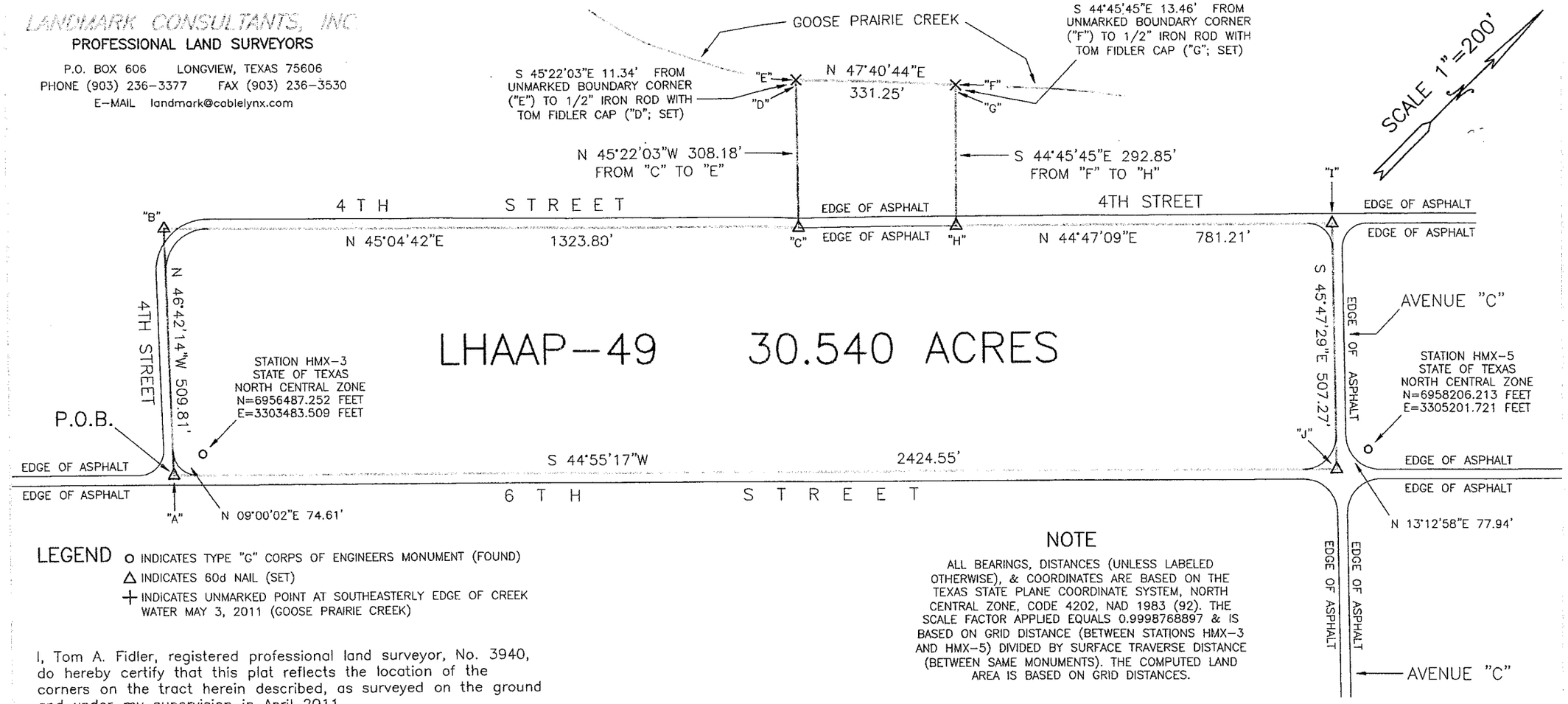

LEGEND

- o INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- △ INDICATES 60d NAIL (SET)
- + INDICATES UNMARKED POINT AT SOUTHEASTERLY EDGE OF CREEK WATER MAY 3, 2011 (GOOSE PRAIRIE CREEK)

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998768897 & IS BASED ON GRID DISTANCE (BETWEEN STATIONS HMX-3 AND HMX-5) DIVIDED BY SURFACE TRAVERSE DISTANCE (BETWEEN SAME MONUMENTS). THE COMPUTED LAND AREA IS BASED ON GRID DISTANCES.

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in April 2011.

Witness my hand and seal May 5, 2011.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

COORDINATE TABLE

POINT	NORTH	EAST
A	6956413.564	3303471.837
B	6956763.174	3303100.790
C	6957697.967	3304038.137
D(ROD)	6957906.516	3303826.894
E	6957914.483	3303818.824
F	6958137.506	3304063.741
G(ROD)	6958127.951	3304073.216
H	6957929.573	3304269.956
I	6958484.036	3304820.288
J	6958130.332	3305183.901

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

LHAAP-49
(30.540 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #1104040	0407088.CRD	M.PTS M.LEG
MAY 5, 2011	1103025M.DWG	DRAWN BY JTJ

00194848

LHAAP-50, 50-1

LUCs FROM FINAL REMEDIAL DESIGN

March 2, 2015

Final
Remedial Design
LHAAP-50
Former Sump Water Tank, Group 4
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for U.S. Army Corps of Engineers – Tulsa District
1645 South 101st East Avenue
Tulsa, Oklahoma 74128

Prepared by Shaw Environmental, Inc.
1401 Enclave Parkway, Suite 250
Houston, Texas 77077

Contract No. W912QR-04-D-0027, Task Order No. DS02
Project No. 117591
Rev 0
September 2011

Shaw® a world of Solutions™

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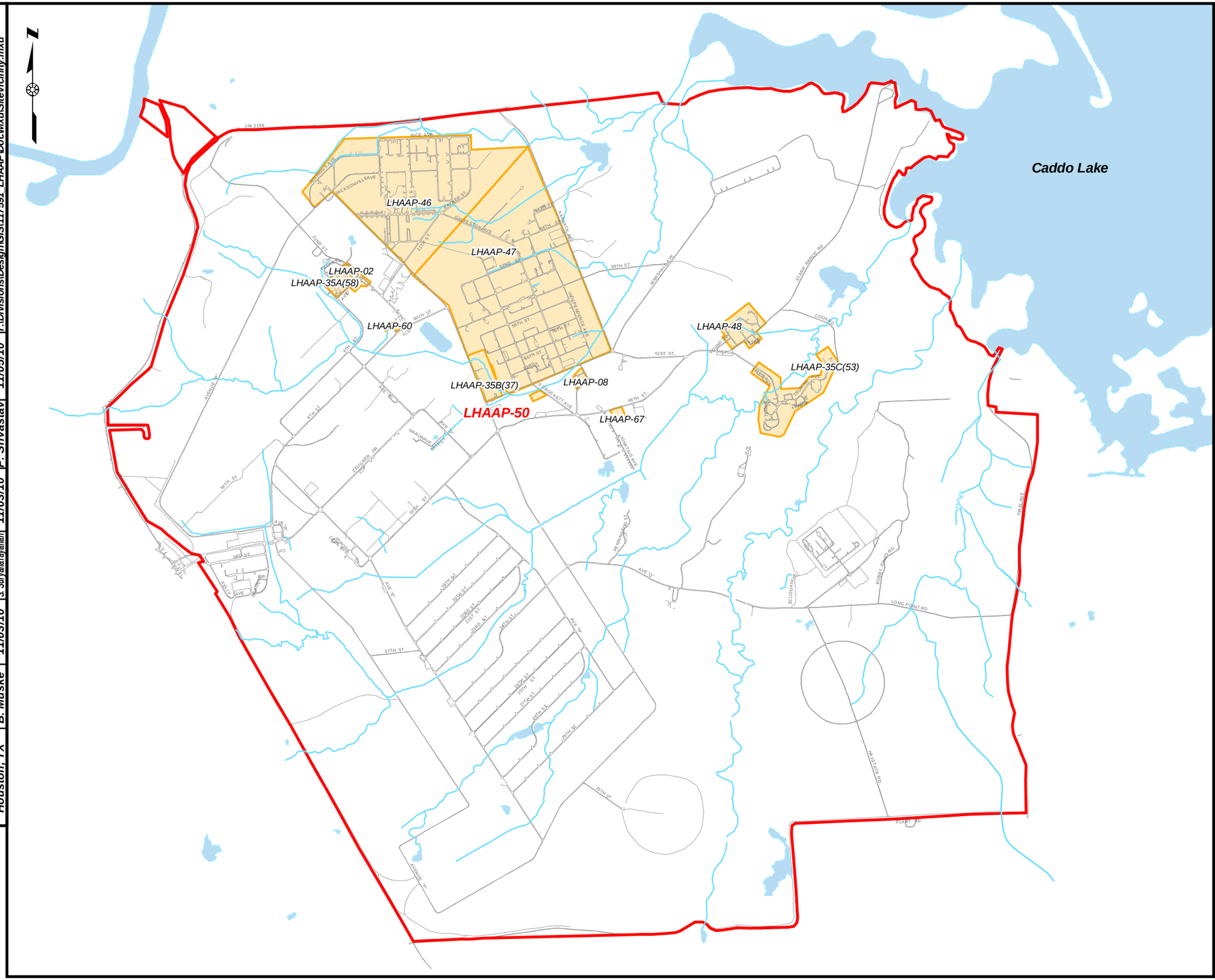
00194852

FILE PATH	T:\Divisions\Design\GIS\117591_LHAAP\Doc\Mxd\SiteVicinity.mxd
APPROVED BY	P. Srivastav 11/05/10
CHECKED BY	S. Suryanarayanan 11/03/10
DRAWN BY	B. Muske 11/03/10
OFFICE	Houston, TX



LEGEND

- Stream
- Road
- Sites
- Lake
- LHAAP Boundary

0 1,200 2,400 4,800 Feet

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

FIGURE 1-2

SITE VICINITY MAP
LHAAP-50 REMEDIAL DESIGN

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

3.0 LAND USE CONTROL

The objective of LUC at LHAAP-50 is to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the sites for anything other than environmental monitoring and testing until cleanup levels are met. Notification of the groundwater use restriction will accompany all transfer documents and will be recorded at the Harrison County Courthouse in accordance with Texas Administrative Code (TAC) Title 30, §335.566. **Appendix B** provides sample LUC compliance certification documentation.

The LUC addresses the area of LHAAP-50 that has groundwater plumes (in both the shallow and intermediate groundwater zones) with levels of contamination that require implementation of a remedy (see **Section 2.3**). The groundwater restriction LUC would be maintained until the concentration of contaminants and by-product contaminants have been reduced to below their respective cleanup levels.

The U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of an LUC objective at this site after it has transferred. The U.S. Army shall obtain USEPA and TCEQ concurrence prior to termination or significant modification of the LUC, or implementation of a change in land use inconsistent with the LUC objectives and use assumptions of the remedy. Although not a remedy, the land use assumption for LHAAP-50 forms the basis for the remedy. The future use of the site as part of a national wildlife refuge is consistent with an industrial risk exposure scenario. Notification of the land use assumption of this site will be made in transfer documentation and will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566. Compliance with the use assumption will be documented in the five-year review reports.

Contract No. W912QR-04-D-0027, Task Order No. DS02• Final • Rev 0 • September 2011

6.0 LAND USE CONTROL DESIGN AND IMPLEMENTATION PLAN

This section describes the LUC design and implementation activities for LHAAP-50. The activities will result in a surveyed and recorded groundwater use restriction boundary and an operation and maintenance plan for the LUC.

The objective of the LUC at LHAAP-50 is to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the site for anything other than environmental monitoring and testing until cleanup levels are met. Notification of the groundwater use restriction will accompany all transfer documents. The U.S. Army is responsible for long-term implementation, maintenance, inspection, reporting, and enforcement of the LUC.

The LUC will address the area of LHAAP-50 that includes two groundwater plumes with levels of contamination that require implementation of a remedy (see **Section 1.3**). The Land Use Control Operation and Maintenance Plan (LUC O&M) will identify the measures required for monitoring and enforcement of the groundwater use restriction. Upon review and concurrence of this RD, the LUC O&M Plan will be coordinated with regulators, finalized, and distributed as part of the Comprehensive LUC Management Plan for LHAAP.

6.1 Land Use Control Implementation

The U.S. Army will undertake the following actions to implement the groundwater restriction LUC for LHAAP-50:

- ***Define the Area of the Groundwater Use Restriction.*** The groundwater use restriction boundary will be defined based on the review of the first round of groundwater sampling data in conjunction with historic data. The extent of plume will be bounded by a buffer and may extend to natural groundwater and surface water boundaries.
- ***Survey the LUC Boundary.*** The proposed boundary will be finalized after all wells are installed and sampled. Concurrence by USEPA and TCEQ will be obtained, and the LUC boundary will be surveyed by a State-licensed surveyor. A legal description of the surveyed area will be appended to the survey plat.
- ***Record the LUC in Harrison County.*** The LUC plat, legal description and groundwater use restriction language will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566.

- ***Notify the Texas Department of Licensing and Regulation of the LUC.*** The Texas Department of Licensing and Regulation will be notified of the groundwater restriction which includes the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the U.S. Army, the USEPA, and the TCEQ. The survey plat, legal boundary and description of the groundwater restriction, in conjunction with a locator map, will be provided in hard and electronic copy.
- ***Develop the LUC O&M Plan.*** An LUC O&M Plan for LHAAP-50 will be developed. It will include the elements presented in **Section 6.2**, the county recordation of the LUC survey plat, legal description and restriction language, and the inspection/certification form.

6.2 Land Use Control Operation and Maintenance

The U.S. Army or its representatives will be responsible for the operation and maintenance of the LHAAP-50 LUC. This includes certification, reporting, and enforcement activities. The U.S. Army shall address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable. To facilitate long-term operation and maintenance of the groundwater use restriction LUC remedy, the U.S. Army will develop a plan that will encompass the elements described in the following subsections.

6.2.1 Site Certification and Reporting

Beginning with finalization of this RD and approval of the inspection form, the U.S. Army will undertake inspections and certify continued compliance with the LUC objectives. The U.S. Army or the transferee after transfer will retain the LUC Inspection Certification documents in the project files for incorporation into the five-year review reports, and these documents will be made available to USEPA and TCEQ upon request. In addition, should any violations be found during the certification, the U.S. Army will provide to USEPA and TCEQ, along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations. The need to continue certifications will be revisited at five year reviews.

6.2.2 Notice of Planned Property Conveyances

The U.S. Army shall provide notice to USEPA and TCEQ of plans to convey the LHAAP-50 acreage. The notice shall describe the mechanism by which the LUC will continue to be implemented, maintained, inspected, reported, and enforced. Upon transfer, such responsibilities may shift to the transferee via appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental document for transfer. Although the U.S. Army may transfer responsibility for various implementation actions, the U.S. Army shall retain its responsibility for remedy integrity. This means that the U.S. Army

is responsible for addressing substantive violations of the LUC performance objective that would undermine the U.S. Army's CERCLA remedy. The U.S. Army also will be responsible for incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation.

6.2.3 Opportunity to Review Text of Intended Land Use Controls

The U.S. Army will provide a copy of the groundwater use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. The USEPA will also receive a copy for review. In addition, the U.S. Army will produce an ECP or other environmental document for transfer of LHAAP-50, but before executing transfer, the U.S. Army will provide USEPA and TCEQ with a copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before transfer, to review all LUC-related provisions.

6.2.4 Notification Should Action(s) which Interfere with Land Use Control Effectiveness be Discovered Subsequent to Conveyance

Should the U.S. Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objective, the U.S. Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 6.2.5** below, the U.S. Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the U.S. Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

6.2.5 Land Use Control Enforcement

Should the LUC remedy reflected in this RD fail, the U.S. Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the USFWS or its lessee, to the institution of judicial action against non-federal third parties. Alternatively, should the circumstances warrant such, the U.S. Army could choose to exercise its response authorities under CERCLA. Should the U.S. Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction; the U.S. Army may notify those agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUC.

6.2.6 Modification or Termination of Land Use Controls

The U.S. Army shall not, without USEPA and TCEQ concurrence, make a significant modification to, or terminate an LUC, or make a land use change inconsistent with the LUC objective. Likewise, the U.S. Army shall seek prior USEPA and TCEQ concurrence before

commencing actions that may impact remedy integrity. In the case of an emergency action, the U.S. Army shall obtain prior USEPA and TCEQ concurrence as appropriate to the exigencies of the situation.

The LUC shall remain in effect until such time as the U.S. Army and USEPA agree that the concentrations of COCs have met cleanup levels. When this occurs, the LUC will be terminated as needed. The decision to terminate the LUC will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action completion report. If the property has been transferred and a determination by the U.S. Army and USEPA has been made to terminate the LUC, the U.S. Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

6.2.7 Comprehensive Land Use Control Management Plan

Upon finalization of the LUC O&M Plan, a copy will be inserted into the Comprehensive LUC Management Plan for Longhorn. The Comprehensive LUC Management Plan figure and table will be updated to reflect the inclusion of LHAAP-50.

The Comprehensive LUC Management Plan consists of LHAAP RD documents and a survey plat showing the locations where LUC being implemented at LHAAP are applied. The purpose of this Comprehensive LUC Management Plan is to ensure all site-specific LUC are compiled into one comprehensive location for both pre-transfer use by the installation and for post-transfer use by the transferee. This document will be provided to USEPA and TCEQ and is also accessible to the public. The Comprehensive LUC Management Plan is located in the Marshall Public Library to accompany LHAAP's Administrative Record.

The land use assumption of industrial use as part of a national wildlife refuge forms the basis for the remedy at LHAAP-50 and this land use assumption will be included in the Comprehensive LUC Management Plan with supporting documentation.

00194858

DRAFT LUC BOUNDARY

FILE PATH	APPROVED BY	CHECKED BY	DRAWN BY	OFFICE
T:\Divisions\Design\GIS\117591_LHAAP\Doc\Mxd\Site50\RD\LanduseControl.mxd	S. Watson	V. Chan	benjamin.grod	Houston, TX
	6/21/2011	6/21/2011	6/21/2011	

N

53RD ST.

GALVESTON AVE

HSMW53

08WW01

47WW27

181

315T ST.

08WW02

176

LHAAP-08

GROCKETT AVE

180

50WW01

BONHAM AVE

50WW05

Flow

Goose Prairie Creek

50WW07

50WW02

LHAAP-50

179

S CROCKETT AVE

S HOUSTON RD

50WW03

50WW04

182

181

48TH ST.

LHAAP-09

LEGEND

- Land Use Control Boundary
  Groundwater use restricted to environmental monitoring and testing only.
- Shallow Monitoring Well
- Shallow/Intermediate Monitoring Well
- 1,1-DCE Plume (7 µg/L Extent)
- 1,2-DCA Plume (5 µg/L Extent)
- PCE Plume (5 µg/L Extent)
- TCE Plume (5 µg/L Extent)
- VC Plume (2 µg/L Extent)
- cis-1,2-DCE Plume (70 µg/L Extent)
- Groundwater Elevation Contour
- Stream
- Road
- Sites

0 75 150 300 Feet

Shaw®

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

FIGURE 7-1

LAND USE CONTROL MAP
LHAAP-50 REMEDIAL DESIGN

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

LHAAP-50, 50-2

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-50 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

LHAAP-50, 50-3

LAND USE CONTROL COMPLIANCE INSPECTION FORM

March 2, 2015

Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated 9/30/11 for LHAAP-50 a certification of site was conducted by _____ [indicate transferee] on _____.

A summary of land use control mechanisms is as follows:

- Groundwater restriction –restriction of the use of groundwater to environmental monitoring and testing until cleanup goals are met. [Indicate whether groundwater restrictions are still required at LHAAP-50]

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-50.

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: _____

Name/Title: _____

Signature: _____

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

LHAAP-51

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-51 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

2010-000005557

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005557 **Receipt No:** 1006195 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-51, is the area of a demolished building location known as Building 60-B, former photographic lab, located within the Plant 3 production area of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-51 is not itself considered an NPL site. Environmental activities at LHAAP-51 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-51 (Building 60-B) was constructed in 1945 for the processing of X-ray film. The building had a concrete floor without a floor drain. Spent developing waste was drummed and transferred to another building for disposal. Small quantities of black and white developer and fixer solutions were generated by the X-ray lab. Activities ceased in the late 1970s or early 1980s. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-51 parcel is 5,754 square foot, more or less, or 0.13209 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-51 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-51. Contaminants in soil samples from LHAAP-51 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-51 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-51 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

Notary Public in and for the State of Texas,
County of Harrison

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-51" TRACT
(INCLUDES THE REMAINS OF A DEMOLISHED BUILDING)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-51" including, but not being limited to, the concrete slab of a demolished building in the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-51" being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "HORSE" (N=6960008.269 feet E=3309591.340 feet). Said traverse indicates a surface distance of 4895.70 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied (in the form of an Autocad DXF file) by Shaw Environmental & Infrastructure Group.

Commencing at monument "HORSE" referenced above,

THENCE N 86deg33'08"W 1716.42' to a concrete nail with head dimple set for the S.E.C. of this tract and this POINT OF BEGINNING,

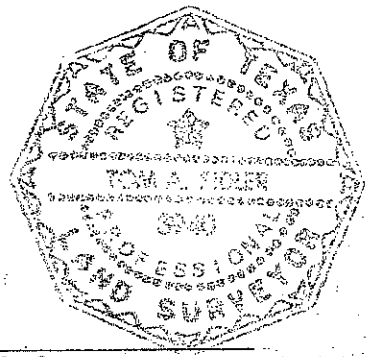
THENCE S 68deg51'01"W 68.17' along the S.B.L. of this tract to a 60d nail set for this tract's S.W.C. ,

THENCE N 21deg08'59"W 84.39' along the W.B.L. of this tract to a 60d nail set for this tract's N.W.C. , said nail being S 79deg23'36"E 3086.37' from said monument "X-11" ,

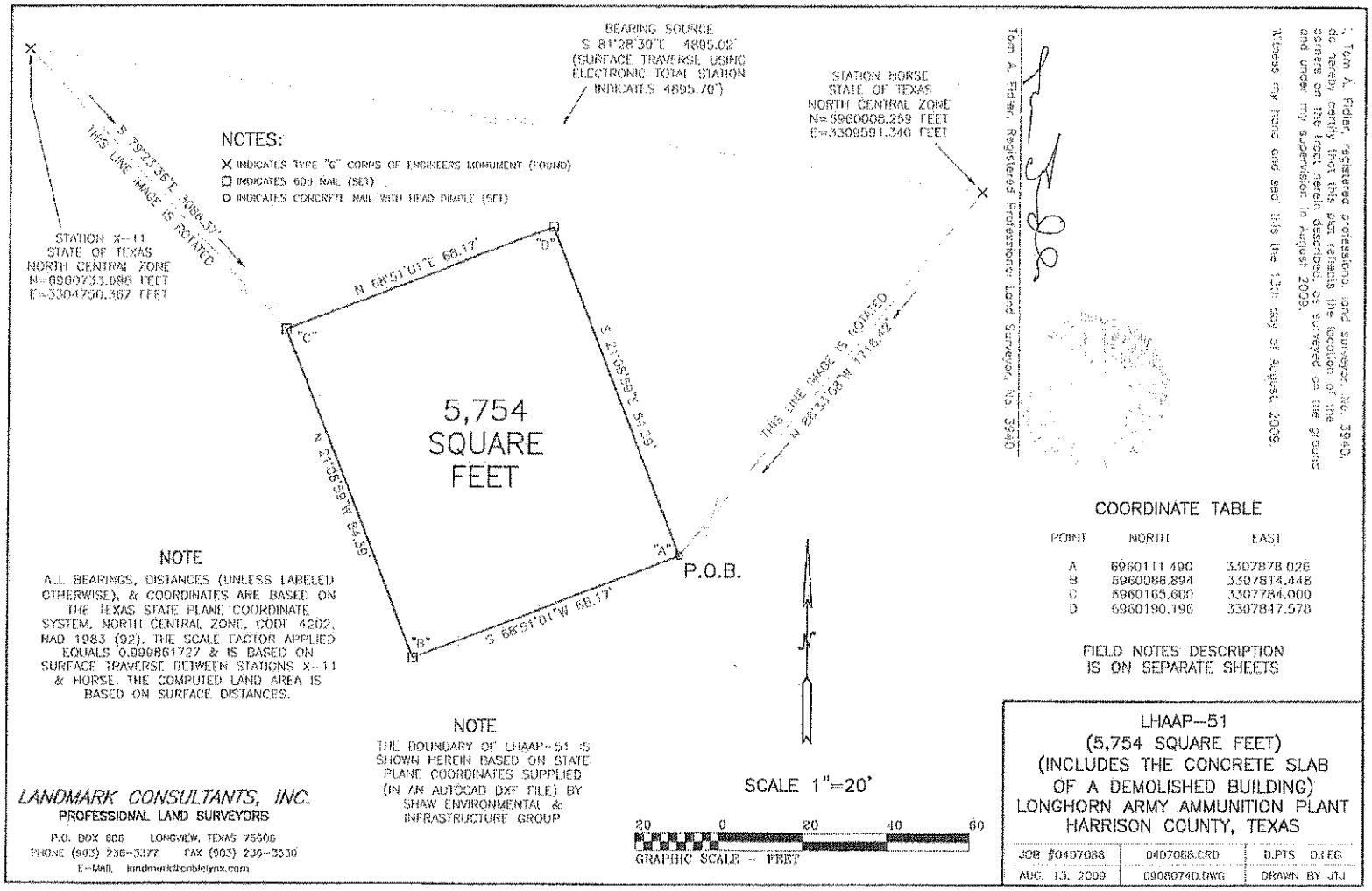
THENCE N 68deg51'01"E 68.17' along the N.B.L. of this tract to a 60d nail set for this tract's N.E.C. ,

THENCE S 21deg08'59"E 84.39' along the E.B.L. of this tract to this POINT OF BEGINNING. This tract contains 5,754 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August 2009.

Witness my hand and seal this the 13th day of August, 2009.

Tom A. Fidler, Registered Professional Land Surveyor No. 3940

COORDINATE TABLE

POINT	NORTH	EAST
A	6960111.490	3307878.026
B	6960086.894	3307814.448
C	6960165.600	3307784.000
D	6960190.196	3307847.578

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & HORSE. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

NOTE

THE BOUNDARY OF LHAAP-51 IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 806 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3539
E-MAIL landmark@cebridge.net

LHAAP-51
(5,754 SQUARE FEET)
(INCLUDES THE CONCRETE SLAB
OF A DEMOLISHED BUILDING)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	D.PTS	D.FB
AUG. 13, 2009	0908074D.DWG	DRAWN BY	JTJ

LHAAP-55

NOTICE OF NONRESIDENTIAL LAND USE AT SEPTIC TANK LOCATIONS FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

2010-000005562

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

34 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005562 **Receipt No:** 1006195 **Amount:** $ 144.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-55, consisted of 10 septic tank and leachate field systems that served outlying areas of the former Longhorn Army Ammunition Plant (LHAAP) within or near LHAAP-48 and LHAAP-35C(53). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-55 is not itself considered an NPL site. Environmental activities at LHAAP-55 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-55 consisted of 10 septic tank and leachate field systems that served outlying areas of LHAAP that could not be connected to the plant sanitary sewer system. Although there was no history of industrial waste being placed into these septic tanks, soil samples were collected from borings installed at septic systems that were associated with industrial processes and analyzed for metals, explosives, semi volatile organic compounds, and volatile organic compounds where appropriate. Further information

may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-55 parcel include: ST-01 with 1,807 square feet, more or less, or 0.04148 acre tract; ST-02 with 1,791 square feet, more or less, or 0.04111 acre tract; ST-03 with 1,784 square feet, more or less, or 0.04095 acre tract; ST-04 with 1,789 square feet, more or less, or 0.04106 acre tract; ST-05 with 1,825 square feet more or less, or 0.04189 acre tract; ST-06 with 1,800 square feet, more or less, or 0.04132 acre tract; ST-07 with 1,865 square feet, more or less, or 0.04281 acre tract; ST-08 with 1,785 square feet, more or less, or 0.04097 acre tract; ST-09 with 2,004 square feet, more or less, or 0.04600 acre tract; and ST-10 with 1,804 square feet, more or less, or 0.04141 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-55 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-55. Contaminants in soil samples from LHAAP-55 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-55 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-55 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10 th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

Notary Public in and for the State of Texas,
County of Harrison

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-01, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,807 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998636625, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "IGNATIUS-1" (N=6957090.304 feet E=3311081.788 feet) and "IGNATIUS-2" (N=6955582.752 feet E=3311851.704 feet). Said traverse indicates a surface distance of 1693.005 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-01, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "IGNATIUS-1" referenced above,

THENCE S 37deg17'23"E 1017.21' to a 60d nail set for the Westmost N.W.C. of this tract and this POINT OF BEGINNING,

THENCE N 63deg19'52"E 19.74' along a N.B.L. of this tract to a 60d nail set for this tract's Westmost N.E.C. ,

THENCE S 26deg40'08"E 4.90' along an E.B.L. of this tract to a 60d nail set for this tract's Northeast reentrant corner ,

THENCE N 89deg25'37"E 24.40' along a N.B.L. of this tract to a 60d nail set for this tract's Northwest reentrant corner ,

THENCE N 00deg00'00"E 18.03' along a W.B.L. of this tract to a 60d nail set for this tract's Eastmost N.W.C. ,

THENCE N 90deg00'00"E 46.53' along a N.B.L. of this tract to a 60d nail set for this tract's Eastmost N.E.C. ,

THENCE S 00deg00'00"E 32.43' along an E.B.L. of this tract to a 60d nail set for this tract's Eastmost S.E.C. ,

THENCE N 90deg00'00"W 46.53' along a S.B.L. of this tract to a 60d nail set for this tract's Eastmost S.W.C. ,

THENCE N 00deg00'00"E 12.40' along a W.B.L. of this tract to a 60d nail set for this tract's Southwest reentrant corner,

THENCE S 89deg25'37"W 23.40' along a S.B.L. of this tract to a 60d nail set for this tract's Southeast reentrant corner,

THENCE S 26deg40'08"E 5.57' along an E.B.L. of this tract to a 60d nail set for this tract's Westmost S.E.C. ,

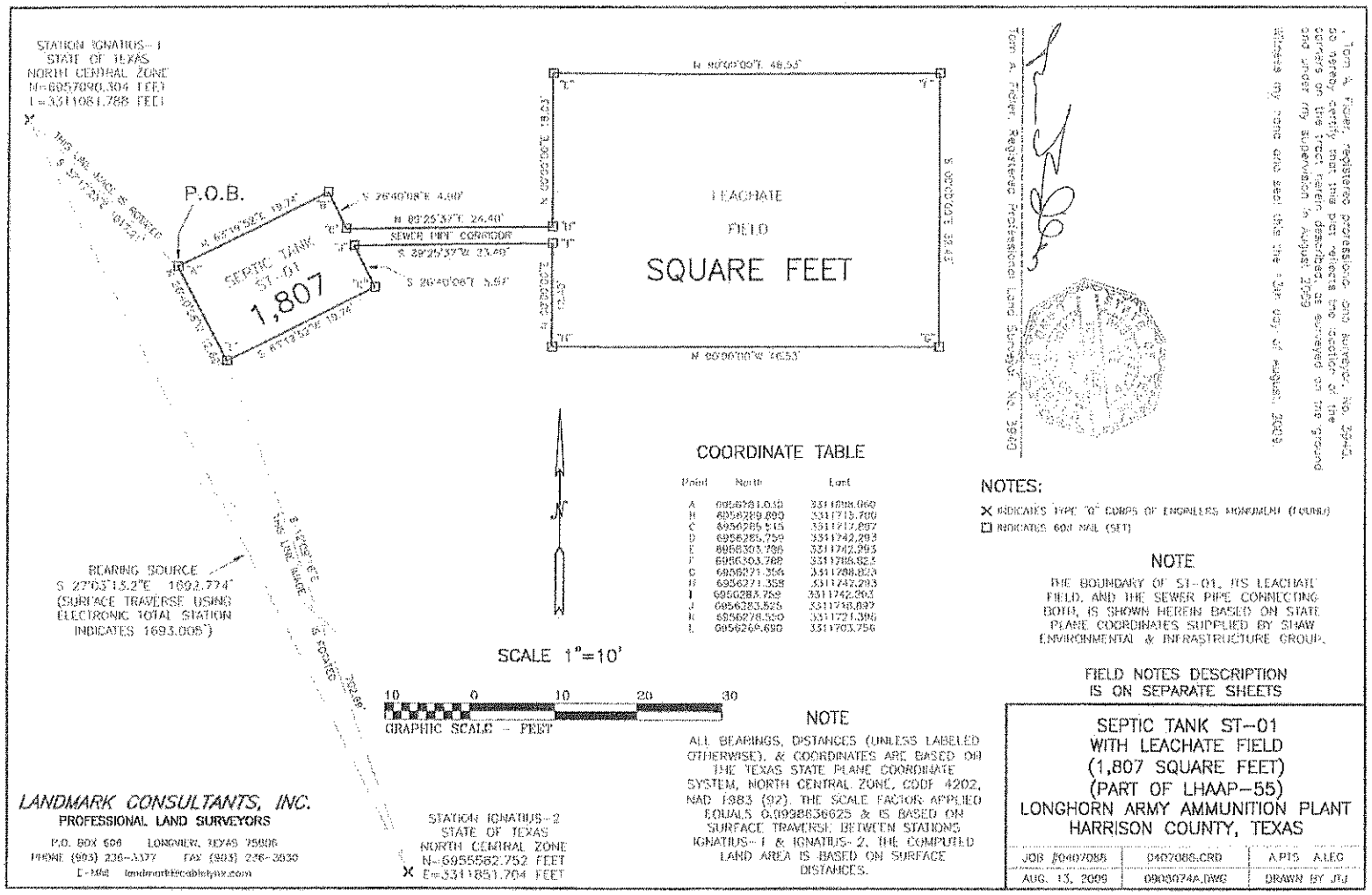
THENCE S 63deg19'52"W 19.74' along a S.B.L. of this tract to a 60d nail set for this tract's Westmost S.W.C., from which station "IGNATIUS-2" referenced above bears S 12deg09'16"E 702.69' ,

THENCE N 26deg40'08"W 12.69' along a W.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,807 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, R.P.L.S. Number 3940



COORDINATE TABLE

Point	North	East
A	6956281.050	3311088.060
B	6956289.800	3311715.700
C	6956285.515	3311717.697
D	6956285.759	3311742.293
E	6956303.798	3311742.993
F	6956303.788	3311788.823
G	6956271.304	3311788.823
H	6956271.359	3311742.293
I	6956283.759	3311742.063
J	6956283.525	3311738.897
K	6956278.550	3311721.386
L	6956269.690	3311703.756

NOTES:

X INDICATES TYPE "B" CORPS OF ENGINEERS MONUMENT (1 QUAD)
□ INDICATES 60d NAIL (SET)

NOTE

THE BOUNDARY OF ST-01, ITS LEACHATE FIELD, AND THE SEWER PIPE CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.99988536625 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS IGNATIUS-1 & IGNATIUS-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3930
E-Mail landmarkllc@sbcglobal.com

SEPTIC TANK ST-01 WITH LEACHATE FIELD (1,807 SQUARE FEET) (PART OF LHAAP-55) LONGHORN ARMY AMMUNITION PLANT HARRISON COUNTY, TEXAS

JOB #0407055	0407055.CRD	A.PTS A.LEG
AUG. 13, 2009	0903074A.DWG	DRAWN BY JDJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-02, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,791 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-02, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-1" referenced above,

THENCE N 05deg57'31"W 746.36' to a 60d nail set for the Eastmost S.E.C. of this tract and this POINT OF BEGINNING,

THENCE N 90deg00'00"W 19.74' along a S.B.L. of this tract to a 60d nail set (in an abandoned utility pole lying on the ground) for this tract's Eastmost S.W.C. ,

THENCE N 00deg00'00"E 5.36' along a W.B.L. of this tract to a 60d nail set for this tract's Southwest reentrant corner,

THENCE N 90deg00'00"W 15.73' along a S.B.L. of this tract to a 60d nail set for this tract's Southeast reentrant corner,

THENCE S 00deg00'00"W 15.91' along an E.B.L. of this tract to a 60d nail set for this tract's Westmost S.E.C. ,

THENCE N 90deg00'00"W 46.53' along a S.B.L. of this tract to a 60d nail set for this tract's Westmost S.W.C. ,

THENCE N 00deg00'00"E 32.43' along a W.B.L. of this tract to a 60d nail set for this tract's Westmost N.W.C. ,

THENCE N 90deg00'00"E 46.53' along a N.B.L. of this tract to a 60d nail set for this tract's Westmost N.E.C. ,

THENCE S 00deg00'00"E 14.52' along an E.B.L. of this tract to a 60d nail set for this tract's Northeast reentrant corner,

THENCE S 90deg00'00"E 15.73' along a N.B.L. of this tract to a 60d nail set for this tract's Northwest reentrant corner,

THENCE N 00deg00'00"W 5.33' along a W.B.L. of this tract to a 60d nail set for this tract's Eastmost N.W.C. ,

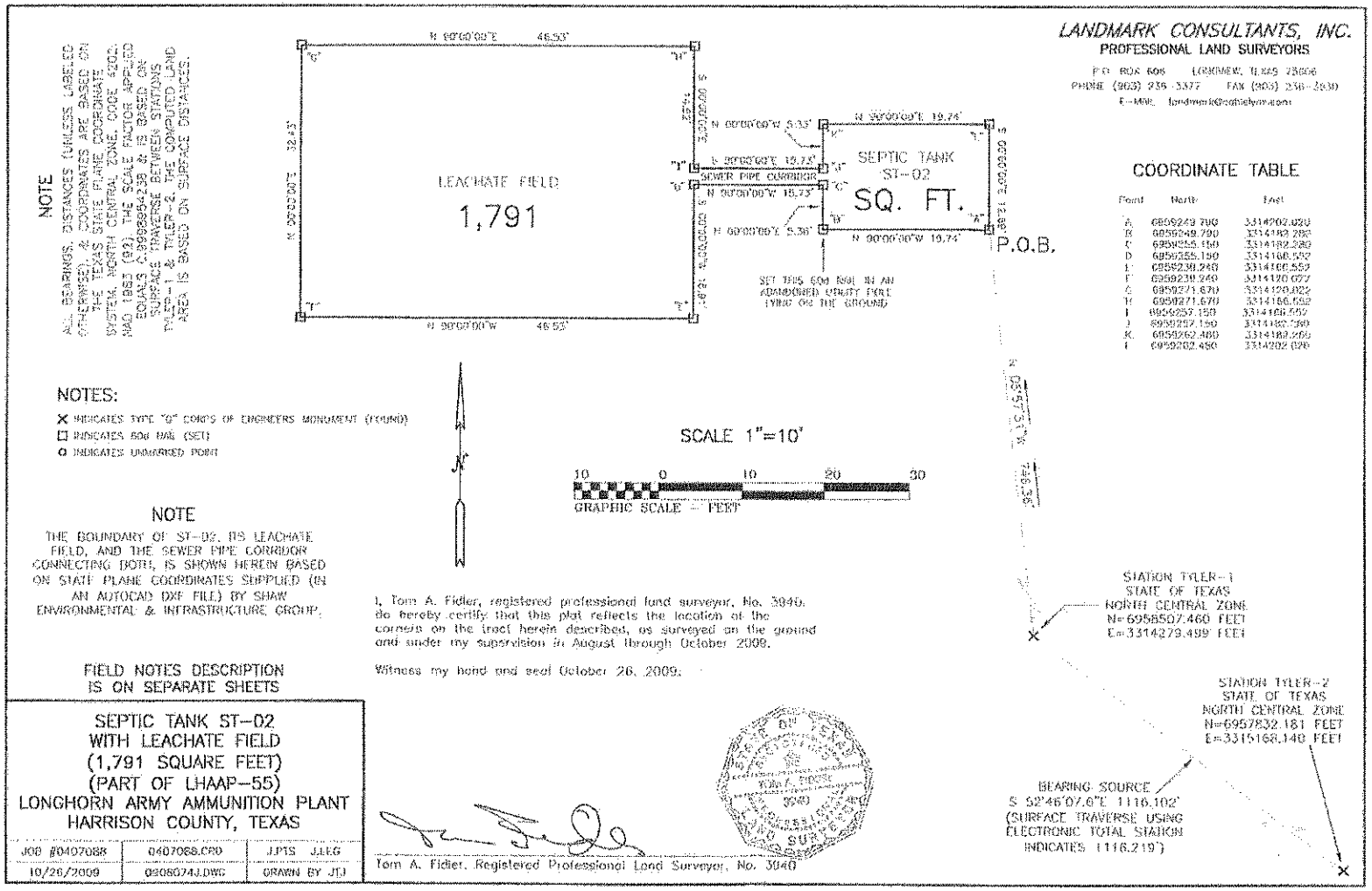
THENCE N 90deg00'00"E 19.74' along a N.B.L. of this tract to a 60d nail set for this tract's Eastmost N.E.C. ,

THENCE S 00deg00'00"E 12.69' along an E.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,791 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, R.P.L.S. Number 3940


LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LORAINE, TEXAS 79532
PHONE (903) 736-5377 FAX (903) 736-2630
E-MAIL landmark@pathfinder.com
NOTE
ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (93). THE SCALE FACTOR APPLIED TO ALL DISTANCES IS 0.99988942358 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.
LEACHATE FIELD
1,791
SEPTIC TANK ST-02
SQ. FT.
SEWER PIPE CORRIDOR
P.O.B.
SET TBS 60d NAIL IN AN ABANDONED UTILITY POLE (TYP) ON THE GROUND
COORDINATE TABLE
Point North East
A 6959249.700 3314202.020
B 6959249.790 3314183.280
C 6959255.150 3314182.280
D 6959255.190 3314168.552
E 6959238.240 3314168.552
F 6959238.240 3314120.022
G 6959271.670 3314120.022
H 6959271.670 3314166.552
I 6959257.150 3314166.552
J 6959257.190 3314182.280
K 6959262.480 3314182.606
L 6959202.480 3314202.020
NOTES:
X INDICATES TYPE "B" CORPS OF ENGINEERS MONUMENT (FOUND)
□ INDICATES 60d NAIL (SET)
O INDICATES UNMARKED POINT
SCALE 1"=10'
10 0 10 20 30
GRAPHIC SCALE - FEET
NOTE
THE BOUNDARY OF ST-02, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.
FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS
I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October 2009.
Witness my hand and seal October 26, 2009.
Tom A. Fidler, Registered Professional Land Surveyor, No. 3940
STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET
STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET
BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')
SEPTIC TANK ST-02
WITH LEACHATE FIELD
(1,791 SQUARE FEET)
(PART OF LHAAP-55)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS
JOB #0407088 | 0407088.CRD | J.PTS J.LEG
10/26/2009 | 0908074J.DWG | DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-03, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,784 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-03, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-1" referenced above,

THENCE N 24deg50'41"E 537.01' to a 60d nail set for the Southmost South corner of this tract and this POINT OF BEGINNING,

THENCE N 35deg57'31"W 30.43' along a S.W. B.L. of this tract to a 60d nail set for a South reentrant corner of this tract,

THENCE S 54deg02'29"W 1.92' along a S.E. B.L. of this tract to a 60d nail set for a South corner of this tract,

THENCE N 38deg10'26"W 12.26' along a S.W. B.L. of this tract to a 60d nail set for a South reentrant corner of this tract,

THENCE S 50deg49'08"W 5.10' along a S.E. B.L. of this tract to a 60d nail set for this tract's Northmost South corner,

THENCE N 39deg10'52"W 19.74' along a S.W. B.L. of this tract to a 60d nail set for this tract's Westmost corner,

THENCE N 50deg49'08"E 12.69' along a N.W. B.L. of this tract to a 60d nail set for this tract's Westmost North corner,

THENCE S 39deg10'52"E 19.74' along a N.E. B.L. of this tract to a 60d nail set for this tract's Westmost East corner,

THENCE S 50deg49'08"W 5.58' along a S.E. B.L. of this tract to a 60d nail set for this tract's East reentrant corner,

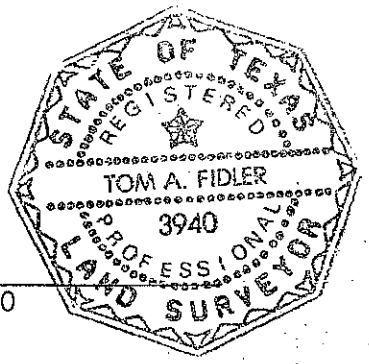
THENCE S 38deg10'26"E 10.37' along a N.E. B.L. of this tract to a 60d nail set for this tract's North reentrant corner,

THENCE N 54deg02'29"E 46.53' along a N.W. B.L. of this tract to a 60d nail set for this tract's Eastmost North corner,

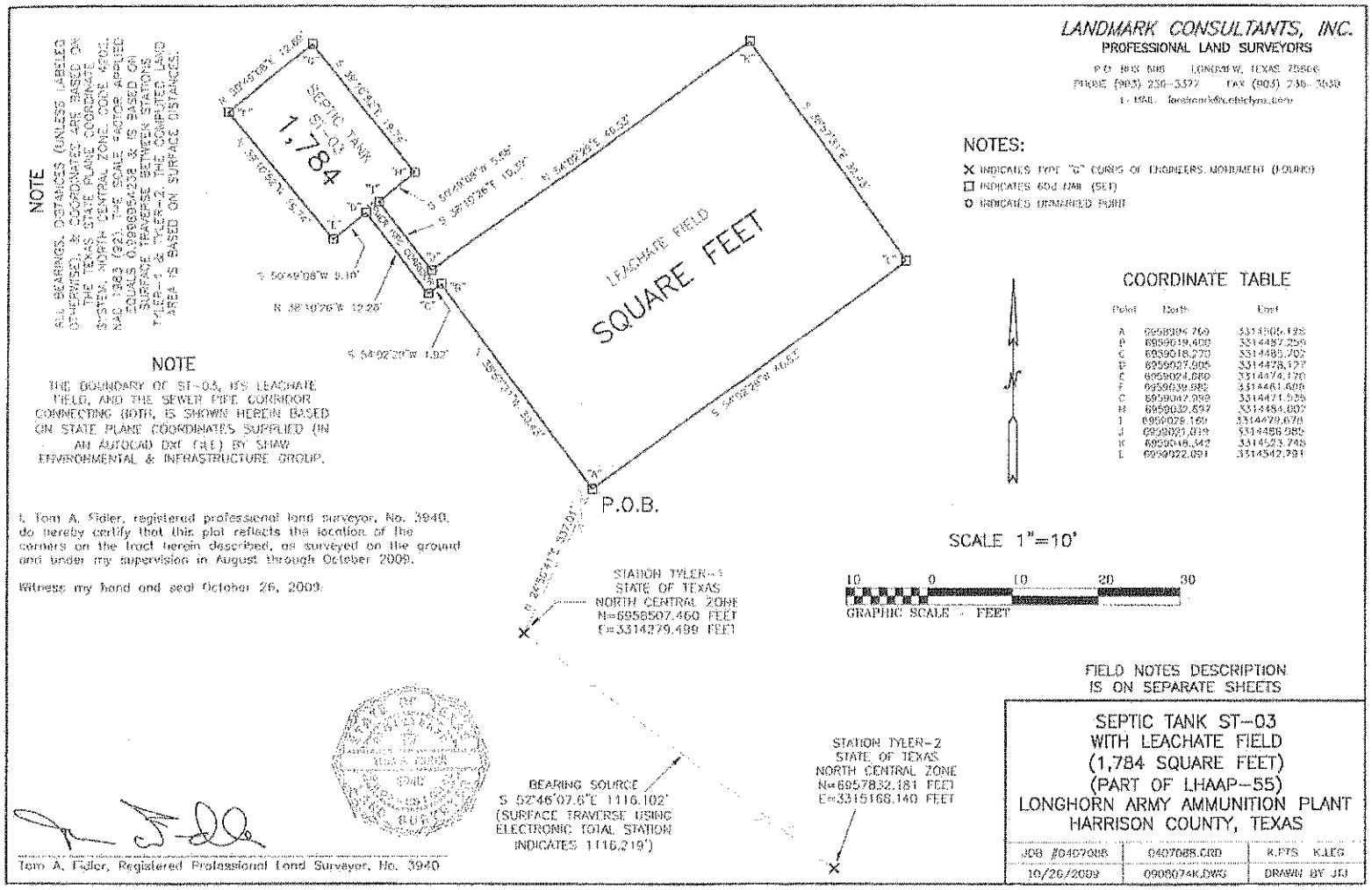
THENCE S 35deg57'31"E 32.43' along a N.E. B.L. of this tract to a 60d nail set for this tract's Eastmost East corner,

THENCE S 54deg02'29"W 46.53' along a S.E. B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,784 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



NOTE

THE BOUNDARY OF ST-03, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October 2009.

Witness my hand and seal October 26, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 608 LONGVIEW, TEXAS 75606
PHONE (903) 236-3327 FAX (903) 236-3439
E-MAIL landmark@cebridyna.com

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
□ INDICATES 60d NAIL (SET)
O INDICATES UNMARKED POINT

COORDINATE TABLE

Point	North	East
A	6956804.769	3314500.135
B	6956819.608	3314487.259
C	6956818.270	3314485.702
D	6956027.905	3314478.177
E	6956024.880	3314474.170
F	6956039.982	3314461.608
G	6956042.098	3314471.525
H	6956032.697	3314484.807
I	6956028.160	3314479.678
J	6956021.039	3314486.985
K	6956048.342	3314513.748
L	6956022.091	3314542.791

SCALE 1"=10'

10 0 10 20 30
GRAPHIC SCALE - FEET

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

SEPTIC TANK ST-03
WITH LEACHATE FIELD
(1,784 SQUARE FEET)
(PART OF LHAAP-55)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	K.PTS K.LEG
10/26/2009	0908074K.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-04, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,789 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-04, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-1" referenced above,

THENCE S 64deg44'32"W 426.66' to a 60d nail set for the Southmost S.E.C. of this tract and this POINT OF BEGINNING,

THENCE N 89deg51'08"W 32.43' along a S.B.L. of this tract to a 60d nail set for this tract's Southmost S.W.C.,

THENCE N 00deg08'52"E 46.53' along a W.B.L. of this tract to a 60d nail set for this tract's Southmost N.W.C.,

THENCE S 89deg51'08"E 14.56' along a N.B.L. of this tract to a 60d nail set for this tract's Northwest reentrant corner,

THENCE N 00deg00'00"W 14.73' along a W.B.L. of this tract to a 60d nail set for this tract's Southwest reentrant corner,

THENCE N 89deg42'35"W 5.65' along a S.B.L. of this tract to a 60d nail set for this tract's Northmost S.W.C. ,

THENCE N 00deg17'25"E 19.74' along a W.B.L. of this tract to a concrete nail with head dimple set (in old asphalt) for this tract's Northmost N.W.C. ,

THENCE S 89deg42'35"E 12.69' along a N.B.L. of this tract to a 60d nail set for this tract's Northmost N.E.C. ,

THENCE S 00deg17'25"W 19.74' along an E.B.L. of this tract to a 60d nail set for this tract's Northmost S.E.C. ,

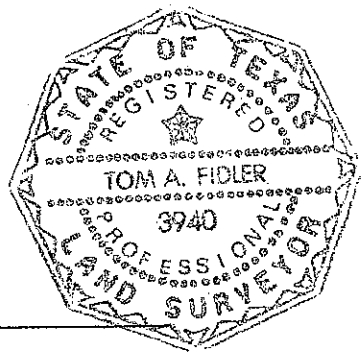
THENCE N 89deg42'35"W 5.04' along a S.B.L. of this tract to a 60d nail set for this tract's Southeast reentrant corner,

THENCE S 00deg00'00"E 14.73' along an E.B.L. of this tract to a 60d nail set for this tract's Northeast reentrant corner,

THENCE S 89deg51'08"E 15.87' along a N.B.L. of this tract to a 60d nail set for this tract's Southmost N.E.C. ,

THENCE S 00deg08'52"W 46.53' along an E.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,789 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

I, Tom A. Fidler, registered professional land surveyor, No. 3980, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October 2009.

Witness my hand and seal October 26, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3980

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P O BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-6377 FAX (903) 230-3630
E-MAIL landmark@suddenlink.com

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (02). THE SCALE FACTOR APPLIED EQUALS 0.99989542 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

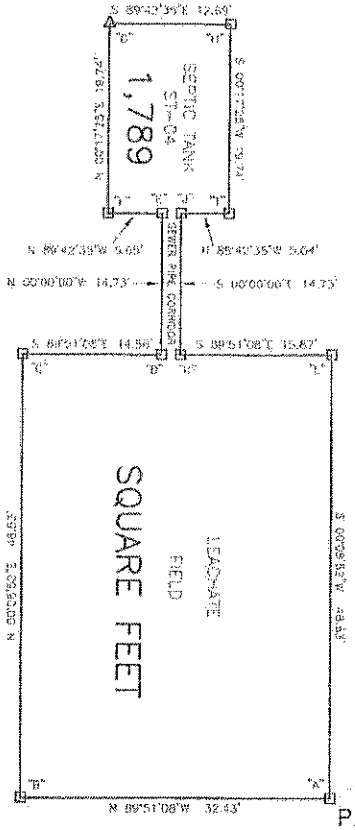
NOTE

THE BOUNDARY OF ST-04, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

NOTES:

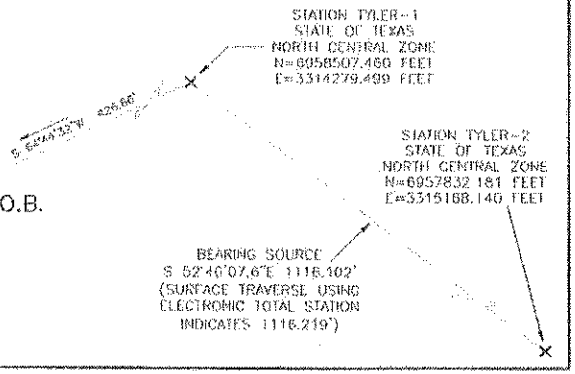
- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES 60d NAIL (SET)
- △ INDICATES CONCRETE NAIL WITH HEAD DIMPLE (SET)

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS



COORDINATE TABLE

Point	North	East
A	6958335.408	3313883.629
B	6958325.402	3313861.190
C	6958372.022	3313861.318
D	6958371.864	3313905.860
E	6958398.716	3313875.880
F	6958388.744	3313870.230
G	6958406.484	3313870.330
H	6958406.420	3313883.026
I	6958386.650	3313902.920
J	6958388.206	3313877.850
R	6958371.979	3313877.890
L	6958371.838	3313893.249



SCALE 1"=10'

10 0 10 20 30
GRAPHIC SCALE - FEET

SEPTIC TANK ST-04
WITH LEACHATE FIELD
(1,789 SQUARE FEET)
(PART OF LHAAP-55)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	LPTS 1.LEG
10/26/2009	09080741.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-05, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,825 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-05, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-2" referenced above,

THENCE N 52deg46'07.6"W 36.82' to a point, said point being S 52deg46'07.6"E 1079.28' from said monument "TYLER-1" ,

THENCE S 37deg13'52"W 81.68' to a 60d nail set for the Northmost East corner of this tract and this POINT OF BEGINNING ,

THENCE S 33deg39'28"W 12.69' along a S.E. B.L. of this tract to a 60d nail set for this tract's Northmost South corner,

THENCE N 56deg20'32"W 17.74' along a S.W. B.L. of this tract to a chisled "X" set in concrete for this tract's South reentrant corner,

THENCE S 36deg51'06"W 32.79' along a S.E. B.L. of this tract to a 60d nail set for this tract's East reentrant corner,

THENCE S 57deg33'12"E 44.52' along a N.E. B.L. of this tract to a 60d nail set for this tract's Southmost East corner,

THENCE S 32deg26'48"W 32.43' along a S.E. B.L. of this tract to a 60d nail set for this tract's Southmost South corner,

THENCE N 57deg33'12"W 46.53' along a S.W. B.L. of this tract to a 60d nail set for this tract's West corner,

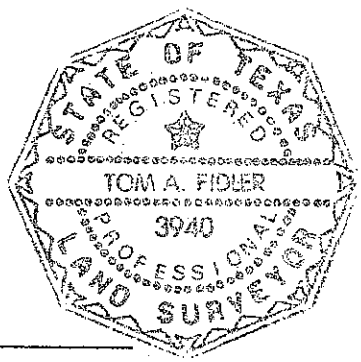
THENCE N 32deg26'48"E 32.43' along a N.W. B.L. of this tract to a 60d nail set for deflection corner,

THENCE N 36deg51'06"E 32.84' along a N.W. B.L. of this tract to a chisled "X" set in concrete for deflection corner,

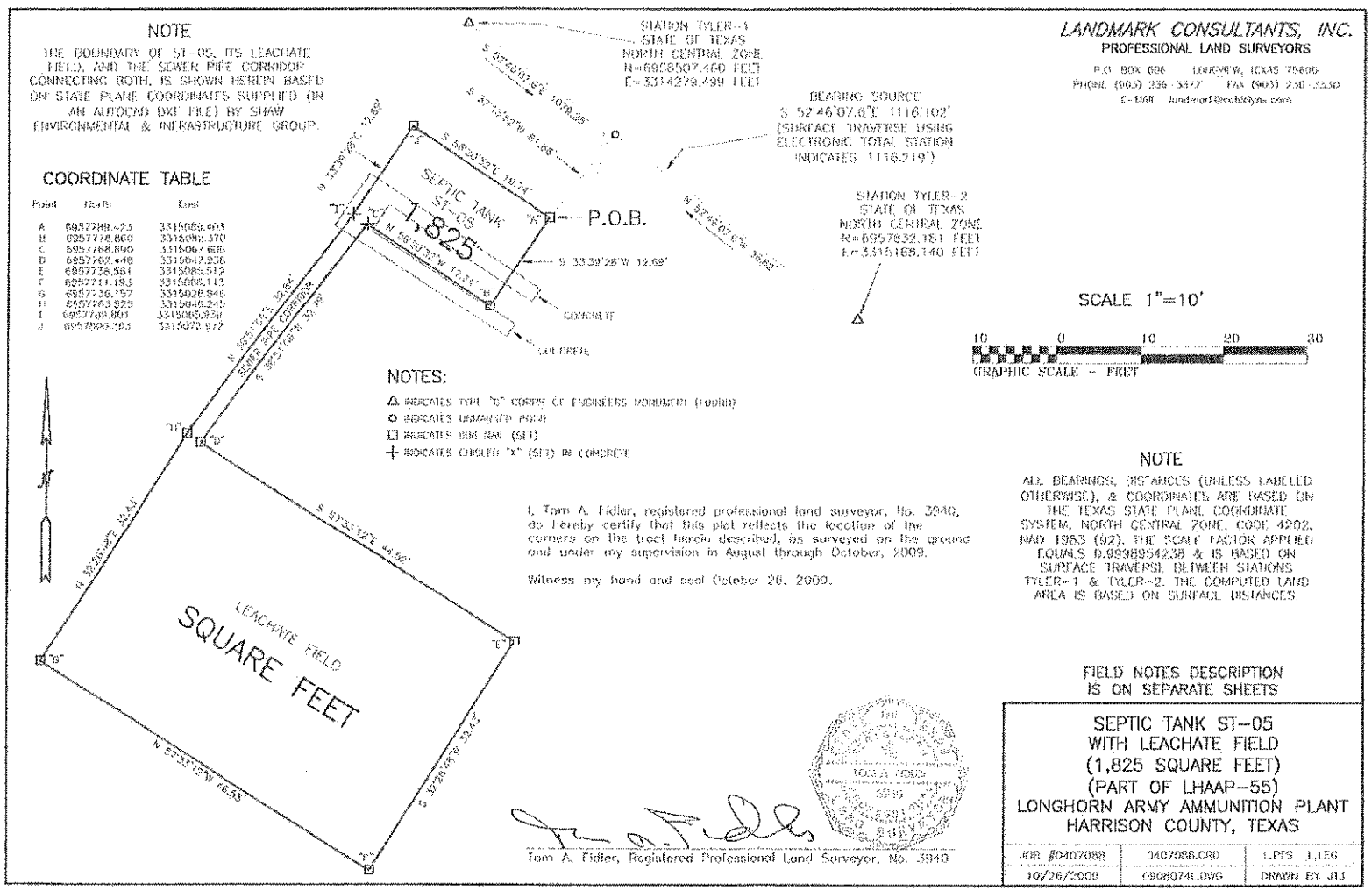
THENCE N 33deg39'28"E 12.69' along a N.W. B.L. of this tract to a 60d nail set for this tract's North corner,

THENCE S 56deg20'32"E 19.74' along a N.E. B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,825 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940


NOTE
THE BOUNDARY OF ST-05, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.
COORDINATE TABLE
Point North East
A 6957788.425 3315089.603
B 6957778.809 3315096.370
C 6957768.899 3316067.686
D 6957767.448 3315047.236
E 6957756.561 3315085.512
F 6957731.193 3315068.113
G 6957736.157 3315028.345
H 6957763.529 3315046.249
I 6957789.801 3315065.931
J 6957805.395 3315072.972
STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET
BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')
STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957852.181 FEET
E=3315168.140 FEET
SEPTIC TANK ST-05
1,825
P.O.B.
LEACHATE FIELD
SQUARE FEET
SEWER PIPE CORRIDOR
S 37°53'12"E 44.50'
N 52°06'48"E 41.00'
N 37°53'12"W 44.50'
S 52°06'48"W 41.00'
NOTES:
INDICATES TYPE "B" CORPS OF ENGINEERS MONUMENT (FOUND)
INDICATES UNMARKED POINT
INDICATES IRON RAN (SET)
INDICATES CHISELED "X" (SET) IN CONCRETE
SCALE 1"=10'
10 0 10 20 30
GRAPHIC SCALE - FEET
NOTE
ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999894238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.
I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.
Witness my hand and seal October 26, 2009.
Tom A. Fidler, Registered Professional Land Surveyor, No. 3940
LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 686 LONGVIEW, TEXAS 75606
PH(903) 236-3377 FAX (903) 230-3330
E-MAIL landmark@cebridges.com
FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS
SEPTIC TANK ST-05
WITH LEACHATE FIELD
(1,825 SQUARE FEET)
(PART OF LHAAP-55)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS
JOB #0407088 0407088.CRD LPTS 1,LEG
10/26/2009 0908074L.DWG DRAWN BY JLJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-06, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,800 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-06, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-2" referenced above,

THENCE S 85deg57'52"E 1425.64' to a 60d nail set for the Northmost N.W.C. of this tract and this POINT OF BEGINNING,

THENCE N 67deg08'12"E 12.69' along a N.B.L. of this tract to a 60d nail set for this tract's Northmost N.E.C. ,

THENCE S 22deg51'48"E 19.74' along an E.B.L. of this tract to a 60d nail set for this tract's Northmost S.E.C. ,

THENCE S 67deg08'12"W 4.97' along a S.B.L. of this tract to a 60d nail set for this tract's S.E. reentrant corner,

THENCE S 22deg49'50"E 19.87' along an E.B.L. of this tract to a 60d nail set for this tract's N.E. reentrant corner,

THENCE N 64deg30'12"E 16.55' along a N.B.L. of this tract to a

60d nail set for this tract's Southmost N.E.C. ,

THENCE S 25deg29'48"E 46.53' along an E.B.L. of this tract to a 60d nail set for this tract's Southmost S.E.C. ,

THENCE S 64deg30'12"W 32.43' along a S.B.L. of this tract to a 60d nail set for this tract's Southmost S.W.C. ,

THENCE N 25deg29'48"W 46.53' along a W.B.L. of this tract to a 60d nail set for this tract's Southmost N.W.C. ,

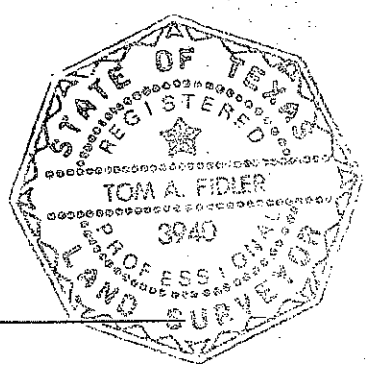
THENCE N 64deg30'12"E 13.88' along a N.B.L. of this tract to a 60d nail set for this tract's N.W. reentrant corner,

THENCE N 22deg49'50"W 19.96' along a W.B.L. of this tract to a 60d nail set for this tract's S.W. reentrant corner,

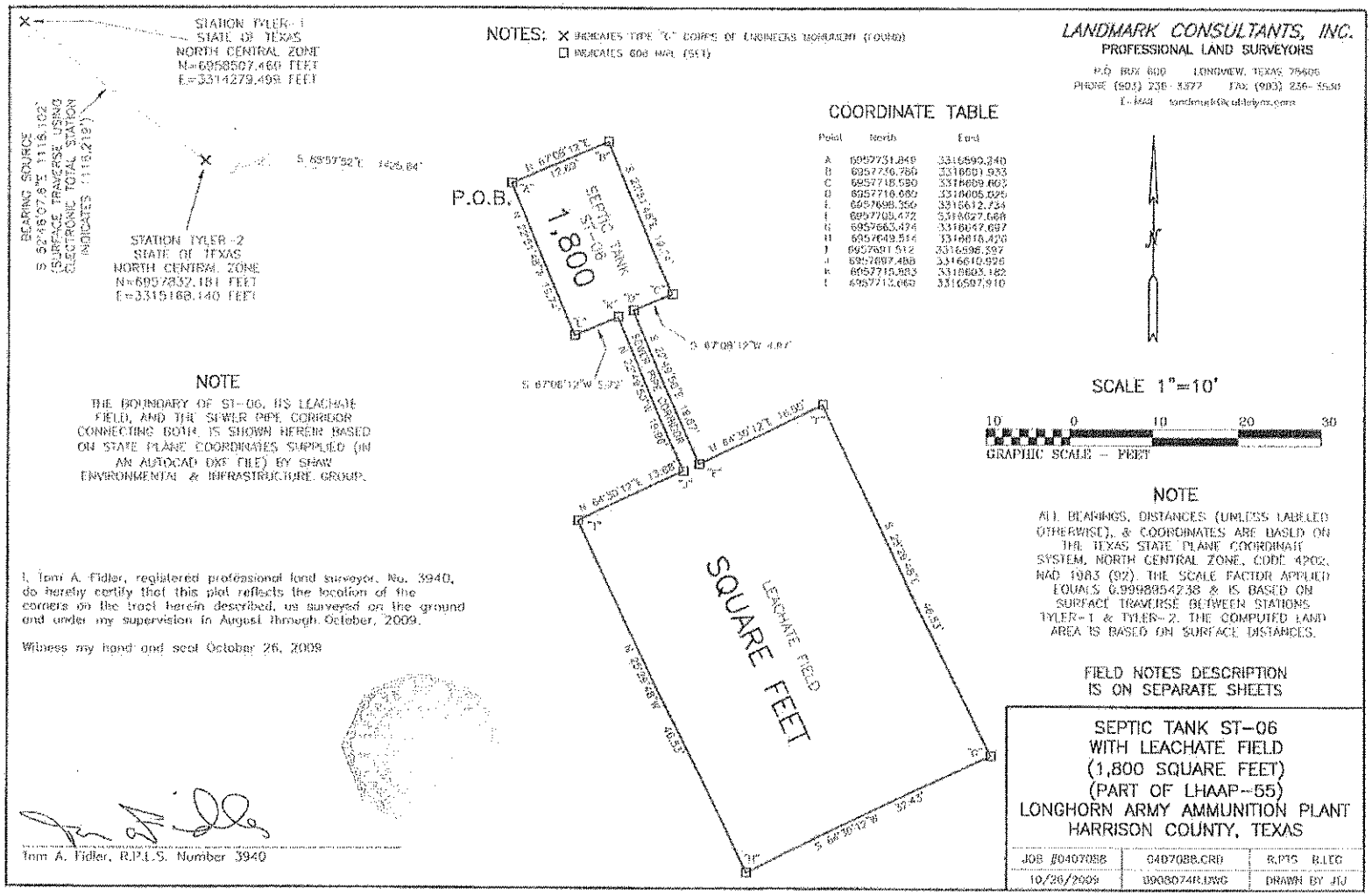
THENCE S 67deg08'12"W 5.72' along a S.B.L. of this tract to a 60d nail set for this tract's Northmost S.W.C. ,

THENCE N 22deg51'48"W 19.74' along a W.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,800 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



COORDINATE TABLE

Point	North	East
A	6957731.849	3316590.340
B	6957736.786	3316601.933
C	6957718.530	3316609.663
D	6957710.592	3316605.026
E	6957698.356	3316612.734
F	6957705.472	3316627.668
G	6957663.424	3316547.697
H	6957649.514	3316616.428
I	6957691.512	3316596.587
J	6957697.488	3316610.926
K	6957715.883	3316603.162
L	6957713.060	3316597.910

LANDMARK CONSULTANTS, INC.
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PHONE (903) 236-3377 FAX (903) 236-3580
E-MAIL landmark@cableone.com

NOTE

THE BOUNDARY OF ST-06, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

NOTE

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FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

Witness my hand and seal October 26, 2009

Tom A. Fidler, R.P.L.S. Number 3940

SEPTIC TANK ST-06
WITH LEACHATE FIELD
(1,800 SQUARE FEET)
(PART OF LHAAP-55)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	R.P.LS B.LEG
10/26/2009	0908074R.DWG	DRAWN BY JJJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-07, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,865 square feet of land out of the Longhorn Ordance Works Reservation, (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-07, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-2" referenced above,

THENCE S 20deg14'47"E 467.25' to a 60d nail set for the N.E.C. corner of this tract and this POINT OF BEGINNING ,

THENCE S 13deg37'37"E 32.43' along an E.B.L. of this tract to a 60d nail set for this tract's S.E.C. ,

THENCE S 76deg22'23"W 46.53' along a S.B.L. of this tract to a 60d nail set for this tract's S.W.C. ,

THENCE N 13deg37'37"W 14.74' along a W.B.L. of this tract to a 60d nail set for this tract's Eastmost reentrant corner,

THENCE S 77deg04'57"W 23.21' along a S.B.L. of this tract to a 60d nail set for a somewhat reentrant corner of this tract,

THENCE S 29deg56'20"W 28.62' along a S.E. B.L. of this tract

to a 60d nail set for this tract's Southmost reentrant corner,

THENCE S 54deg24'06"E 5.82' along a N.E. B.L. of this tract to a 60d nail set for this tract's East corner,

THENCE S 35deg35'54"W 19.74' along a S.E. B.L. of this tract to a 60d nail set for this tract's South corner,

THENCE N 54deg24'06"W 12.69' along a S.W. B.L. of this tract to a 60d nail set for this tract's West corner,

THENCE N 35deg35'54"E 19.74' along a N.W. B.L. of this tract to a 60d nail set for this tract's North corner,

THENCE S 54deg24'06"E 4.86' along a N.E. B.L. of this tract to a 60d nail set for this tract's Westmost reentrant corner,

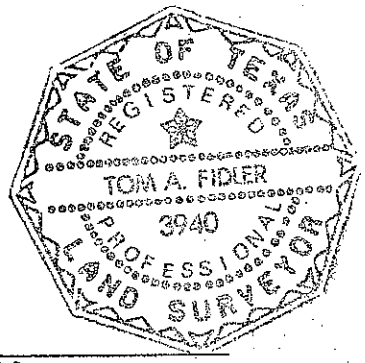
THENCE N 29deg56'20"E 29.29' along a N.W. B.L. of this tract to a 60d nail set for this tract's Southmost N.W.C. ,

THENCE N 77deg04'57"E 24.06' along a N.B.L. of this tract to a 60d nail set for this tract's Northmost reentrant corner,

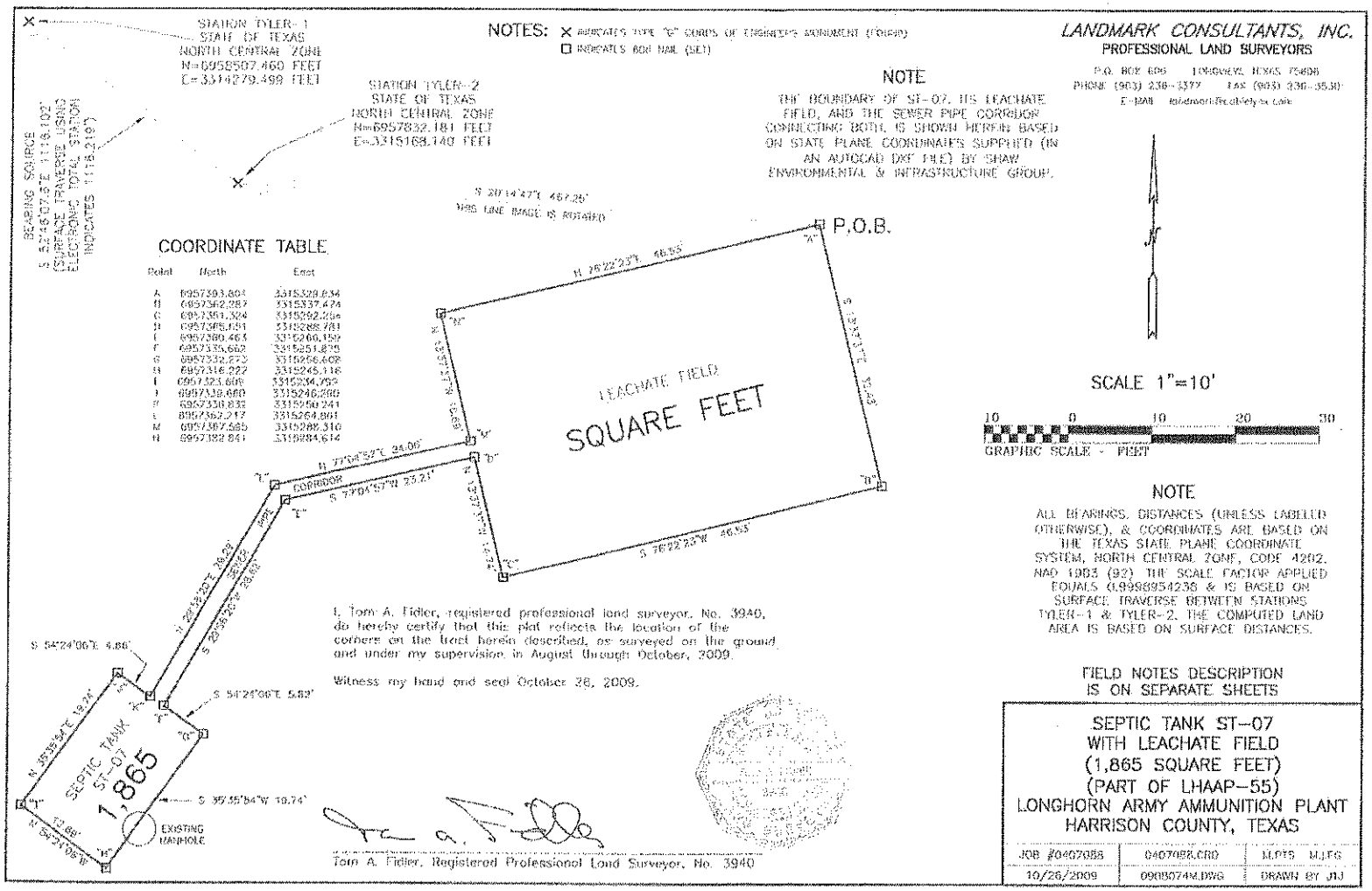
THENCE N 13deg37'37"W 15.69' along a W.B.L. of this tract to a 60d nail set for this tract's Northmost N.W.C. ,

THENCE N 76deg22'23"E 46.53' along a N.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,865 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
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PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL lc@landmarkconsultants.com

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

Witness my hand and seal October 26, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

SEPTIC TANK ST-07 WITH LEACHATE FIELD (1,865 SQUARE FEET) (PART OF LHAAP-55) LONGHORN ARMY AMMUNITION PLANT HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	M.LES M.J.FG
10/26/2009	090B074N.DWG	DRAWN BY JJJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-08, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,785 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-08, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-2" referenced above,

THENCE S 37deg52'57"E 620.24' to a 60d nail set for the Northmost N.E.C. corner of this tract and this POINT OF BEGINNING,

THENCE S 16deg08'12"E 46.53' along an E.B.L. of this tract to a 60d nail set for this tract's Eastmost S.E.C. ,

THENCE S 73deg51'48"W 32.43' along a S.B.L. of this tract to a 60d nail set for slight deflection corner,

THENCE S 70deg49'57"W 12.79' along a S.B.L. of this tract to a 60d nail set for this tract's Southmost reentrant corner,

THENCE S 17deg16'09"E 6.37' along an E.B.L. of this tract to a 60d nail set for this tract's Westmost S.E.C. ,

THENCE S 72deg43'51"W 19.74' along a S.B.L. of this tract to a 60d nail set for this tract's only S.W.C. ,

THENCE N 17deg16'09"W 12.69' along a W.B.L. of this tract to a chisled "X" set in concrete for this tract's Southmost N.W.C. ,

THENCE N 72deg43'51"E 19.74' along a N.B.L. of this tract to a 60d nail set for this tract's Southmost N.E.C. ,

THENCE S 17deg16'09"E 4.32' along an E.B.L. of this tract to a 60d nail set for this tract's Westmost reentrant corner,

THENCE N 70deg49'57"E 12.83' along a N.B.L. of this tract to a 60d nail set for this tract's Eastmost reentrant corner,

THENCE N 16deg08'12"W 44.52' along a W.B.L. of this tract to a 60d nail set for this tract's Northmost N.W.C. ,

THENCE N 73deg51'03"E 32.43' along a N.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,785 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, R.P.L.S. Number 3940

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314270.499 FEET

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

BEARING SOURCE
S 52°46'07.8"E 1116.102'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1116.218')

S 37°52'57"E 620.24'
THIS LINE IMAGE IS ROTATED

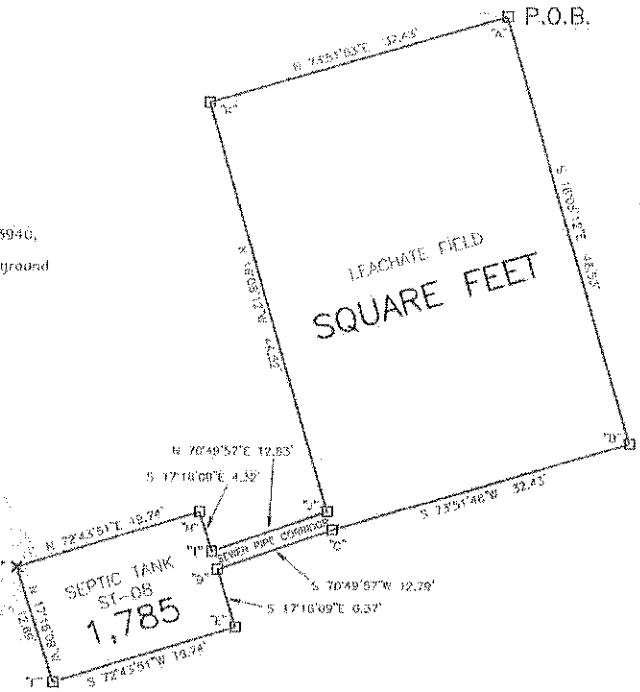
NOTES:
- O INDICATES TYPE "C" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES 60d NAIL (SET)
- X INDICATES CHISELED "X" SET IN CONCRETE

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3830
E-MAIL landmark@cableone.com

NOTE
THE BOUNDARY OF ST-08, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

COORDINATE TABLE

Point	North	East
A	6957342.644	3315548.994
B	6957297.947	3315561.926
C	6957288.934	3315530.774
D	6957284.733	3315516.689
E	6957276.650	3315520.580
F	6957272.790	3315501.730
G	6957284.908	3315497.963
H	6957290.768	3315516.813
I	6957286.644	3315518.085
J	6957290.858	3315530.217
K	6957333.624	3315517.844



I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

Witness my hand and seal October 26, 2009.

Tom A. Fidler, R.P.L.S. Number 3940

NOTE
ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

SEPTIC TANK ST-08
WITH LEACHATE FIELD
(1,785 SQUARE FEET)
(PART OF LHAAP-55)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	N.PTS N.LEG
10/26/2009	0908074N.DWG	DRAWN BY JJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-09, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 2,004 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-09, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-2" referenced above,

THENCE S 03deg30'04"E 1101.12' to a 60d nail set for the North corner of this tract and this POINT OF BEGINNING,

THENCE S 47deg56'14"E 12.69' along a N.E. B.L. of this tract to a 60d nail set for this tract's East corner,

THENCE S 42deg03'46"W 19.74' along a S.E. B.L. of this tract to a 60d nail set for this tract's South corner,

THENCE N 47deg56'14"W 4.08' along a S.W. B.L. of this tract to a 60d nail set for this tract's S.E. reentrant corner,

THENCE S 18deg07'53"E 120.09' along an E.B.L. of this tract to a 60d nail set for this tract's N.E. reentrant corner,

THENCE N 67deg40'46"E 15.01' along a N.B.L. of this tract to a

60d nail set for this tract's N.E.C. ,

THENCE S 22deg19'14"E 46.53' along an E.B.L. of this tract to a 60d nail set for this tract's S.E.C. ,

THENCE S 67deg40'46"W 32.43' along a S.B.L. of this tract to a 60d nail set for this tract's S.W.C. ,

THENCE N 22deg19'14"W 46.53' along a W.B.L. of this tract to a 60d nail set for this tract's N.W.C. ,

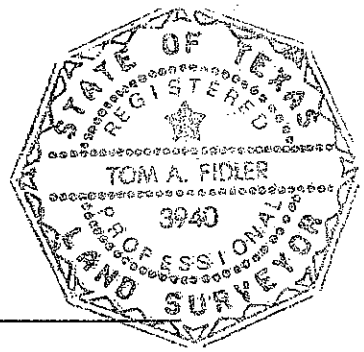
THENCE N 67deg40'46"E 15.42' along a N.B.L. of this tract to a 60d nail set for this tract's N.W. reentrant corner,

THENCE N 18deg07'53"W 123.73' along a W.B.L. of this tract to a 60d nail set for this tract's S.W. reentrant corner,

THENCE N 47deg56'14"W 4.59' along a S.W. B.L. of this tract to a 60d nail set for this tract's West corner,

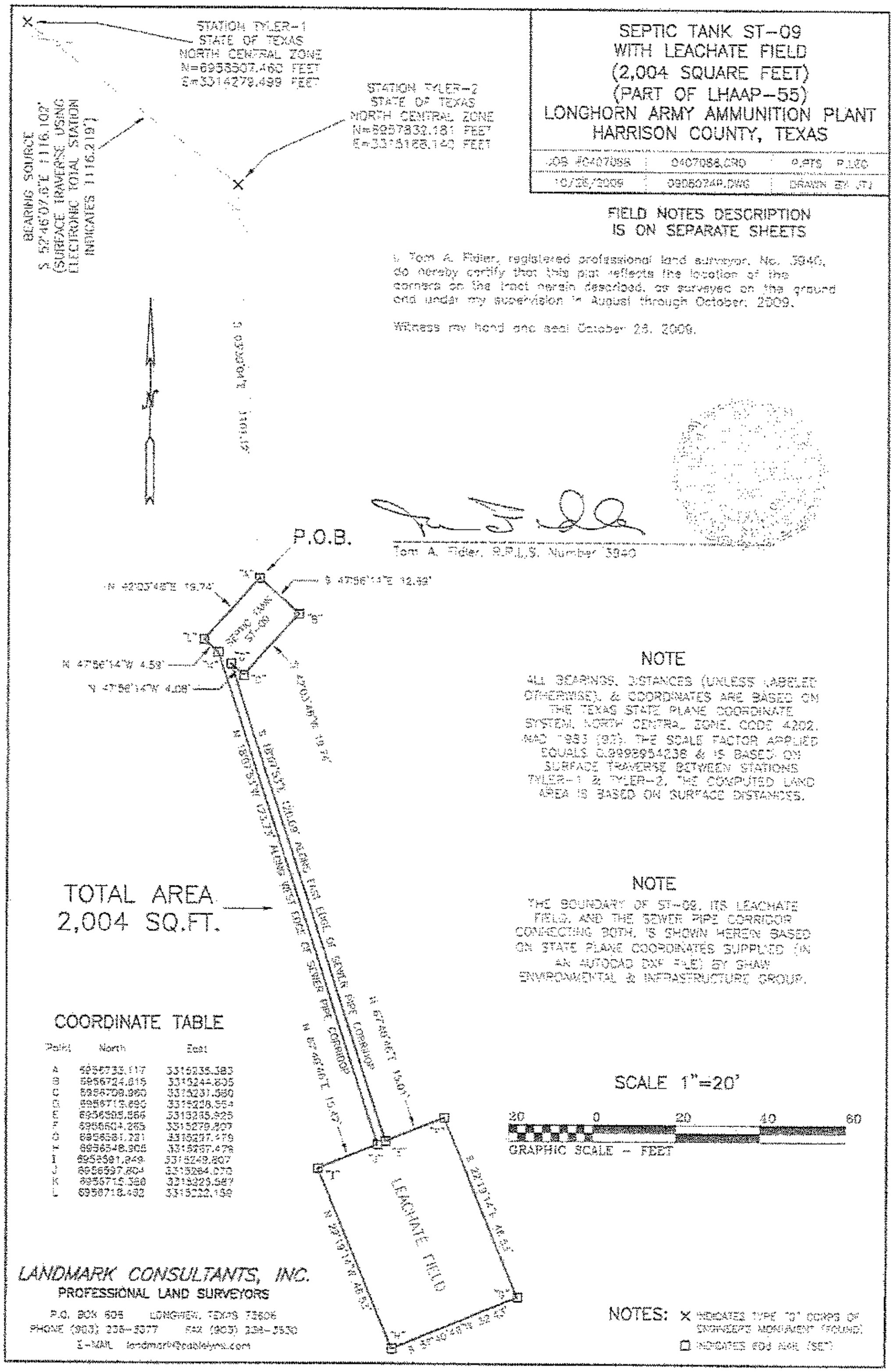
THENCE N 42deg03'46"E 19.74' along a N.W. B.L. of this tract to this POINT OF BEGINNING. This tract contains 2,004 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

00194901


SEPTIC TANK ST-09
WITH LEACHATE FIELD
(2,004 SQUARE FEET)
(PART OF LHAAP-55)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS
JOB #0407088 | 0407088.CRD | P.PTS P.LEG
10/26/2009 | 09080724P.DWG | DRAWN BY JTJ
FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS
I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.
Witness my hand and seal October 26, 2009.
Tom A. Fidler, R.P.L.S. Number 3940
STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958307.460 FEET
E=3314279.499 FEET
STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET
BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')
S 03°00'04" 1161.15'
N
P.O.B.
N 42°03'48"E 19.74'
S 47°56'14"E 12.59'
SEPTIC TANK ST-09
N 47°56'14"W 4.59'
N 47°56'14"W 4.08'
S 42°03'48"W 19.74'
S 18°07'53"E 120.09' ALONG EAST EDGE OF SEWER PIPE CORRIDOR
N 18°07'53"W 123.33' ALONG WEST EDGE OF SEWER PIPE CORRIDOR
N 67°40'46"E 15.01'
N 67°40'46"E 15.43'
TOTAL AREA
2,004 SQ.FT.
LEACHATE FIELD
S 22°19'14"E 48.53'
N 22°19'14"W 48.53'
S 67°40'46"W 32.43'
NOTE
ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (93). THE SCALE FACTOR APPLIED EQUALS 0.9999954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.
NOTE
THE BOUNDARY OF ST-09, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.
SCALE 1"=20'
20 0 20 40 60
GRAPHIC SCALE - FEET
NOTES: × INDICATES TYPE "D" CORPS OF ENGINEERS MONUMENT (FOUND)
□ INDICATES 60d NAIL (SET)
LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 605 LONGVIEW, TEXAS 75606
PHONE (903) 236-5377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

COORDINATE TABLE

Point	North	East
A	6956733.117	3316235.383
B	6956724.615	3316244.605
C	6956709.960	3316231.580
D	6956715.690	3316228.554
E	6956585.566	3316285.925
F	6956604.265	3316279.807
G	6956581.231	3316297.179
H	6956548.906	3316287.479
I	6956581.849	3316249.807
J	6956597.804	3316284.070
K	6956715.360	3316229.567
L	6956718.432	3316222.159

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-10, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,804 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-10, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-2" referenced above,

THENCE S 34deg34'49"E 861.93' to a 60d nail set for the Westmost N.W.C. of this tract and this POINT OF BEGINNING,

THENCE S 81deg33'36"E 46.53' along a N.B.L. of this tract to a 60d nail set for this tract's Westmost N.E.C. ,

THENCE S 08deg26'24"W 13.21' along an E.B.L. of this tract to a 60d nail set for this tract's N.E. reentrant corner,

THENCE S 82deg30'08"E 21.87' along a N.B.L. of this tract to a 60d nail set for this tract's N.W. reentrant corner,

THENCE N 08deg55'06"E 4.34' along a W.B.L. of this tract to a 60d nail set for this tract's Eastmost N.W.C. ,

THENCE S 81deg04'54"E 19.74' along a N.B.L. of this tract to a 60d nail set for this tract's Eastmost N.E.C. ,

THENCE S 08deg55'06"W 12.69' along an E.B.L. of this tract to a 60d nail set for this tract's Eastmost S.E.C. ,

THENCE N 81deg04'54"W 19.74' along a S.B.L. of this tract to a 60d nail set for this tract's Eastmost S.W.C. ,

THENCE N 08deg55'06"E 6.34' along a W.B.L. of this tract to a 60d nail set for this tract's S.W. reentrant corner,

THENCE N 82deg30'08"W 21.85' along a S.B.L. of this tract to a 60d nail set for this tract's S.E. reentrant corner,

THENCE S 08deg26'24"W 17.22' along an E.B.L. of this tract to a 60d nail set for this tract's Westmost S.E.C. ,

THENCE N 81deg33'36"W 46.53' along a S.B.L. of this tract to a 60d nail set for this tract's Westmost S.W.C. ,

THENCE N 08deg26'24"E 32.43' along a W.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,804 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, R.P.L.S. Number 3940

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1116.219')

NOTES: ✕ INDICATES TYPE "D" CORPS OF ENGINEERS MONUMENT (FOUND)
☐ INDICATES 60d NAIL (SET)

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
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PHONE (903) 236-3377 FAX (903) 236-3539
E-MAIL landmark@cablelynx.com

NOTE

THE BOUNDARY OF ST-10, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

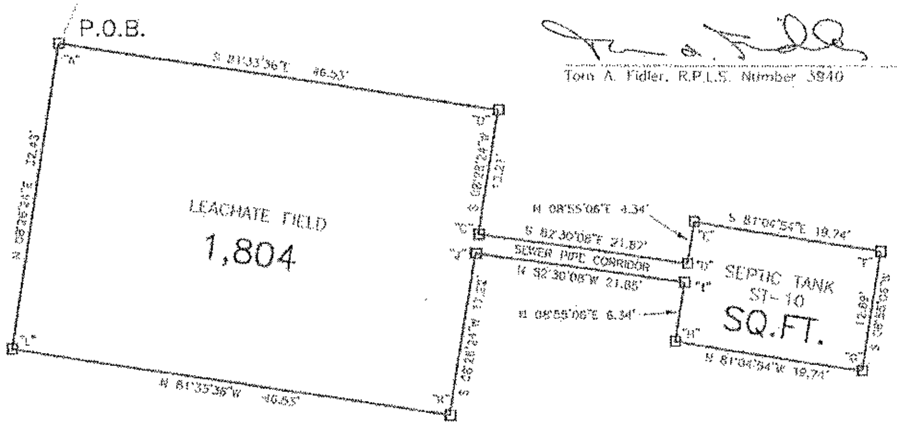
Witness my hand and seal October 26, 2009.

COORDINATE TABLE

Point	North	East
A	6957122.525	3315657.350
B	6957119.896	3315703.305
C	6957102.831	3315701.426
D	6957099.778	3315723.186
E	6957104.070	3315723.780
F	6957101.010	3315743.281
G	6957088.423	3315741.314
H	6957091.533	3315721.813
I	6957097.892	3315722.299
J	6957100.863	3315701.133
K	6957083.617	3315698.609
L	6957090.446	3315652.579

SCALE 1"=10'

GRAPHIC SCALE - FEET



Tom A. Fidler, R.P.L.S. Number 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (93). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

SEPTIC TANK ST-10 WITH LEACHATE FIELD (1,804 SQUARE FEET) (PART OF LHAAP-55) LONGHORN ARMY AMMUNITION PLANT HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	0.PTS 0.LFG
10/26/2009	09080740.DWG	DRAWN BY JTJ

LHAAP-35A(58), 58-1

LUCs FROM FINAL REMEDIAL DESIGN

March 2, 2015

Final

Remedial Design
LHAAP-35A(58), Shops Area, Group 4
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for U.S. Army Corps of Engineers – Tulsa District
1645 South 101st East Avenue
Tulsa, Oklahoma 74128

Prepared by Shaw Environmental, Inc.
1401 Enclave Parkway, Suite 250
Houston, Texas 77077

Contract No. W912QR-04-D-0027, Task Order No. DS02
Project No. 117591
Rev 0
September 2011

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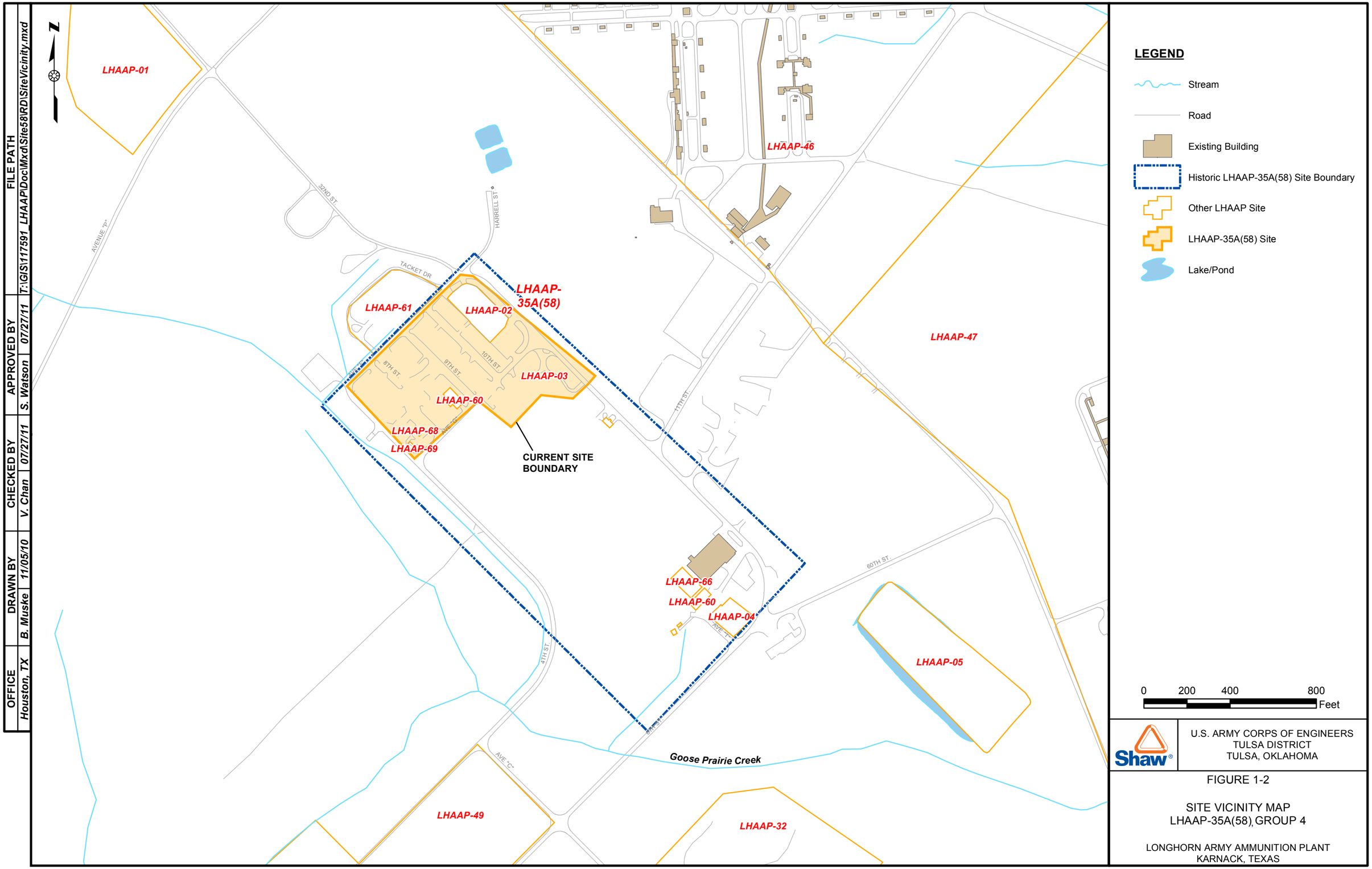
Contract No. W912QR-04-D-0027, Task Order No. DS02• Final • Rev 0 • September 2011



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OFFICE	DRAWN BY	CHECKED BY
Houston, TX	B. Muske	V. Chan
	11/05/10	07/27/11

APPROVED BY	
S. Watson	07/27/11

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

FIGURE 1-2

SITE VICINITY MAP
LHAAP-35A(58), GROUP 4

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

2.0 LAND USE CONTROL

The objective of the LUC at LHAAP-35A(58) is to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the site for anything other than environmental monitoring and testing until cleanup goals are met. Notification of the groundwater use restriction will accompany all transfer documents and will be recorded at the Harrison County Courthouse in accordance with Texas Administrative Code (TAC) Title 30, §335.566. **Appendix A** provides sample LUC compliance certification documentation.

The LUC addresses the two groundwater plumes at LHAAP-35A(58) with levels of contamination that require implementation of a remedy (see **Section 1.3**). The U.S. Army is responsible for implementing, maintaining, monitoring, reporting on, and enforcing the LUC.

U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of an LUC objective at this site after it has transferred. U.S. Army shall obtain USEPA and Texas Commission on Environmental Quality (TCEQ) concurrence prior to termination or significant modification of the LUC, or implementation of a change in land use inconsistent with the LUC objectives and use assumptions of the remedy. Although not a remedy, the land use assumption for LHAAP-35A(58) forms the basis for the remedy. The future use of the site as part of a national wildlife refuge is consistent with the industrial risk exposure scenario. Notification of the land use assumption of this site will be made in transfer documentation and will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566. Compliance with the use assumption will be documented in the five-year review reports.

4.0 LAND USE CONTROL DESIGN AND IMPLEMENTATION PLAN

This section describes the LUC design and implementation activities for LHAAP-35A(58). The activities will result in a surveyed and recorded groundwater use restriction boundary and an operation and maintenance plan for the LUC.

The objective of the LUC at LHAAP-35A(58) is to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the site for anything other than environmental monitoring and testing until cleanup goals are met. Notification of the groundwater use restriction will accompany all transfer documents. The U.S. Army is responsible for long-term implementation, maintenance, inspection, reporting, and enforcement of the LUC.

The LUC will address the area of LHAAP-35A(58) that includes two groundwater plumes with levels of contamination that require implementation of a remedy (see **Section 1.3**). The Land Use Control Operation and Maintenance (LUC O&M) Plan will identify the measures required for monitoring and enforcement of the groundwater use restriction. Upon review and concurrence of this RD, the LUC O&M Plan will be coordinated with regulators, finalized, and distributed as part of the Comprehensive LUC Management Plan.

4.1 Land Use Control Implementation

The U.S. Army will undertake the following actions to implement the groundwater restriction LUC for LHAAP-35A(58):

- Define the Area of the Groundwater Use Restriction. The groundwater use restriction boundary will be defined based on the review of the first round of groundwater sampling data in conjunction with historic data. The extent of plume will be bounded by a buffer and may extend to natural groundwater and surface water boundaries.

- Survey the LUC Boundary. The proposed boundary will be finalized after all wells are installed and sampled. Concurrence by USEPA and TCEQ will be obtained, and the LUC boundary will be surveyed by a State-licensed surveyor. A legal description of the surveyed area will be appended to the survey plat.

- Record the LUC in Harrison County. The LUC plat, legal description and groundwater use restriction language will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566.

- Notify the Texas Department of Licensing and Regulation of the LUC. The Texas Department of Licensing and Regulation will be notified of the groundwater restriction which includes the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the Army, the USEPA, and the TCEQ. The survey plat, legal boundary and description of the groundwater restriction, in conjunction with a locator map, will be provided in hard and electronic copy.

- Develop the LUC O&M Plan. A LUC O&M Plan for LHAAP-35A(58) will be developed. It will include the elements presented in **Section 4.2**, the county recordation of the LUC survey plat, legal description and restriction language, and the inspection/certification form.

4.2 Land Use Control Operation and Maintenance

The U.S. Army or its representatives will be responsible for the operation and maintenance of the LHAAP-35A(58) LUC. This includes certification, reporting and enforcement activities. The U.S. Army shall address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable. To facilitate long-term operation and maintenance of the groundwater use restriction LUC remedy, the U.S. Army will develop a plan that will encompass the elements described in the following subsections.

4.2.1 Site Certification and Reporting

Beginning with finalization of this RD and approval of the inspection form, the U.S. Army will undertake inspections and certify continued compliance with the LUC objectives. The U.S. Army, or the transferee after transfer, will retain the LUC Inspection Certification documents in the project files for incorporation into the five-year review reports, and these documents will be made available to USEPA and TCEQ upon request. In addition, should any violations be found during the certification, the U.S. Army will provide to USEPA and TCEQ, along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations. The need to continue certifications will be revisited at five year reviews.

4.2.2 Notice of Planned Property Conveyances

The U.S. Army shall provide notice to USEPA and TCEQ of plans to convey the LHAAP-35A(58) acreage. The notice shall describe the mechanism by which the LUC will continue to be implemented, maintained, inspected, reported, and enforced. Upon transfer, such responsibilities may shift to the transferee via appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental document for transfer. Although the U.S. Army may transfer responsibility for various implementation actions, the U.S. Army shall retain its responsibility for remedy integrity. This means that the U.S. Army

Contract No. W912QR-04-D-0027, Task Order No. DS02• Final • Rev 0 • September 2011

is responsible for addressing substantive violations of the LUC performance objective that would undermine the U.S. Army's CERCLA remedy. The U.S. Army also will be responsible for incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation.

4.2.3 Opportunity to Review Text of Intended Land Use Controls

U.S. Army will provide a copy of the groundwater use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. USEPA will also receive a copy for review. In addition, the U.S. Army will produce an ECP or other environmental document for transfer of LHAAP-35A(58), but before executing transfer, the U.S. Army will provide USEPA and TCEQ with a copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before transfer, to review all LUC-related provisions.

4.2.4 Notification Should Action(s) Which Interfere with Land Use Control Effectiveness be Discovered Subsequent to Conveyance

Should the U.S. Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objective, the U.S. Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 4.2.5** below, the U.S. Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the U.S. Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

4.2.5 Land Use Control Enforcement

Should the LUC remedy reflected in this RD fail, the U.S. Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the United States Fish and Wildlife Service (USFWS) or its lessee, to the institution of judicial action against non-federal third-parties. Alternatively, should the circumstances warrant such, the U.S. Army could choose to exercise its response authorities under CERCLA. Should the U.S. Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the U.S. Army may notify those agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUC.

4.2.6 Modification or Termination of Land Use Controls

The U.S. Army shall not, without USEPA and TCEQ concurrence, make a significant modification to, or terminate a LUC, or make a land use change inconsistent with the LUC

objective. Likewise, the U.S. Army shall seek prior USEPA and TCEQ concurrence before commencing actions that may impact remedy integrity. In the case of an emergency action, the U.S. Army shall obtain prior USEPA and TCEQ concurrence as appropriate to the exigencies of the situation.

The LUC shall remain in effect until such time as the U.S. Army and USEPA agree that the concentrations of COCs have met cleanup levels. When this occurs, the LUC will be terminated as needed. The decision to terminate the LUC will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action completion report. If the property has been transferred and a determination by the U.S. Army and USEPA has been made to terminate the LUC, the U.S. Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

4.2.7 Comprehensive Land Use Control Management Plan

Upon finalization of the LUC O&M Plan, a copy will be inserted into the Comprehensive LUC Management Plan for Longhorn. The Comprehensive LUC Management Plan figure and table will be updated to reflect the inclusion of LHAAP-35A(58).

The Comprehensive LUC Management Plan consists of LHAAP RD documents and a survey plat showing the locations where LUCs being implemented at LHAAP are applied. The purpose of this Comprehensive LUC Management Plan is to ensure all site specific LUCs are compiled into one comprehensive location for both pre-transfer use by the installation and for post-transfer use by the transferee. This document will be provided to USEPA and TCEQ, and is also accessible to the local government and the public. The Comprehensive LUC Management Plan is located in the Marshall Public Library to accompany LHAAP's Administrative Record.

The land use assumption of industrial use as part of a national wildlife refuge forms the basis for the remedy at LHAAP-35A(58) and this land use assumption will be included in the Comprehensive LUC Management Plan with supporting documentation.

DRAFT LUC BOUNDARY

FILE PATH	
T:\GIS\117591_LHAAP\Doc\Mxd\Site58\RDL\LanduseControl.mxd	

OFFICE	DRAWN BY		CHECKED BY		APPROVED BY	
Houston, TX	B. Muske	09/22/11	V. Chan	09/22/11	S. Watson	09/22/11

LHAAP-35A(58)
LHAAP-61
LHAAP-02
LHAAP-03
LHAAP-60
LHAAP-68
LHAAP-69
LHAAP-59
LHAAP-46
LHAAP-47
LHAAP-66
LHAAP-67
LHAAP-04
LHAAP-05
LHAAP-49
LHAAP-32

32ND ST.
HARRELL ST.
TACKET DR
AVE. F
8TH ST.
9TH ST.
GALVESTON AVE
111TH ST.
62ND ST.
AVENUE Y
60TH ST.
59TH ST.
4TH ST.
6TH ST.
AVE. C
AVE. D

Goose Prairie Creek

LEGEND

- Stream
- Road
- Estimated 1,1-DCE Concentration Contour (7 µg/L)
- Estimated TCE Concentration Contour (5 µg/L)
- Estimated PCE Concentration Contour (5 µg/L)
- Estimated Vinyl Chloride Concentration Contour (2 µg/L)
- Preliminary Land Use Control Boundary *Groundwater use restricted to environmental monitoring and testing only.*
- Existing Building
- Other LHAAP Site
- LHAAP-35A(58) Site
- Lake/Pond

0 200 400 800 Feet

Shaw®

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

FIGURE 6-1

LAND USE CONTROL MAP
LHAAP-35A(58), GROUP 4

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

LHAAP-35A(58), 58-2

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-35A (58) FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

LHAAP-35A(58), 58-3

LAND USE CONTROL COMPLIANCE INSPECTION FORM

March 2, 2015

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 _____ [indicate transferee] on _____.

A summary of land use control mechanisms is as follows:

- Groundwater restriction –restriction of the use of groundwater to environmental monitoring and testing until cleanup goals are met. [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: _____

Name/Title: _____

Signature: _____

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

LHAAP-59

NOTICE OF NONRESIDENTIAL LAND USE FOR LHAAP-59 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

00194919

2011-000003378

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

NOTICE

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 03/24/2011 03:52 PM **Document Number:** 2011-000003378 **Receipt No:** 1103745 **Amount:** $ 32.00 **By:** Lauren Boyd, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

AARON WILLIAMS EC-ER
1645 SOUTH 101ST EAST AVENUE

STATE OF TEXAS HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remedial investigation of the land described herein. The site, LHAAP-59, the former Pesticide Storage Building 725, was constructed in 1984 to support maintenance activities at the plant as a pesticide storage building. LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-59 is not itself considered an NPL site. Environmental activities at LHAAP-59 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-59 consists of a Building 725 and the surrounding area. The building, now removed, contained a concrete floor with floor drains that discharged to two nearby sumps. Soil samples were collected near the building and sumps and analyzed for metals, semivolatile organic compounds, volatile organic compounds, dioxins and furans in the 1990s and in 2007 additional samples were collected and analyzed for pesticides and herbicides near the sumps and at the building. Low levels of pesticides were detected. An analysis demonstrated that

these chemicals in soil did not exhibit a potential for release to the groundwater in excess of the groundwater MSC (GW-Ind) and were considered to be protective for nonresidential worker exposure, as specified in 30 TAC §335.559(g)(2)(B). Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30
p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-59 parcel is a 0.2537 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-59 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-59. Contaminants in soil samples from LHAAP-59 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-59 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-59 is consistent with the non-residential use scenario evaluated in the risk screening. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multifamily residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through
12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

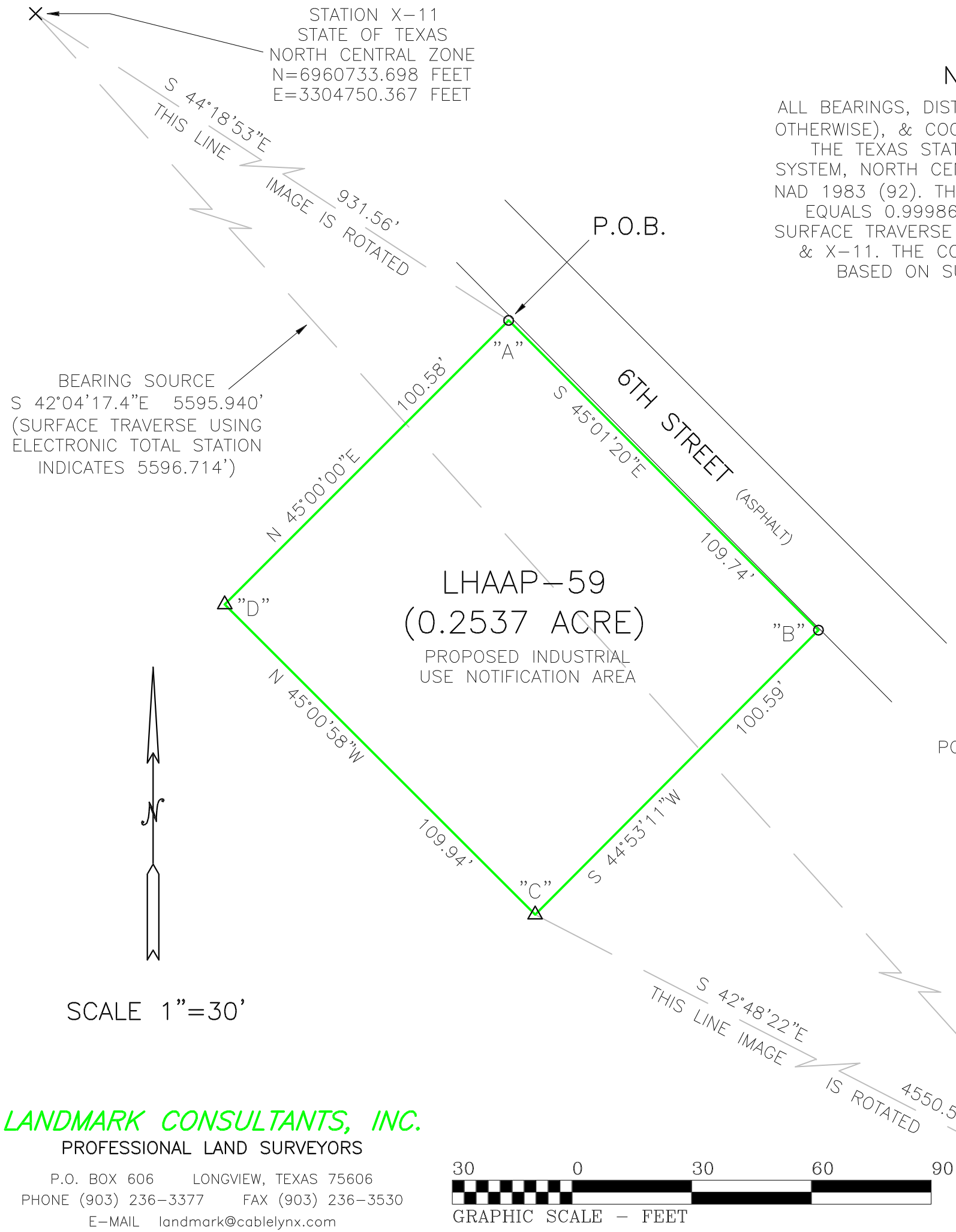
EXECUTED this the 25 th day of January, 2011 ~~2010~~.

BEFORE ME, on this the 25 th day of Jan 2011, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 25 day of January, 2011 ~~2010~~.

Notary Public in and for the State of Texas,
County of Harrison

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011



NOTE

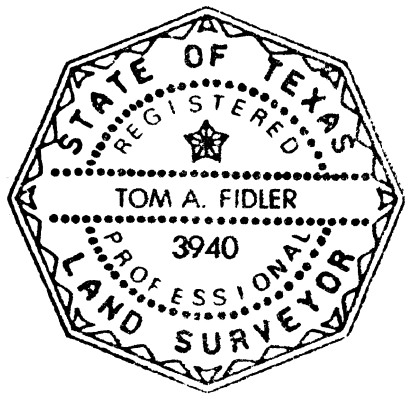
ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS C–21 & X–11. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6960067.154	3305401.154
B	6959989.588	3305478.780
C	6959918.320	3305407.794
D	6959996.035	3305330.035

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in July 2008.

Witness my hand and seal this the 29th day of July, 2008



Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- O INDICATES CONCRETE NAIL IN BOTTLE CAP (SET IN ASPHALT)
- △ INDICATES 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- ——— INDICATES BOUNDARY OF PROPOSED INDUSTRIAL USE NOTIFICATION AREA

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236–3377 FAX (903) 236–3530
E–MAIL landmark@cablelynx.com

LHAAP–59
(0.2537 ACRE)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

00194923

JOB #0407088	0407088.CRD	0605063D.DWG
07/29/2008	0605063.CRD	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
"LHAAP–59" TRACT
(PROPOSED INDUSTRIAL USE NOTIFICATION AREA)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP–59" being 0.2537 acre of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP–59" being more particularly described as follows :

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X–11" (N=6960733.698 feet E=3304750.367 feet) and "C–21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940", and the abbreviation C.N.I.B.C. indicates concrete nail in bottle cap.

Commencing at monument "X–11" referenced above,

THENCE S 44deg18'53"E 931.56' to a C.N.I.B.C. set (in the asphalt pavement of the road known as 6th Street) for the North corner of this tract and this POINT OF BEGINNING,

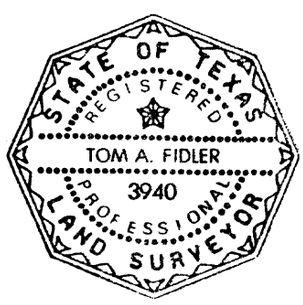
THENCE S 45deg01'20"E 109.74' along the N.E. B.L. of this tract to a C.N.I.B.C. set (in the asphalt pavement of the road known as 6th Street) for this tract's East corner,

THENCE S 44deg53'11"W 100.59' along the S.E. B.L. of this tract to an I.R.O.P.C. set for this tract's South corner, from which the monument "C–21" referenced above bears S 42deg48'22"E 4550.54',

THENCE N 45deg00'58"W 109.94' along the S.W. B.L. of this tract to an I.R.O.P.C. set for this tract's West corner,

THENCE N 45deg00'00"E 100.58' along the N.W. B.L. of this tract to this POINT OF BEGINNING, containing 0.2537 acre, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler

Tom A. Fidler, R.P.L.S. Number 3940

LHAAP-60

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-60 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

2010-000005561

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

16 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005561 **Receipt No:** 1006195 **Amount:** $ 72.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-60, consisted of four pesticide storage buildings located in the steam plant and shops area of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-60 is not itself considered an NPL site. Environmental activities at LHAAP-60 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-60 consisted of buildings 411, 411-A, 714, and shed TS-80, which were located in the northwestern portion of LHAAP near the steam plant and shops area in the general vicinity of sites LHAAP-02, LHAAP-04, LHAAP-35A(58), and LHAAP-66. Pesticides and herbicides were stored in the now demolished buildings. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at

the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-60 parcels include: Building 411 with 4,242 square feet, more or less, or 0.09738 acre tract; Building TS-80 with 186 square feet, more or less, or 0.00426 acre tract; Building 411-A with 484 square feet, more or less, or 0.01111 acre tract; and Building 714 with 4,468 square feet, more or less, or 0.10463 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-60 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-60. Contaminants in soil samples from LHAAP-60 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-60 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-60 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10 th day of March 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

Notary Public in and for the State of Texas,
County of Harrison

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-60A" TRACT
(FOUNDATION SLAB OF DEMOLISHED BUILDING 411)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-60A" being the concrete foundation slab of demolished Building 411, "LHAAP-60A" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-60A" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "C-21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "X-11" referenced above,

THENCE S 42deg04'17.4"E 1875.89' to a point, from which point monument "C-21" referenced above bears S 42deg04'17.4"E 3720.05',

(as used below, the abbreviation C.C.F.S. indicates corner of concrete foundation slab)

THENCE S 47deg55'43"W 188.47' to a C.C.F.S. found for the Northmost corner of this tract and this description's POINT OF BEGINNING,

THENCE S 45deg09'46"E 41.80' along the Northeast B.L. of this tract to a C.C.F.S. found for this tract's Eastmost corner,

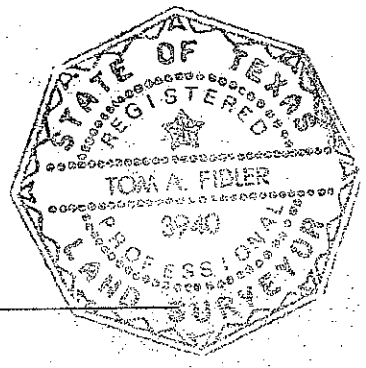
THENCE S 44deg51'53"W 101.29' along the Southeast B.L. of this

tract to a C.C.F.S. found for this tract's Southmost corner,

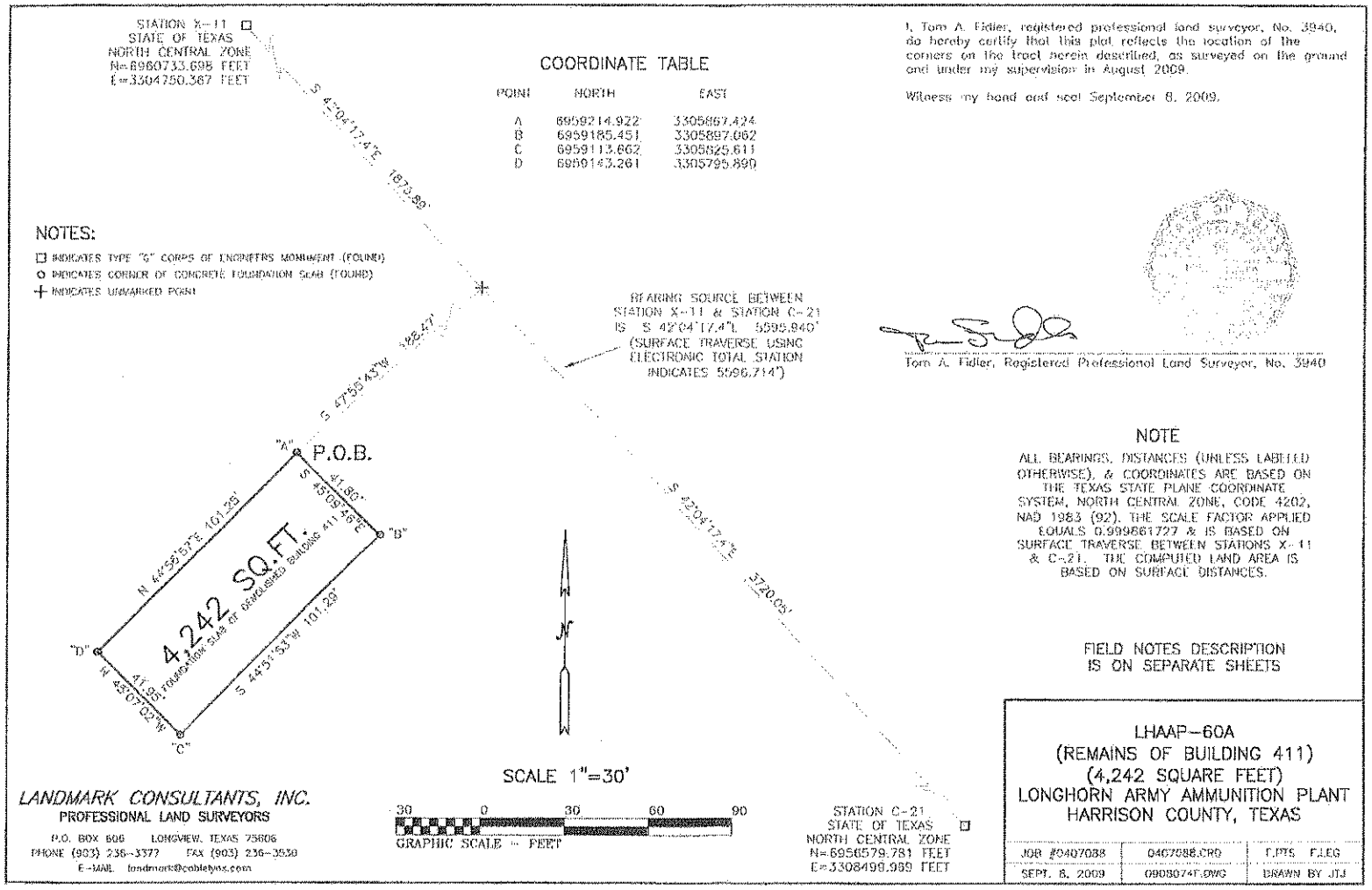
THENCE N 45deg07'02"W 41.95' along the Southwest B.L. of this tract to a C.C.F.S. found for this tract's Westmost corner,

THENCE N 44deg56'57"E 101.25' along the Northwest B.L. of this tract to this POINT OF BEGINNING. This tract contains 4,242 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



COORDINATE TABLE

POINT	NORTH	EAST
A	6959214.922	3305867.424
B	6959185.451	3305897.062
C	6959113.662	3305825.611
D	6959143.261	3305795.890

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August 2009.

Witness my hand and seal September 8, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTES:

- ☐ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- ○ INDICATES CORNER OF CONCRETE FOUNDATION SLAB (FOUND)
- ┼ INDICATES UNMARKED POINT

BEARING SOURCE BETWEEN STATION X-11 & STATION C-21 IS S 42°04'17.4"E 5595.840' (SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 5596.714')

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.99986727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & C-21. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

SCALE 1"=30'

30 0 30 60 90
GRAPHIC SCALE = FEET

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 806 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cobletyns.com

LHAAP-60A
(REMAINS OF BUILDING 411)
(4,242 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	F.PTS F.LEG
SEPT. 8, 2009	0908074F.DWG	DRAWN BY JTJ

"LHAAP-60B" TRACT
(BUILDING TS-80)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, the perimeter of tract "LHAAP-60B" being defined by the four corners of the external face of the exterior walls of Building TS-80 (said Building is constructed of galvanized corrugated sheet metal), tract "LHAAP-60B" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-60B" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "C-21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "X-11" referenced above,

THENCE S 42deg04'17.4"E 1919.72' to a point, from which point monument "C-21" referenced above bears S 42deg04'17.4"E 3676.22',

(as used below, the abbreviation C.E.F.E.W. indicates Corner of the External Face of the Exterior Walls of Building TS-80)

THENCE S 47deg55'43"W 378.14' to a C.E.F.E.W. found for the Northmost corner of this tract and this description's POINT OF BEGINNING,

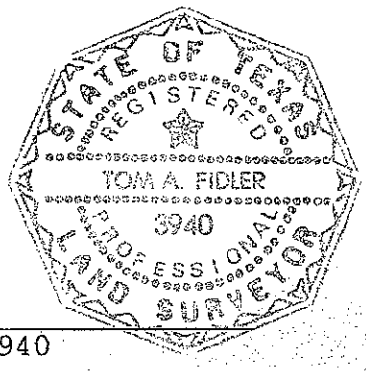
THENCE S 41deg54'33"E 8.55' along the Northeast B.L. of this tract to a C.E.F.E.W. found for this tract's Eastmost corner,

THENCE S 48deg12'22"W 22.54' along the Southeast B.L. of this tract to a C.E.F.E.W. found for this tract's Southmost corner,

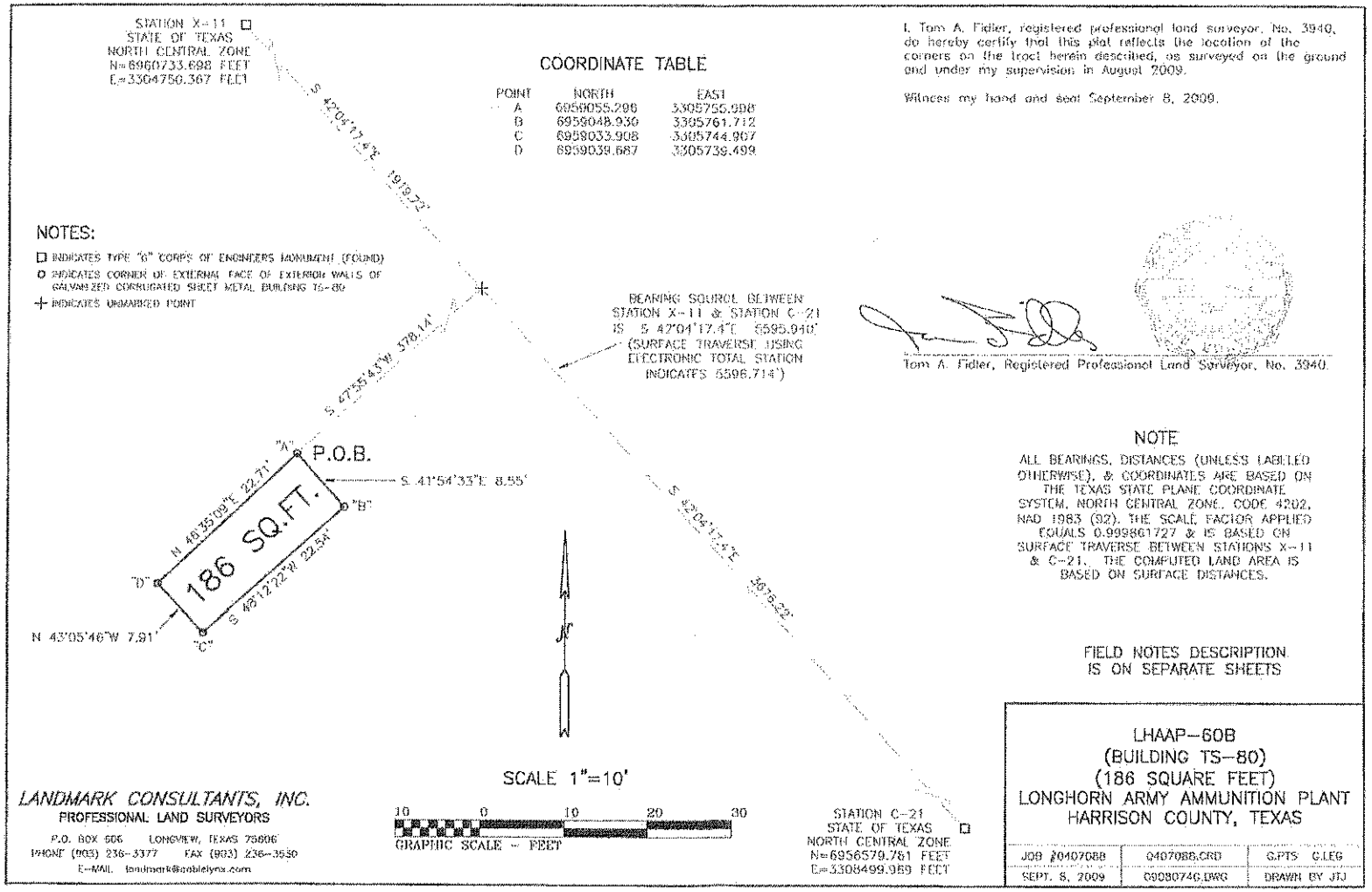
THENCE N 43deg05'46"W 7.91' along the Southwest B.L. of this tract to a C.E.F.E.W. found for this tract's Westmost corner,

THENCE N 46deg35'09"E 22.71' along the Northwest B.L. of this tract to this POINT OF BEGINNING. This tract contains 186 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



COORDINATE TABLE

POINT	NORTH	EAST
A	6959055.296	3305755.988
B	6959048.930	3305761.712
C	6959033.908	3305744.907
D	6959039.687	3305739.499

NOTES:

- ☐ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- O INDICATES CORNER OF EXTERNAL FACE OF EXTERIOR WALLS OF GALVANIZED CORRUGATED SHEET METAL BUILDING TS-80
- + INDICATES UNMARKED POINT

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August 2009.

Witness my hand and seal September 8, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940.

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & C-21. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 506 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3550
E-MAIL landmark@cablelynx.com

LHAAP-60B
(BUILDING TS-80)
(186 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	G.PTS C.LEG
SEPT. 8, 2009	0908074C.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
"LHAAP-60C" TRACT
(FOUNDATION SLAB OF DEMOLISHED BUILDING 411-A)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-60C" being the concrete foundation slab of demolished Building 411-A, tract "LHAAP-60C" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-60C" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "C-21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "X-11" referenced above,

THENCE S 42deg04'17.4"E 1924.12' to a point, from which point monument "C-21" referenced above bears S 42deg04'17.4"E 3671.82',

(as used below, the abbreviation C.C.F.S. indicates corner of concrete foundation slab)

THENCE S 47deg55'43"W 418.77' to a C.C.F.S. found for the Northmost corner of this tract and this description's POINT OF BEGINNING,

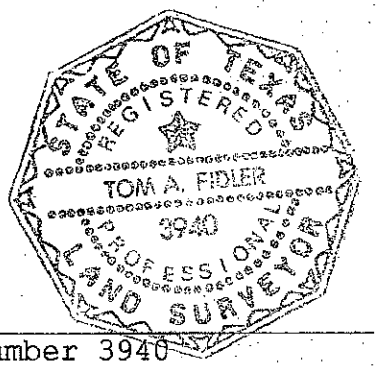
THENCE S 28deg26'16"E 24.08' along the Northeast B.L. of this tract to a C.C.F.S. found for this tract's Eastmost corner,

THENCE S 61deg38'48"W 20.15' along the Southeast B.L. of this tract to a C.C.F.S. found for this tract's Southmost corner,

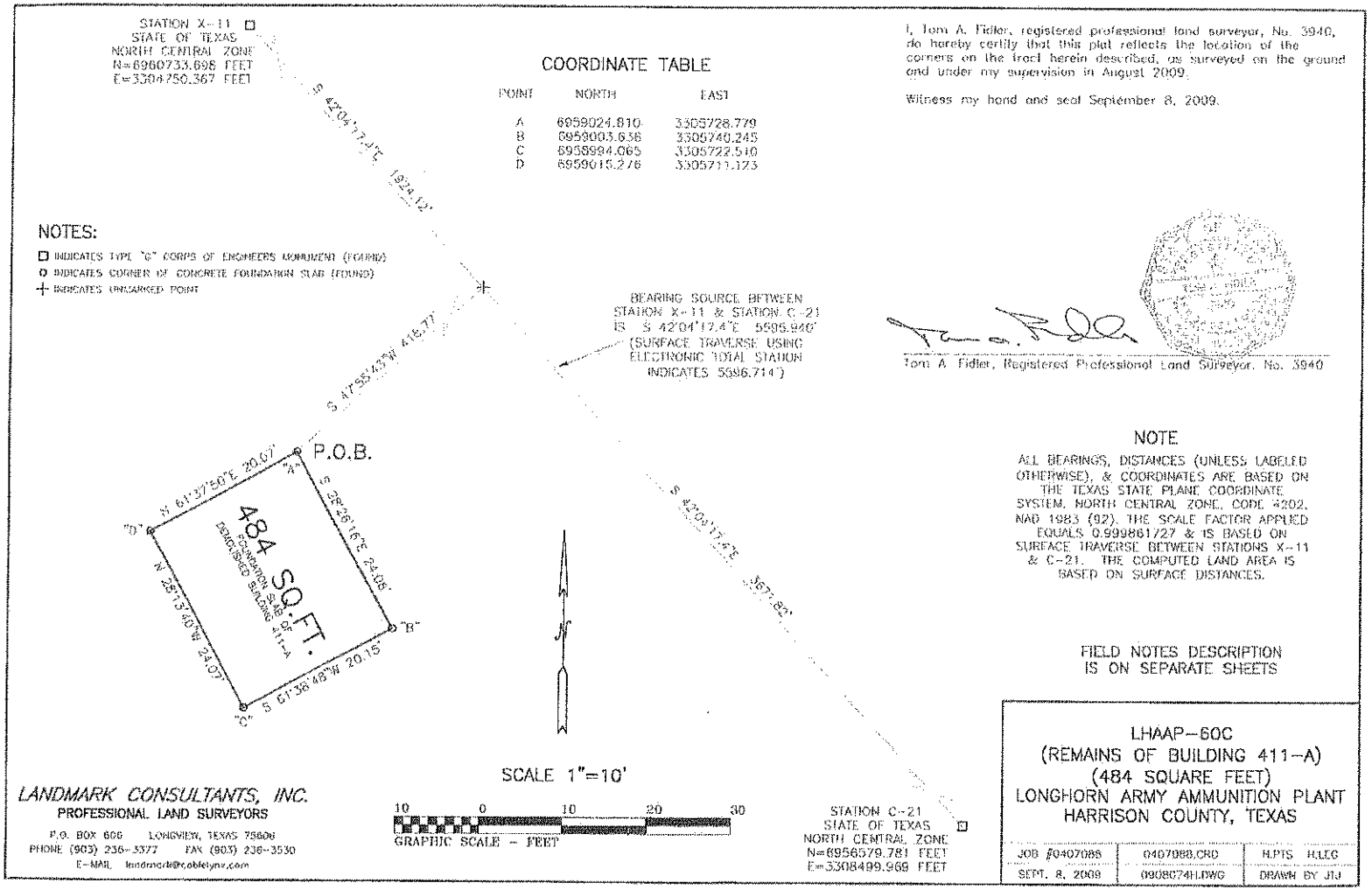
THENCE N 28deg13'40"W 24.07' along the Southwest B.L. of this tract to a C.C.F.S. found for this tract's Westmost corner,

THENCE N 61deg37'50"E 20.07' along the Northwest B.L. of this tract to this POINT OF BEGINNING. This tract contains 484 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



COORDINATE TABLE

POINT	NORTH	EAST
A	6959024.810	3305728.779
B	6959003.636	3305740.245
C	6958994.065	3305722.510
D	6959015.276	3305711.173

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August 2009.

Witness my hand and seal September 8, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTES:

- ☐ INDICATES TYPE "C" CORPS OF ENGINEERS MONUMENT (FOUND)
- O INDICATES CORNER OF CONCRETE FOUNDATION SLAB (FOUND)
- ⊕ INDICATES UNMARKED POINT

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & C-21. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cobblynx.com

LHAAP-60C
(REMAINS OF BUILDING 411-A)
(484 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	H.PTS H.LLG
SEPT. 8, 2009	0908074HLDWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
"LHAAP-60D" TRACT
(INCLUDES FOUNDATION SLAB OF DEMOLISHED BUILDING #714)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-60D" including the concrete foundation slab of demolished Building #714 plus an area adjacent to the Southwest edge of said slab, "LHAAP-60D" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-60D" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "C-21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "X-11" referenced above,

THENCE S 42deg04'17.4"E 395.512' to a point, from which point monument "C-21" referenced above bears S 42deg04'17.4"E 5200.428'

(as used below, the abbreviation C.C.F.S. indicates corner of concrete foundation slab)

THENCE S 47deg55'43"W 442.92' to a C.C.F.S. found for the Northmost corner of this tract and this description's POINT OF BEGINNING,

THENCE S 44deg51'26"E 91.43' along the Northeast B.L. of this tract, and generally along the Northeast edge of said concrete slab, to a C.C.F.S. found for this tract's Eastmost corner,

THENCE S 44deg50'54"W 44.35' along a Southeast B.L. of this tract, and generally along the Southeast edge of said concrete slab, to a C.C.F.S. found for this tract's Southmost corner,

THENCE N 44deg59'57"W 29.43' along a Southwest B.L. of this tract, and generally along the Southwest edge of said concrete slab, to a point for this tract's Southmost reentrant corner,

THENCE S 45deg00'03"W 14.90' along a Southeast B.L. of this tract to a 60d nail set for this tract's Westmost South corner,

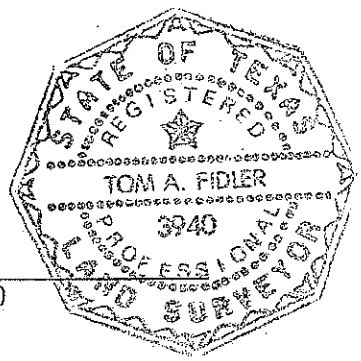
THENCE N 44deg59'57"W 32.36' along a Southwest B.L. of this tract to a 60d nail set for this tract's Southmost West corner,

THENCE N 45deg00'03"E 14.90' along a Northwest B.L. of this tract to a point for this tract's Northmost reentrant corner,

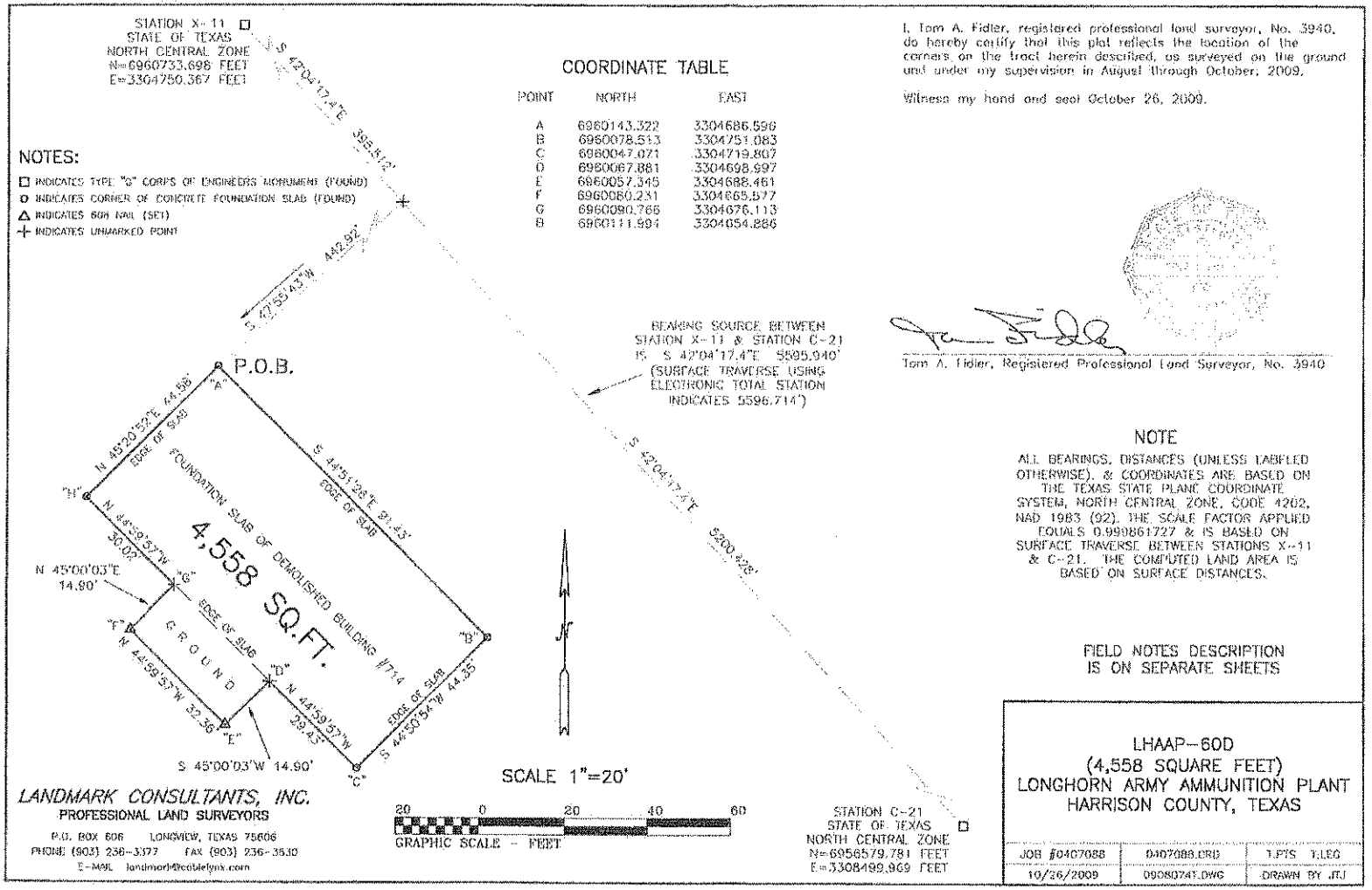
THENCE N 44deg59'57"W 30.02' along a Southwest B.L. of this tract, and generally along the Southwest edge of said concrete slab, to a C.C.F.S. found for this tract's Northmost West corner,

THENCE N 45deg20'52"E 44.58' along a Northwest B.L. of this tract, and generally along the Northwest edge of said concrete slab, to this POINT OF BEGINNING. This tract contains 4,558 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



NOTES:

- □ INDICATES TYPE "B" CORPS OF ENGINEERS MONUMENT (FOUND)
- O INDICATES CORNER OF CONCRETE FOUNDATION SLAB (FOUND)
- △ INDICATES 60d NAIL (SET)
- ┼ INDICATES UNMARKED POINT

COORDINATE TABLE

POINT	NORTH	EAST
A	6960143.322	3304686.596
B	6960078.513	3304751.083
C	6960047.071	3304719.807
D	6960067.881	3304698.997
E	6960057.345	3304688.461
F	6960080.231	3304665.577
G	6960090.766	3304676.113
B	6960111.994	3304654.886

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

Witness my hand and seal October 26, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & C-21. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
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E-MAIL landmark@cebridgelynx.com

LHAAP-60D
(4,558 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	1 PTS 1 LEG
10/26/2009	09080747.DWG	DRAWN BY JTJ

LHAAP-64

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-64 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

2010-000005558

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005558 **Receipt No:** 1006195 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-64, is the location of a former transformer storage area located in the western portion of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-64 is not itself considered an NPL site. Environmental activities at LHAAP-64 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-64 is located next to site LHAAP-29. Polychlorinated biphenyl (PCB)-containing transformers were stored on a pad on Zeugner Drive immediately southwest of Building 707-B. Approximately 20 out-of-service non-PCB transformers were stored on pallets with no curbs or other containment. The site was used for the storage of transformer oil. The contaminants of concern were petroleum and oil lubricants and PCBs. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas

75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-64 parcel is 847 square feet, more or less, or 0.01944 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-64 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-64. Contaminants in soil samples from LHAAP-64 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-64 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-64 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

Notary Public in and for the State of Texas,
County of Harrison

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-64" TRACT
(ADJACENT TO FOUNDATION SLAB OF DEMOLISHED BUILDING #707-B)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-64" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), tract "LHAAP-64" being adjacent to the Southwest edge of the concrete foundation slab of demolished Building #707-B, tract "LHAAP-64" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998463585, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "C-1" (N=6955947.067 feet E=3305400.600 feet) and "C-22" (N=6955892.461 feet E=3307823.958 feet). Said traverse indicates a surface distance of 2424.346 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "C-1" referenced above,

THENCE S 32deg52'16"W 338.58' to the West corner of the concrete slab of demolished building 707-B, said slab corner marking the North corner of this tract and this POINT OF BEGINNING,

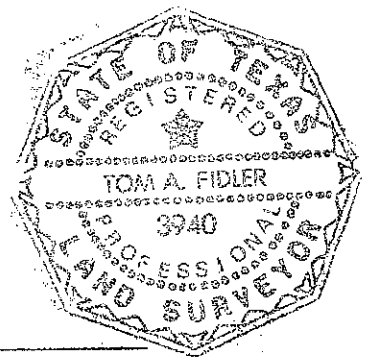
THENCE S 45deg00'47"E 29.76' along the N.E. B.L. of this tract, and generally along the Southwest edge of said concrete slab, to the South corner of said concrete slab, said slab corner marking the East corner of this tract,

THENCE S 44deg55'45"W 28.44' along the S.E. B.L. of this tract to a concrete nail with head dimple set (in asphalt) for the South corner of this tract,

THENCE N 45deg00'47"W 29.75' along the S.W. B.L. of this tract to a concrete nail with head dimple set (in asphalt) for the West corner of this tract,

THENCE N 44deg54'27"E 28.44' along the N.W. B.L. of this tract to this POINT OF BEGINNING. This tract contains 847 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

NOTES:

- ☐ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- O INDICATES CORNER OF CONCRETE FOUNDATION SLAB (FOUND)
- △ INDICATES 60d NAIL (SET)
- ┼ INDICATES CONCRETE NAIL WITH HEAD DIMPLE (SET)

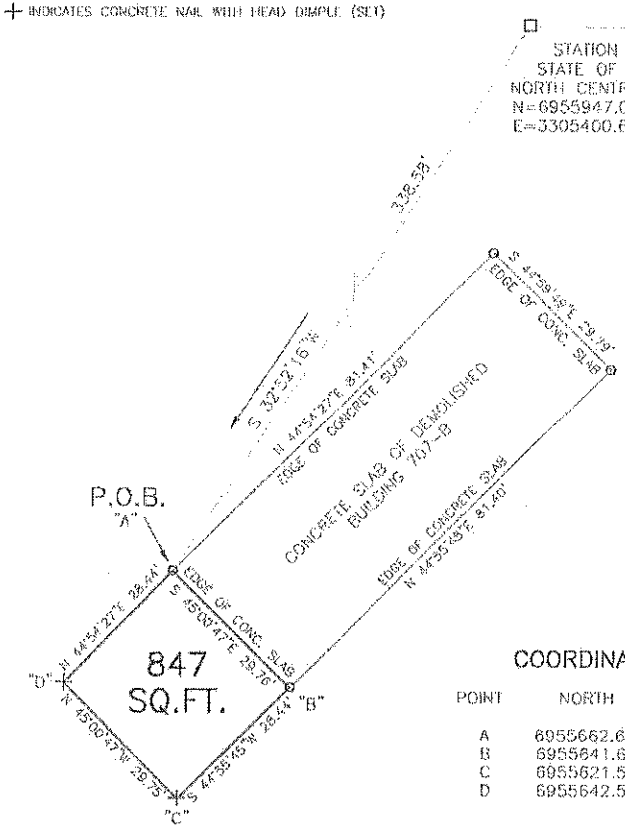
I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through November, 2009.

Witness my hand and seal November 12, 2009.

STATION C-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6955947.067 FEET
E=3305400.600 FEET

BEARING SOURCE BETWEEN STATION C-1 & STATION C-22 IS S 88°42'33.0"E 2423.973' (SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 2424.346')

STATION C-22
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6955892.461 FEET
E=3307823.958 FEET



Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

COORDINATE TABLE

POINT	NORTH	EAST
A	6955662.694	3305216.833
B	6955641.654	3305237.884
C	6955621.519	3305217.798
D	6955642.552	3305196.756

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999846358S & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS C-1 & C-22. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

SCALE 1"=20'

20 0 20 40 60
GRAPHIC SCALE – FEET

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-5377 FAX (903) 236-3530
E-MAIL landmark@cobblelyne.com

LHAAP-64
(847 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	0 PTS 0 LEG
NOV. 12, 2009	090807AU.DWG	DRAWN BY JDJ

LHAAP-66

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-66 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

2010-000005559

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005559 **Receipt No:** 1006195 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-66, is the location of a leaking transformer from the electric power substation and transformer area, near Building 401. Building 401 housed gas-fired boilers that generated steam for distribution throughout the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-66 is not itself considered an NPL site. Environmental activities at LHAAP-66 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-66 is located at the electric power substation and includes several transformers. One of these transformers was reported to be leaking, but subsequent environmental activities confirmed there was no release to the soil from polychlorinated biphenyls. The electric power substation still provides power to parts of LHAAP. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465,

Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-66 parcel is 8,616 square foot, more or less, or 0.19779 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-66 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-66. Contaminants in soil samples from LHAAP-66 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-66 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-66 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D:C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

Notary Public in and for the State of Texas,
County of Harrison

NOTARY PUBLIC STATE OF TEXAS
ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-66" TRACT
(CONTAINS AN ELECTRIC POWER SUBSTATION)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-66" containing an electric power substation, including transformers, "LHAAP-66" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-66" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "C-21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "X-11" referenced above,

THENCE S 42deg04'17.4"E 1722.19' to a point, from which point monument "C-21" referenced above bears S 42deg04'17.4"E 3873.75',

(as used below, the abbreviation F.C.P. indicates 2-1/2" diameter chain link fence corner pipe)

THENCE S 47deg55'43"W 210.22' to an F.C.P. found (leaning approximately 15 degrees) for the Northmost corner of this tract and this description's POINT OF BEGINNING,

THENCE S 45deg10'23"E 130.14' along a chain link fence found for the Northeast B.L. of this tract to an F.C.P. found for this tract's Eastmost corner,

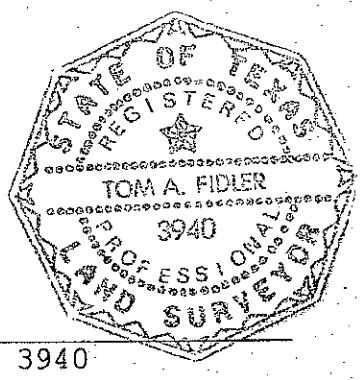
THENCE S 44deg46'19"W 65.93' along a chain link fence found for

the Southeast B.L. of this tract to an F.C.P. found for this tract's Southmost corner,

THENCE N 45deg18'44"W 130.52' along a chain link fence found for the Southwest B.L. of this tract to an F.C.P. found for this tract's Westmost corner,

THENCE N 45deg05'44"E 66.25' along a chain link fence found for the Northwest B.L. of this tract to this POINT OF BEGINNING. This tract contains 8,616 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

00194957

STATION X-11
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6960733.698 FEET
E=3304750.367 FEET

30 0 30 60 90
GRAPHIC SCALE – FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August 2009.

Witness my hand and seal November 12, 2009.

COORDINATE TABLE

POINT	NORTH	EAST
A	6959314.442	3305748.279
B	6959222.696	3305840.580
C	6959175.889	3305794.144
D	6959267.673	3305701.353

NOTES:

□ INDICATES TYPE "C" CORPS OF ENGINEERS MONUMENT (FOUND)
○ INDICATES 2-1/2" DIAMETER CHAIN LINK FENCE CORNER PIPE (FOUND)
+ INDICATES UNMARKED POINT
INDICATES CHAIN LINK FENCE

S 42°04'17.4"E 1723.19'

S 47°55'43"W 340.22'

BEARING SOURCE BETWEEN STATION X-11 & STATION C-21 IS S 42°04'17.4"E 5595.040' (SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 5596.714')

THIS FENCE CORNER PIPE IS LEANING APPROXIMATELY 15°

P.O.B.

"A"

"B"

"C"

"D"

N 45°03'44"E 66.25'

S 45°10'23"E 130.14'

S 44°16'19"W 65.93'

N 45°18'44"W 130.52'

8,616 SQUARE FEET

THIS TRACT CONTAINS AN ELECTRIC POWER SUBSTATION, INCLUDING TRANSFORMERS

S 42°04'17.4"E 3872.75'

STATION C-21
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6956579.761 FEET
E=3308499.969 FEET

TOM A. FIDLER
3940
REGISTERED
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & C-21. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

SCALE 1"=30'

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

NOTE

THE BOUNDARY OF LHAAP-66 IS DEFINED BY THE CHAIN LINK FENCE SHOWN ON THIS PLAT.

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

LHAAP-66
(8,616 SQUARE FEET)
(CONTAINS AN ELECTRIC POWER SUBSTATION)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	E.PTS E.LEG
NOV. 12, 2009	0908074C.DWG	DRAWN BY JTJ

LHAAP-67, 67-1

LUCs FROM FINAL REMEDIAL DESIGN

March 2, 2015

FINAL
REMEDIAL DESIGN
LHAAP-35B (37), CHEMICAL LABORATORY AND LHAAP-67, ABOVEGROUND STORAGE TANK FARM
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared by

U.S. Army Corps of Engineers
Tulsa District
1645 South 101st East Avenue
Tulsa, Oklahoma

August 1, 2011

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4.0 Land Use Controls for the Site

The LUCs to be implemented by the Army or its representatives for LHAAP-35B(37) and LHAAP-67 to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health include:

- Ensure no withdrawal or use of groundwater beneath the sites for anything other than environmental monitoring and testing until cleanup goals are met

Notification of the groundwater use restriction will accompany all transfer documents and will be recorded at the Harrison County Courthouse in accordance with Texas Administrative Code (TAC) Title 30, §335.566.The LUC addresses the areas of LHAAP-35B(37) and LHAAP-67 that include groundwater plumes at LHAAP-35B(37) and LHAAP-67 with levels of contamination that require implementation of a remedy (see **Section 2.0**). The U.S. Army is responsible for implementing, maintaining, monitoring, reporting on, and enforcing the LUC.

U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of an LUC objective at this site after it has transferred. U.S. Army shall obtain USEPA and TCEQ concurrence prior to termination or significant modification of the LUC, or implementation of a change in land use inconsistent with the LUC objectives and use assumptions of the remedy. Although not a remedy, the land use assumption for LHAAP-35B(37) and LHAAP-67 forms the basis for the remedy. The reasonably anticipated future use of the site as part of a national wildlife refuge is consistent with an industrial risk exposure scenario. Notification of the land use assumption of this site will be made in transfer documentation, will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566 and compliance with the use assumption will be documented in the Five-Year Review reports.

6.2 Land Use Control Implementation Actions

The Army or its representatives will be responsible for LUC implementation and certification, reporting and enforcement. The Army shall address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable.

As a condition of property transfer, the Army may require the transferee to assume responsibility for various implementation actions, as indicated below. Although the Army may transfer responsibility for various implementation actions, the Army shall retain its responsibility for remedy integrity. This means that the Army is responsible for addressing substantive violations of performance objectives that would undermine the Army's CERCLA remedy. The Army also will be responsible for: 1) incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation; 2) recording groundwater use restriction and survey plat at the Harrison County Courthouse; and 3) notifying Texas Department of Licensing and Regulation of the groundwater restriction which includes the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the Army, the USEPA, and the TCEQ. The following LUC implementation actions shall be undertaken by the Army in order to ensure that the aforementioned LUC performance objectives for LHAAP-35B(37) and LHAAP-67 are met and maintained:

6.2.1 Comprehensive Land Use Control Management Plan

Within 30 days of receiving USEPA and TCEQ approval of this RD, the Army will incorporate this document into the Comprehensive LUC Management Plan. The Comprehensive LUC Management Plan consists of LHAAP RD documents and a survey plat showing the locations where LUCs being implemented at LHAAP are applied. The purpose of this Comprehensive LUC Management Plan is to ensure all site specific LUCs are compiled into one comprehensive location for both pre-transfer use by the installation and for post-transfer use by the transferee. This document is also accessible to regulators, the local government and the public. The Comprehensive LUC Management Plan is located in the Marshall Public Library to accompany LHAAP's Administrative Record. As LUC RD documents for additional environmental sites are approved by USEPA and TCEQ, the Army shall likewise add those documents and survey plats to the Comprehensive LUC Management Plan as well as update the previous copy of the plan placed in the Marshall Public Library.

6.2.2 Site Certifications and Reporting

Beginning with finalization of this RD, the Army will undertake annual certifications to confirm continued compliance with the LUC objectives. The Army will retain the annual LUC Compliance Certification documents in the project files for incorporation into the Five-Year Review Reports, and these documents will be made available to USEPA and TCEQ upon request. The certification form will be consistent with the form attached as **Appendix B**. In addition, should any violations be found during the annual certification, the Army will provide to USEPA and TCEQ along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations**.** Upon transfer, such responsibilities may shift to the transferee via

appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental transfer document. The need to continue annual certifications will be revisited at Five-Year Reviews.

6.2.3 Notice of Planned Property Conveyances

The Army shall provide notice to USEPA and TCEQ of plans to convey LHAAP-35B(37) and LHAAP-67 acreage. The notice shall describe the mechanism by which LUCs will continue to be implemented, maintained, inspected, reported, and enforced.

6.2.4 Opportunity to Review Text of Intended Land Use Controls

Army will provide a copy of the groundwater use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. In addition, the Army will produce an ECP or other environmental document for transfer of LHAAP-35B(37) and LHAAP-67, but before executing transfer, the Army will provide USEPA and TCEQ with a draft copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before document execution, to review all LUC-related provisions.

6.2.5 Notification Should Action(s) Which Interfere with Land Use Control Effectiveness Be Discovered Subsequent to Conveyance

Should the Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objectives, the Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 6.2.6** below, the Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

6.2.6 Land Use Control Enforcement

Should the LUC remedy reflected in this LUC RD fail, the Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the owner or violator, to the institution of judicial action under the auspices of Texas property law or CERCLA. Alternatively, should the circumstances warrant such, the Army could choose to exercise its response authorities under CERCLA, and then seek cost recovery after the fact from the person(s) or entity(ies) who violated a given LUC. Should the Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the Army will notify these agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUCs.

6.2.7 Modification or Termination of Land Use Controls

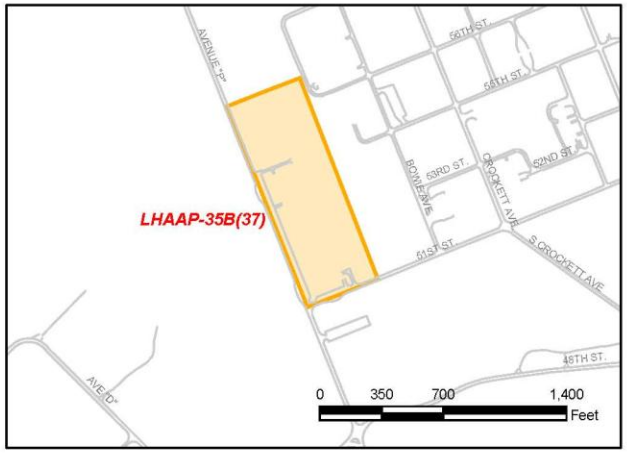
The Army shall not, without USEPA and TCEQ concurrence, make a significant modification to, or terminate a LUC, or make a land use change inconsistent with the LUC objectives and use assumptions of the selected remedy. Likewise, the Army shall seek prior USEPA and TCEQ concurrence before commencing actions that may impact remedy integrity. In the case of an emergency action, the Army shall obtain prior USEPA and TCEQ concurrence as appropriate to the exigencies of the situation.

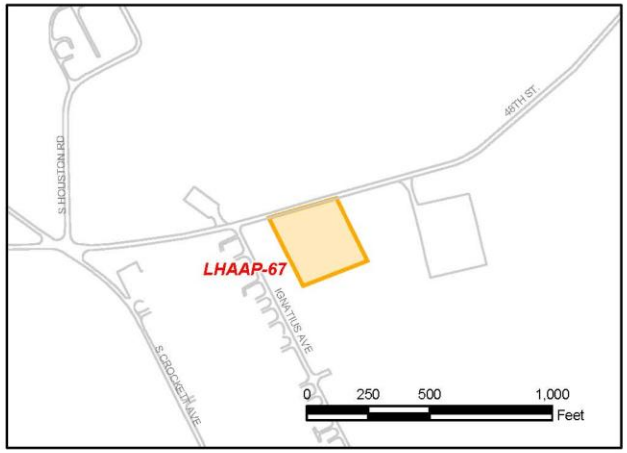
The LUCs shall remain in effect until such time as the Army, TCEQ and USEPA agree that the concentrations of COCs have met cleanup levels. When this occurs, the LUCs will be terminated as needed. The decision to terminate LUCs will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action completion report. If the property has been transferred and a determination by the Army, TCEQ and USEPA has been made to terminate one or more of the LUCs, the Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

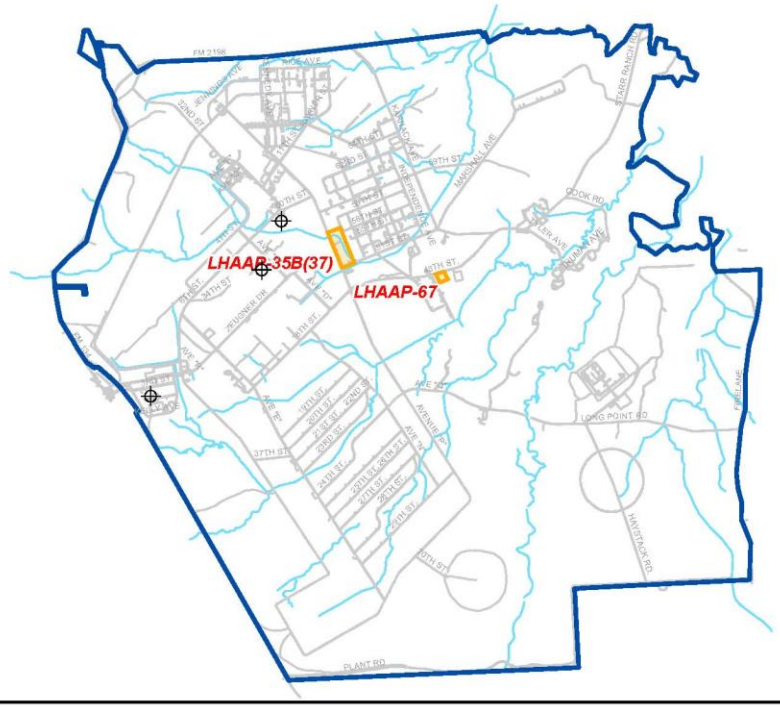
6.3 Monitored Natural Attenuation Implementation Actions

Implementation actions include installation of additional monitoring wells, plugging and abandonment of monitoring wells not designated for long-term monitoring, implementation of a groundwater monitoring plan, monitoring, and reporting. The project schedule and cost summary for implementation actions are provided in **Appendix H**. Groundwater monitoring will be conducted to monitor the effectiveness of MNA in reducing contaminant concentrations over time. Monitoring will also be conducted to evaluate plume migration and ensure that chlorinated solvents-contaminated groundwater does not impact nearby surface water at unacceptable levels. Surface water sampling will be conducted to confirm contaminated groundwater is not migrating to surface water. The Groundwater Monitoring Plan, attached as **Appendix A**, describes the wells, their locations, analytical parameters, the frequency of the monitoring, surface water sampling, and presents a list of the monitored constituents and their respective MCLs. Groundwater monitoring and surface water sampling conducted at LHAAP-35B(37) and LHAAP-67 will follow the Health and Safety Plan (**Appendix E**), the Contractor Quality Control Plan (**Appendix F**), the Chemical Data Acquisition Plan (**Appendix G**), Field Activities (**Appendix C**) and Field Procedures (**Appendix D**) as contained in the appendices of the Remedial Design LHAAP-35B(37) and LHAAP-67.

Annual reports will be prepared for any year in which sampling occurs to document the monitoring program. The first year's annual report will include a review of the first four quarters of data, which include natural attenuation parameters and provide an evaluation for the evidence of MNA as a remedial method and a review of the first year's surface water sample data. The TCEQ provides guidance for MNA as a remedial action in *Monitored Natural Attenuation Demonstrations* (Texas Natural Resource Conservation Commission [TNRCC], RG-366/TRRP-33, October 2001). Although LHAAP is being addressed under the Risk Reduction Standards rather than Texas Risk Reduction Program (TRRP), this guidance is comparable to USEPA guidance and may be used as a guideline for the evaluation of the groundwater data. TRRP guidance specifies recommended lines of evidence to document the occurrence of natural attenuation at a site. For the first annual report, primary and secondary lines of evidence will be evaluated to document that attenuation is occurring at LHAAP-35B(37) and LHAAP-67. The primary line







LEGEND

- Road
- Stream
- Site
- Approximate LHAAP Boundary
- LHAAP Water Supply Well

LEGEND

- Approximate LHAAP Boundary
- Road
- Stream
- Site
- LHAAP Water Supply Well

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	FILE PATH
Houston, TX	B. Lu 10/12/07	N. Olson 10/31/07	P. Srivastav 10/31/07	T:\GIS\Longhorn\MXD\ST35B67\ROD\SiteLocs.mxd

Shaw

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

FIGURE 2-2
SITE LOCATION MAP
REMEDIAL DESIGN
LHAAP-35B(37) AND LHAAP-67, GROUP 4
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

LHAAP-67, 67-2

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-67 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

2014-000013308

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

NOTICE

8 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 12/09/2014 10:42 AM **Document Number:** 2014-000013308 **Receipt No:** 1415412 **Amount:** $ 50.00 **By:** Pam Rockwell, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

AECOM
ATTN: AMANDA LAGARDE (FEDEX ENV)
112 E PECAN ST., SUITE 400
SAN ANTONIO, TX 78205

STATE OF TEXAS HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROL AT LHAAP-67

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed remedial activities at the land described herein. The remediation site is in a former industrial area, located on the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-67 (Underground Storage Tank Farm Area). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-67 were performed in accordance with the FFA requirements.

The LHAAP-67 site, when operational, consisted of seven aboveground storage tanks used for storage of No. 2 fuel oil, kerosene, and solvents. The tanks were surrounded by earthen dikes designed to contain potential spills. A Record of Decision (ROD) for LHAAP-67 was signed by the U.S. Army and USEPA with TCEQ concurrence in 2010 establishing the final remedy which consists of a land use control (LUC) in conjunction with monitored natural attenuation (MNA). The site was not remediated to levels suitable for unrestricted use. The LUC at LHAAP-67 is required to prevent human exposure to contaminated groundwater. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public

Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-67 parcel is a 4 acre tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A. Within the LHAAP-67 parcel is designated a LUC boundary which is a 6.088-acre tract, more or less, as described in Exhibit A. The LUC boundary is also presented in the attached Figure 1.

Future use of the parcel is intended as a national wildlife refuge consistent with non-residential use. For purposes of this certification, residential use includes, but is not limited to, single family or multifamily residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.The United States Department of the Army has undertaken careful environmental study of the LHAAP-67 site and concluded that the LUC set forth below is required to ensure protection of human health and the environment.

(1) Groundwater Restriction. The groundwater use restriction boundary consists of the 6.088-acre tract, more or less. Groundwater underlying this land is contaminated with trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), 1,2-dichloroethane (1,2-DCA), 1,1,1-trichloroethane (1,1,1-TCA), and 1,1,2-trichloroethane (1,1,2-TCA), and other volatile organic compounds (VOCs) and shall not be accessed or used for any purpose without the prior written approval of the U.S. Army, the USEPA, and the TCEQ. A LUC restricting the use of groundwater has been established for the protection of human health. The U.S. Army will notify the Texas Department of Licensing and Regulation of the groundwater restriction which includes prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval by the U.S. Army, the USEPA, and the TCEQ. A restriction against the residential use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE).

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 20 th day of November, 2014.

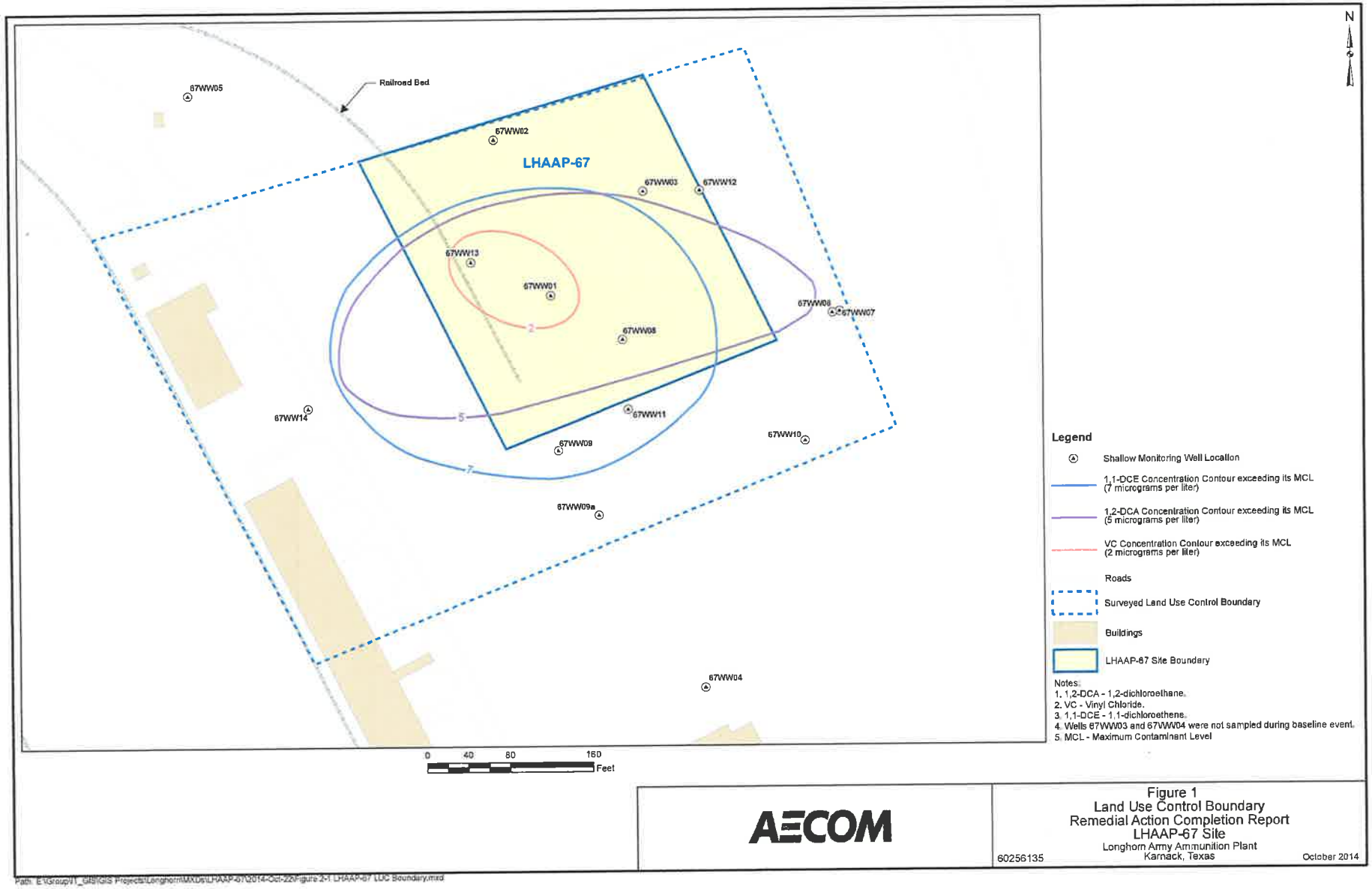
BEFORE ME, on this the 20 th day of November, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 20 day of November, 2014.

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 03-17-2015

Notary Public in and for the State of Texas,
County of Harrison

EXHIBIT A
SURVEY PLAT



AECOM

Figure 1
Land Use Control Boundary
Remedial Action Completion Report
LHAAP-67 Site
Longhorn Army Ammunition Plant
Karnack, Texas

60256135 October 2014

Path: E:\Group\1_GIS\GIS Projects\Longhorn\MXDs\LHAAP-67\2014-Oct-22\Figure 2-1 LHAAP-67 LUC Boundary.mxd

FIELD NOTES DESCRIPTION OF
"LHAAP-67" LAND USE CONTROL AREA
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, "LHAAP-67" Land Use Control Area being 6.088 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), "LHAAP-67" Land Use Control Area being more particularly described as follows :

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998636625, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "IGNATIUS-1" (N=6957090.304 feet E=3311081.788 feet) and "IGNATIUS-2" (N=6955582.752 feet E=3311851.704 feet). Said traverse indicates a surface distance of 1693.005 feet between said monuments. The computed land area is based on grid distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940" .

Commencing at monument "IGNATIUS-1" referenced above,

THENCE S 32deg49'15"W 145.39' to an I.R.O.P.C. set for the N.W.C. of this tract and this POINT OF BEGINNING,

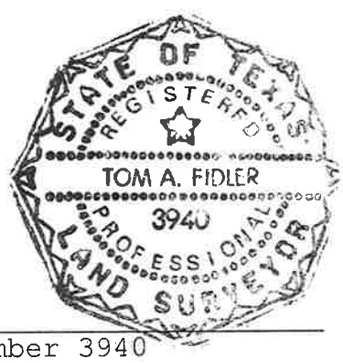
THENCE N 74deg08'33"E 654.97' along the N.B.L. of this tract to an I.R.O.P.C. set for this tract's N.E.C. ,

THENCE S 21deg34'17"E 390.25' along the E.B.L. of this tract to an I.R.O.P.C. set for this tract's S.E.C. ,

THENCE S 68deg21'49"W 605.17' along the S.B.L. of this tract to an I.R.O.P.C. set for this tract's S.W.C., from which monument "IGNATIUS-2" referenced above bears S 33deg05'59"E 1167.80' ,

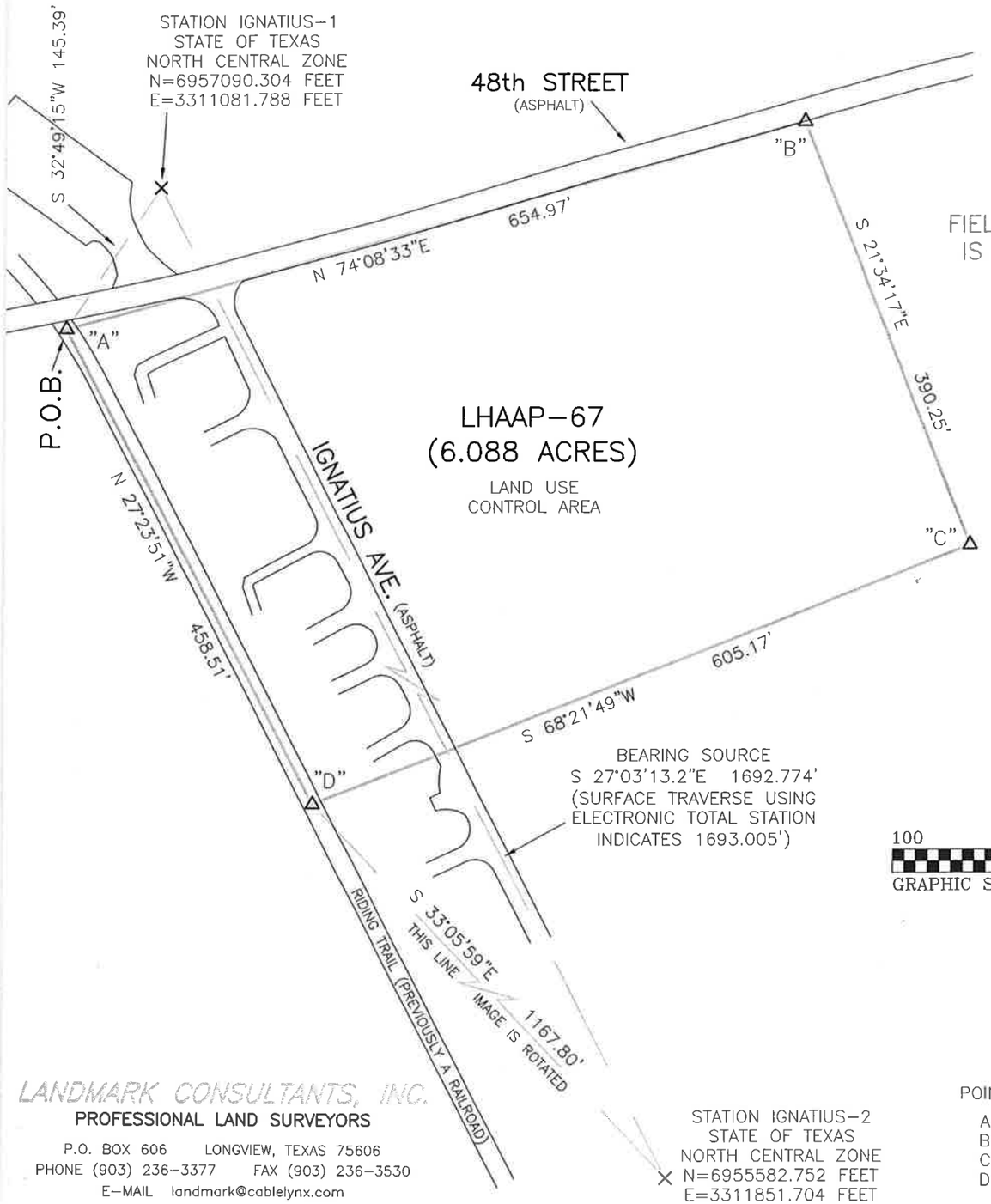
THENCE N 27deg23'51"W 458.51' along the W.B.L. of this tract to this POINT OF BEGINNING, containing 6.088 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

00194974



I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in October, 2014.

Witness my hand and seal this the 16th day of October, 2014.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998636625 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS IGNATIUS-1 & IGNATIUS-2. THE COMPUTED LAND AREA IS BASED ON GRID DISTANCES.

SCALE 1"=100'

100 0 100 200 300

GRAPHIC SCALE – FEET

LEGEND

- X TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- O CONCRETE NAIL IN BOTTLE CAP (SET IN ASPHALT)
- △ 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- BOUNDARY LINE OF LAND USE CONTROL AREA

COORDINATE TABLE

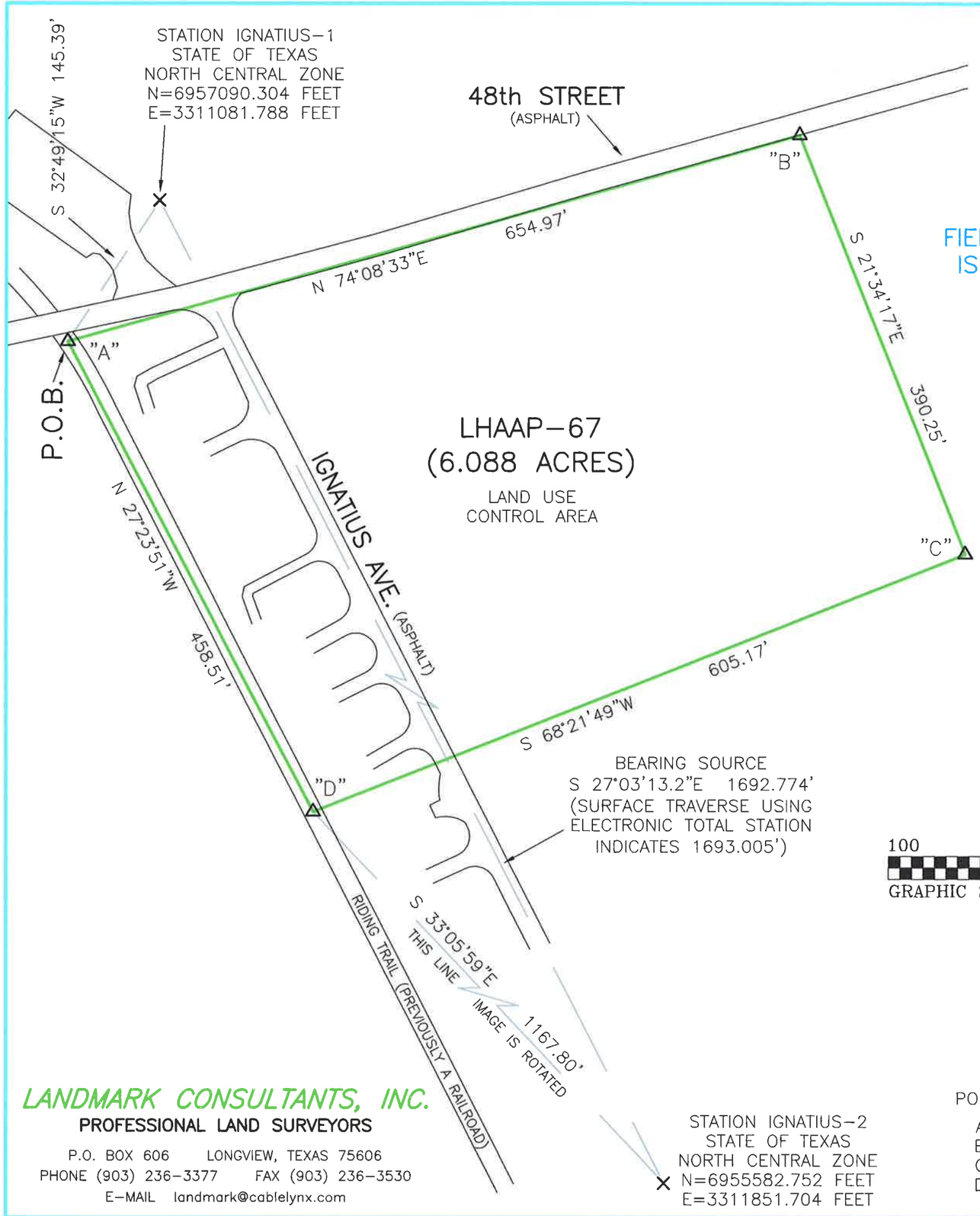
POINT	NORTH	EAST
A	6956968.123	3311002.985
B	6957147.091	3311633.031
C	6956784.178	3311776.509
D	6956561.041	3311213.974

LHAAP-67 L.U.C.A.
(6.088 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	H.PTS H.LEG
10/16/2014	0605063H.DWG	DRAWN BY JTJ

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

00194975



I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in October, 2014.

Witness my hand and seal this the 16th day of October, 2014.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

SCALE 1"=100'

100 0 100 200 300
GRAPHIC SCALE - FEET

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998636625 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS IGNATIUS-1 & IGNATIUS-2. THE COMPUTED LAND AREA IS BASED ON GRID DISTANCES.

LEGEND

- X TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- o CONCRETE NAIL IN BOTTLE CAP (SET IN ASPHALT)
- △ 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- BOUNDARY LINE OF LAND USE CONTROL AREA

COORDINATE TABLE

POINT	NORTH	EAST
A	6956968.123	3311002.985
B	6957147.091	3311633.031
C	6956784.178	3311776.509
D	6956561.041	3311213.974

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

LHAAP-67 L.U.C.A.
(6.088 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	H.PTS H.LEG
10/16/2014	0605063H.DWG	DRAWN BY JTJ

LHAAP-67, 67-3

LAND USE CONTROL COMPLIANCE INSPECTION FORM

March 2, 2015

Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated 8/1/11 for LHAAP-67, a certification of site was conducted by _____ [indicate transferee] on _____.

A summary of land use control mechanisms is as follows:

- Groundwater restriction - restriction of the use of groundwater to environmental monitoring and testing until cleanup goals are met. [Indicate whether groundwater restrictions are still required at LHAAP-67]

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-67.

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: _____

Name/Title: _____

Signature: _____

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

LHAAP-68

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-68 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

2010-000005560

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005560 **Receipt No:** 1006195 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-68, is located near the service station in the maintenance shops and power area of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP-68 consisted of two mobile 600-gallon storage tanks on trucks that were parked on the asphalt surface at the service station of the maintenance complex. LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-68 is not itself considered an NPL site. Environmental activities at LHAAP-68 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-68 is located at the maintenance complex next to the service station. Two mobile 600-gallon storage tanks on trucks were parked on the asphalt surface with no curb or other containment present. The mobile storage tanks contained No. 2 diesel and gasoline fuel. In 2006, six soil samples were collected, two from each of three borings that were installed at the site, and analyzed for semi volatile organic compounds, volatile organic compounds, and total petroleum hydrocarbons. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday

through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-68 parcel is 426 square foot, more or less, or 0.00977 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-68 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-68. Contaminants in soil samples from LHAAP-68 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-68 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-68 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10 th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

Notary Public in and for the State of Texas,
County of Harrison

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-68" TRACT
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-68" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-68" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "C-21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "X-11" referenced above,

THENCE S 42deg04'17.4"E 428.46' to a point, from which point monument "C-21" referenced above bears S 42deg04'17.4"E 5167.48',

THENCE S 47deg55'43"W 686.07' to a concrete nail (with head dimple) set in asphalt for the Northmost corner of this tract and this description's POINT OF BEGINNING,

THENCE S 44deg35'24"E 41.58' along the Northeast B.L. of this tract to an "X" set (chisled in concrete) for this tract's Eastmost corner,

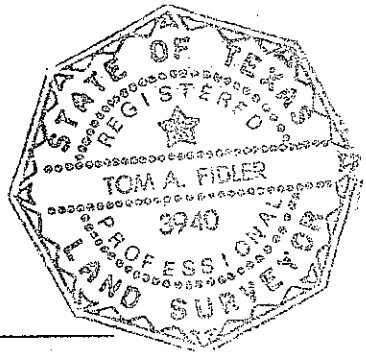
THENCE S 41deg38'18"W 9.34' along the Southeast B.L. of this tract to an "X" set (chisled in concrete) for this tract's Southmost corner,

THENCE N 46deg59'28"W 41.90' along the Southwest B.L. of this tract to a concrete nail (with head dimple) set in asphalt for this tract's Westmost corner,

THENCE N 43deg41'50"E 11.08' along the Northwest B.L. of this

tract to this POINT OF BEGINNING. This tract contains 426 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

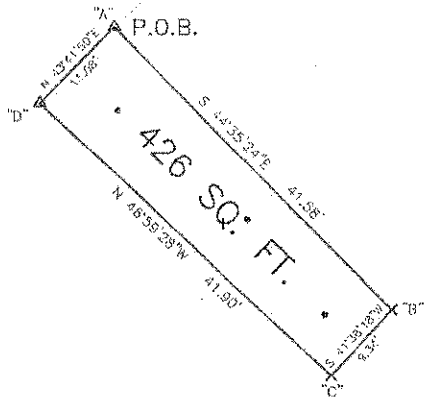
STATION X-11 □
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6960733.696 FEET
E=3304750.367 FEET

S 42°04'17.4"E 428.46'

COORDINATE TABLE

POINT	NORTH	EAST
A	6959955.942	3304528.186
B	6959926.330	3304557.376
C	6959919.350	3304551.170
D	6959947.931	3304520.531

S 47°55'43"W 686.07'



BEARING SOURCE BETWEEN
STATION X-11 & STATION C-21
IS S 42°04'17.4"E 5595.940'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 5596.714')

S 42°04'17.4"E 5167.48'

NOTES:

□ INDICATES TYPE "B" CORPS OF ENGINEERS MONUMENT (FOUND)
△ INDICATES CONCRETE NAIL WITH LEAD PLUG (SET)
X INDICATES X CHISLED IN CONCRETE (SET)
O INDICATES UNMARKED POINT
* INDICATES BORE HOLE AS MARKED BY SHAW ENVIRONMENTAL

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October 2009.

Witness my hand and seal October 26, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & C-21. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

SCALE 1"=10'

10 0 10 20 30
GRAPHIC SCALE - FEET

STATION C-21 □
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6956579.781 FEET
E=3308490.969 FEET

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-5377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

LHAAP-68
(426 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	S.PTS S.LEG
10/26/2009	09080745.DWG	DRAWN BY JTJ

PISTOL RANGE

NOTICE OF NONRESIDENTIAL LAND USE AT PISTOL RANGE FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

2012-000000705

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000705 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas, in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, the former Pistol Range is located at the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA) became effective on December 30, 1991. The former Pistol Range is an NPL site and a removal action was performed in 2009 in accordance with the FFA requirements. As a result of the removal action, the lead agency has determined that no further CERCLA action is necessary at the former Pistol Range to protect public health, welfare or the environment.

The former Pistol Range is located in the southeastern portion of LHAAP, approximately 280 feet south of Avenue Q at the end of Robert Avenue. The site is the eastern portion of a rectangular field and is approximately 110 feet north to south by 150 feet east to west. The former Pistol Range was known to have been used by LHAAP security personnel for small arms target qualification and recertification. The former Pistol Range was established in the 1950s and was used intermittently through 2004. A no further action Record of Decision for the former Pistol Range was signed by USEPA in 2010

establishing no remedy was required. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The former Pistol Range is a 0.3879 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the former Pistol Range and USEPA and TCEQ concluded that no further investigation or action is required.

Limited monitoring of the former Pistol Range will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of the former Pistol Range is consistent with the nonresidential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 21 th day of July, 2011.

BEFORE ME, on this the 21 th day of July, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 21 day of July, 2011.

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 03-17-2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
FORMER PISTOL RANGE
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 16,897 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9999146277, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "C-19-2" (N=6952844.320 feet E=3312839.019 feet) and "3-95" (N=6952411.298 feet E=3314136.438 feet). Said traverse indicates a surface distance of 1367.890 feet between said monuments. The computed land area is based on grid (State Plane) distances.

Commencing at monument "3-95" referenced above,

(As used herein, the abbreviation I.R.C. indicates 1/2" iron rod with R.P.L.S. #3940 orange plastic cap)

THENCE S 45deg51'27"E 855.98' to an I.R.C. set for the S.W.C. of this tract and this POINT OF BEGINNING,

THENCE N 00deg00'20"W 107.99' along the W.B.L. of this tract to an I.R.C. set for this tract's N.W.C. ,

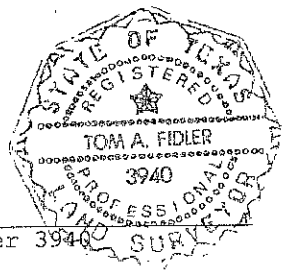
THENCE N 89deg59'47"E 155.96' along the N.B.L. of this tract to an I.R.C. set for this tract's N.E.C. ,

THENCE S 00deg32'56"E 107.99' along the E.B.L. of this tract to an I.R.C. set for this tract's S.E.C. ,

THENCE S 89deg59'43"W 156.98' along the S.B.L. of this tract to this POINT OF BEGINNING.

This tract contains 16,897 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

STATION C-19-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6952844.320 FEET
E=3312839.019 FEET

BEARING SOURCE BETWEEN
STATION C-19-2 & STATION 3-95
IS S 71°32'35.6"E 1367.773'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1367.890')

STATION 3-95
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6952411.298 FEET
E=3314136.438 FEET

COORDINATE TABLE

POINT	NORTH	EAST
A	6951923.143	3314750.686
B	6951815.153	3314750.697
C	6951815.166	3314907.681
D	6951923.153	3314906.647

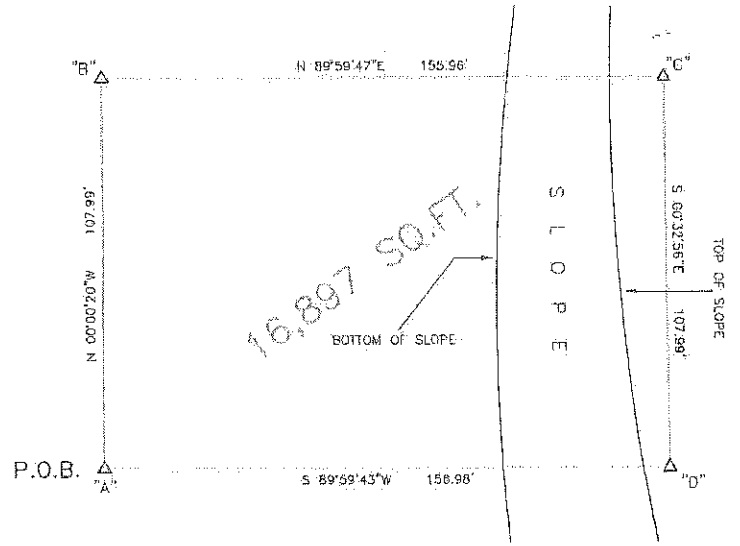
LEGEND

□ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
△ INDICATES 1/2" IRON ROD WITH R.P.L.S. #3940 CAP (SET)

S 45°51'27"E 855.98'

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999914277 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS C-19-2 AND 3-95. THE COMPUTED LAND AREA IS BASED ON GRID DISTANCES.



LANDMARK SURVEYS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in April 2011.

Witness my hand and seal May 2, 2011.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

N

SCALE 1"=30'

30 0 30 60 90
GRAPHIC SCALE - FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

FORMER PISTOL RANGE
(16,897 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #1104040	0407088.CRD	L.PTS L.LEG
MAY 2, 2011	1103025L.DWG	DRAWN BY JTJ

LHAAP-001-R-01 AND LHAAP-003-R-01, MMRP-1

LUC INSPECTION AND MAINTENANCE LOG

March 2, 2015

Draft LUC Inspection and Maintenance Log – LHAAP-001-R-01 and LHAAP-003-R-01

Date	Inspected by:	Inspection/Maintenance Activities				Corrective action or repairs required?	Repairs/Action Taken
		Maintain Land Use Controls		Prohibit residential development/use	Prevent explosive safety risks		
		Signage maintained e.g. replace damaged or weathered signs to the full count of signs	Signage visible from one sign to the next: i.e. grass mowed around signage	Verified no residential development/use	Verified no intrusive activities i.e. digging		

LHAAP-001-R-01 AND LHAAP-003-R-01, MMRP-2

LUCs FROM FINAL REMEDIAL DESIGN PENDING

March 2, 2015

LHAAP-001-R-01 AND LHAAP-003-R-01, MMRP-3

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-001-R-01 AND LHAAP-003-R-01 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

March 2, 2015

APPENDIX A

GSA TRANSFER LETTERS

GSA Public Buildings Service
Tel: (817) 978-3856
Fax: (817) 978-2063
melvin.freeman@gsa.gov

February 21, 2014

Mr. Thomas E. Lederle
Chief, ACSIM BRAC Division
600 Army Pentagon
Washington D.C. 20310-0600

Dear Mr. Lederle:

Your report of excess dated July 29, 2002, covered 8,492.02 acres of land (later corrected to 8,416 acres), more or less, and improvements at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas. GSA Control No. 7-D-TX-0692.

As set forth in the enclosed letter, an additional 50.54 acres of land, more or less, of the LHAAP property known as Tract No. 7 – Landfill 12 Area, described in Attachment 1 of the transfer letter has been transferred without reimbursement to the U.S. Department of the Interior, Fish and Wildlife Service (FWS) under the authority of 16 U.S.C. 667b. Additional transfers will be made when approvals are obtained from the Army on lands currently not suitable for transfer. Future requests for transfers will identify requested land by legal description or map overlay.

Upon finalization of transfer of the total land requested by FWS, a complete boundary legal description will be provided by FWS identifying all former Army land that had been transferred. Any map overlays used in the interim to identify previously transferred land will be voided for use to identify former Army land at LHAAP subsequently controlled by FWS.

Custody and accountability of the property identified by legal description in Attachment 1 to the transfer letter, together with any necessary documentation, should be transferred to FWS by your agency as soon as practicable. We will appreciate your prompt advice as to the date such action is accomplished. We understand that the FWS, Region 2 Acting Regional Director, Ms. Joy Nicholopoulos, P.O. Box 1306, Albuquerque, NM 87103 will represent the FWS in this matter.

Please acknowledge receipt of this communication in the space provided on the enclosed copy of this letter and return it to this office. You may contact Veronica Capron Vorva, Realty Specialist at telephone 817-978-4246 if there are questions.

U.S. General Services Administration
Real Property Utilization and Disposal
Division (7PZ)
819 Taylor Street, Room 11A30
Fort Worth, TX 76102-6112

Sincerely,

Melvin E. Freeman, Director
Real Property Utilization and Disposal
Division (7PZ)

Enclosures

Receipt acknowledged:

Name THOMAS E LEDERLE

Title Chief, ACSIM BRAC DIV

Date 03/07/2014

cc: Ms. Joy Nicholopoulos, Acting Regional Director
U.S. Fish and Wildlife Service, Region 2
Division of Realty
P.O. Box 1306
Albuquerque, NM 87103-1306

GSA Public Buildings Service
Tel. (817) 978-3856
Fax (817) 978-2063
melvin.freeman@gsa.gov

February 21, 2014

Joy Nicholopoulos, Acting Regional Director
U.S. Fish and Wildlife Service, Region 2
Division of Realty
P.O. Box 1306
Albuquerque, NM 87103-1306

RE: Transfer of 50.54 acres of land at the Longhorn Army Ammunition Plant, Harrison County, Texas

Dear Ms. Nicholopoulos:

Your letter of April 27, 2004, requested transfer to the U.S. Department of the Interior, Fish and Wildlife Service (FWS), under the authority of P.L. 80-537, 16 U.S.C. 667b, a total of 8,404 acres of land (later corrected to 8,416 acres, more or less), at the Longhorn Army Ammunition Plant (LHAAP), City of Karnack, Harrison County, State of Texas, together with all the improvements found on the real estate, and all related personal property located thereon (hereinafter referred to as the "Property"), reported July 29, 2002, as excess to the needs of the U.S. Army. The first transfer of 5,031.75 acres was accepted into primary jurisdiction by FWS on April 30, 2004. It was agreed that as parcels met the specifications of transfer, additional parcels would be transferred by means of a letter request, a map, and a legal description to GSA.

All the rights to be transferred herein have heretofore been declared excess to the needs of the United States Department of the Army. The respective interests to be transferred hereby have been reported to the General Services Administration (GSA) and have been determined to be excess for disposal pursuant to P.L. 107-217, (40 U.S.C. §§550, et. seq.) as amended.

In accordance with your subsequent letter of February 4, 2014, an additional 50.54 acres, more or less, known as Tract No. 7 – Landfill 12 Area (hereinafter referred to as the "Property") are now suitable for transfer to add to the 6,364.35 acres, more or less, previously transferred on nine separate occasions. A true and complete legal description of Tract No. 7 – Landfill 12 Area is included in **Attachment 1**.

Accordingly, pursuant to 40 U.S.C. 501, et seq. and Public Law 80-537, 16 U.S.C. 667b, and acting under authority delegated to me, I hereby transfer 50.54 acres, more

U.S. General Services Administration
Real Property Utilization and Disposal Division (7PZ)
819 Taylor Street, Room 11A30
Fort Worth, TX 76102-6112

or less, as described in **Attachment 1** to the custody and accountability of the U.S. Department of Interior, Fish and Wildlife Service.

Additional transfers covering the remainder of the real estate comprising the LHAAP will be made when approvals are obtained from the Army on lands currently not suitable for transfer. Future requests for other transfers will specifically identify such requested land by legal description and/or map overlay.

This transfer is expressly made subject to all environmental notices, exceptions, restrictions, agreements, and covenants affecting the Property identified in the Environmental Condition of Property V, Longhorn Army Ammunition Plant, Karnack, Texas, dated September 2007 and revised December 6, 2013, (hereinafter referred to as the "ECOP V") which is incorporated herein by reference and amends the "ECOP" previously described in and made a part of the original transfer of April 26, 2004, and subsequent transfers, and the "ECOP II" dated October 2004, "ECOP III" dated August 2005, and "ECOP IV" dated March 2007 to the extent and only to the extent the same are valid and affect the Property conveyed herein. FWS covenants and agrees that the Property is hereby transferred subject to the use restrictions and covenants which run with the land as identified in Attachment 2 of the ECOP V previously described. FWS further covenants and agrees that in the event that the Property, or any part thereof, is sold, conveyed, transferred, leased, or otherwise disposed of, the following notices, covenants, and restrictions shall be inserted in any instrument of conveyance.

Upon finalization of transfer of the total land requested by FWS, a complete boundary legal description will be provided by FWS identifying all former Army land that had been transferred. Any map overlays used in the interim to identify previously transferred land will be voided for use to identify former Army land at LHAAP subsequently controlled by FWS.

The property transferred is subject to compliance by the FWS with the provisions of the National Environmental Policy Act of 1969, as amended, including the preparation of an environmental impact statement if required. The Property is transferred subject to compliance by the FWS with Section 106 of the National Historic Preservation Act of 1966, and Executive Order 11593.

Mr. Thomas E. Lederle, Chief, ACSIM BRAC Division, U.S. Army, 600 Army Pentagon, Washington D.C. 20310 will act for the U.S. Army in arranging for the transfer of custody and accountability of the Property and in other matters related to the transfer.

A copy of our letter of same date to the U.S. Army is enclosed for your information. It is requested that you acknowledge receipt of this communication on the enclosed copy of this letter in the space provided, return it to this office, and that such steps as necessary be taken by your Agency to consummate the transaction.

Sincerely,

Melvin E. Freeman

Melvin E. Freeman, Director
Real Property Utilization and Disposal
Division (7PZ)

Enclosures

Receipt acknowledged:

Name Robert R. Brubaker

Title Realty Officer

Date 3-3-2014

cc: Mr. Thomas E. Lederle
Chief, ACSIM BRAC Division
600 Army Pentagon
Washington D.C. 20310-0600

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
DIVISION OF REALTY

TRACT REPORT

OF THE

UNITED STAES OF AMERICA

TRACT (100q)

CONTAINING 50.54 ACRES

CADDO LAKE NATIONAL WILDLIFE REFUGE

HARRRISON COUNTY, TEXAS

Report Prepared By

Louis J. duBois, Jr.
Land Surveyor

January 2014

Tract Description of the
United States of America Tract (100q)
Caddo Lake National Wildlife Refuge
Harrison County, Texas

The hereinafter described tract of land is located in Harrison County, Texas, near the town of Karnack, tract (100q) being 50.54 acres of land out of the Longhorn Ordnance Works Reservation, also known as the Longhorn Army Ammunition Plant, Karnack, Texas, said 50.54 acres of land being that certain 50.54 acre tract described as Parcel No. 7 – Landfill 12 Area excepted from United States of America tract (100a) as surveyed by Entz Engineering and Associates, Inc. & Huffman Surveying Company, A Joint Venture, of Muskogee, Oklahoma, delineated on a map tracing designated "United States of America Tracts (100a,b)" bearing the date of May, 2004, of record in the files of the United States Department of the Interior, Fish and Wildlife Service, Region 2, Albuquerque, New Mexico, said tract (100q) being more particularly described by metes and bounds as follows:

SURVEYOR'S NOTE:

All bearings and distances are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92), Survey Feet. The average Combined Scale Factor applied equals 0.99988410; Convergence equals 02° 21' 53". The computed land area is based on surface distances.

Parcel No. 7 - Landfill 12 Area

BEGINNING at the southwest corner of the Landfill 12 Area, described as Parcel No. 7, said point being described as "Landfill 12 Area Point No. 1" and having a coordinate value of N=6953300.238, E=3311087.540;

THENCE, along the boundary line of said Parcel No. 7,

N. 03°15'36" W., 1741.41 feet

to a point for a corner of this tract, said point being described as "Landfill 12 Area Point No. 2";

THENCE, along the boundary line of said Parcel No. 7,

N. 62°03'32" E., 1151.75 feet

to a point for a corner of this tract, said point being described as "Landfill 12 Area Point No. 3";

THENCE, along the boundary line of said Parcel No. 7,

S. 15°55'59" E., 1311.85 feet

to a point for a corner of this tract, said point being described as "Landfill 12 Area Point No. 4";

THENCE, along the boundary line of said Parcel No. 7,

S. 35°09'33" W., 1306.48 feet

to a point for a corner of this tract, said point being described as "Landfill 12 Area Point No. 5";

THENCE, along the boundary line of said Parcel No. 7,

N. 84°25'54" W., 528.74 feet

to the **POINT OF BEGINNING**, and containing 50.54 acres, more or less.

Bounded on the north, east, south and west by USA tract (100a).

The hereinbefore-described tract of land is delineated on a plat designated "United States of America Tract (100q)" bearing the date of January 15, 2014, of record in the files of the United States Department of the Interior, Fish and Wildlife Service.