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New England District

Final
2020 Annual Operations, Maintenance, and Monitoring Report

Main Post
Former Fort Devens Army Installation
Devens, Massachusetts

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2020 Annual Operations, Maintenance, and Monitoring Report

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Former Fort Devens Army Installation
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CERTIFICATION

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Acronyms and Abbreviations

%	percent
µg/L	microgram per liter
AAFES	Army Air Force Exchange Service
AOC	area of contamination
BRAC	Base Realignment and Closure
BTEX	benzene, toluene, ethylbenzene, xylene
CG	cleanup goal
COC	contaminant of concern
COD	chemical oxygen demand
CSM	conceptual site model
DCB	dichlorobenzene
DCL	Devens Consolidation Landfill
Devens	Main Post of the former Fort Devens Army Installation
DO	dissolved oxygen
DoD	Department of Defense
ELAP	Environmental Laboratory Accreditation Program
EPH	extractable petroleum hydrocarbon
ESMA	Excavated Soils Management Area
Eurofins	Eurofins TestAmerica Laboratories, Inc.
FS	feasibility study
ft/ft	feet per foot
HA	Housing Area
Harding	Harding Environmental Science & Engineering, Inc.
HGL	HydroGeoLogic, Inc.
HLA	Harding Lawson Associates, Inc.
Horne	Horne Engineering Services, Inc.
J	estimated concentration
KGS	KOMAN Government Solutions, LLC
LTM	long-term monitoring
LTMMP	Long-Term Monitoring and Maintenance Plan
LUC	land-use control
LUCIP	Land-Use Control Implementation Plan
MassDEP	Massachusetts Department of Environmental Protection
MassDevelopment	Massachusetts Development and Finance Agency

MCL	maximum contaminant level
MEC	munitions and explosives of concern
mg/L	milligram per liter
mm	millimeter
MNA	monitored natural attenuation
mV	millivolt
NAVD 88	North American Vertical Datum of 1988
ORP	oxidation-reduction potential
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
QAPP	Quality Assurance Project Plan
QC	quality control
RI	remedial investigation
ROD	Record of Decision
SA	Study Area
S-A JV	SERES-Arcadis 8(a) Joint Venture 2, LLC
TDS	total dissolved solids
UJ/J	estimated
U.S.	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UST	underground storage tank
UXO	unexploded ordnance
VOC	volatile organic compound
VPH	volatile petroleum hydrocarbon
Weston	Weston Solutions, Inc.
yd^3	cubic yard

1 Introduction

This 2020 Annual Long-Term Monitoring (LTM) Report details the performance of ongoing LTM activities at the former Fort Devens Army Installation (Devens), located in Devens, Massachusetts (Figure 1). LTM activities were performed in accordance with the LTM and Maintenance Plan (LTMMP; Sovereign/HydroGeoLogic, Inc. [HGL] 2015) and the Quality Assurance Project Plan (QAPP) for the Annual LTM and Maintenance Program (SERES-Arcadis 8(a) Joint Venture 2, LLC [S-A JV] 2020). S-A JV prepared this LTM Report on behalf of the United States (U.S.) Army Corps of Engineers (USACE) – New England District, under Contract Number W912WJ-19-D-0014.

1.1 Long-Term Monitoring Program Background

The LTM program instituted at Devens is a result of the individual Records of Decision (RODs) issued for each area of contamination (AOC) referenced in this report. These AOCs consist of:

- AOC 57: Building 3713 Fuel Oil Spill
  - 2001 ROD by Harding Environmental Science & Engineering, Inc. ([Harding] 2001)
- AOC 69W: Fort Devens Elementary School (Building 215) Fuel Oil Spill Site
  - 1999 ROD by Harding Lawson Associates, Inc. ([HLA] 1999a)
- AOC 43G: Historical Gas Station G
  - 1996 ROD by U.S. Environmental Protection Agency ([USEPA] 1996)
- AOCs 32 and 43A: Defense Reutilization and Marketing Office Yard and former Petroleum, Oils, and Lubricants Storage Area
  - 1998 ROD by Horne Engineering Services, Inc. ([Horne] 1998)
- The Devens Consolidation Landfill (DCL)
  - 1999 ROD by HLA (HLA 1999b)
- Grant Housing Area (HA) and 37-millimeter (mm) Impact Area
  - 2009 ROD by Weston Solutions, Inc. ([Weston] 2009)

The RODs established site-specific remedial actions for each AOC, as well as the LTM program and land-use controls (LUCs). The effectiveness of the remedial actions is reviewed periodically in Five-Year Review Reports (HLA 2000; Nobis Engineering, Inc. 2005; HGL 2010; H&S Environmental, Inc. 2015; and KOMAN Government Solutions, LLC [KGS] 2020).

LTM activities in 2020 were conducted at each of the above AOCs in accordance with the LTMMP (Sovereign/HGL 2015) and included the following:

- **AOC 57 –** Annual water level measurements at 19 locations at Areas 2 and 3 and groundwater sampling at Area 3 were conducted during the spring LTM event. Groundwater samples were analyzed for total and dissolved metals (arsenic, iron, and manganese) at two Area 3 monitoring wells. One surface water location was also sampled during the spring 2020 LTM event and was analyzed for total and dissolved metals (arsenic, iron, and manganese).
- **AOC 69W –** Annual water level measurements at 17 locations and groundwater sampling at eight monitoring wells and two well points were conducted during the fall LTM event. Samples from eight wells were analyzed for extractable petroleum hydrocarbons (EPH) and target polycyclic aromatic hydrocarbons (PAHs). Samples

from each of the 10 monitoring wells and well points were analyzed for dissolved metals (arsenic, iron, and manganese).

- **AOC 43G –** Annual water level measurements at 11 monitoring wells and groundwater sampling at eight wells were conducted during the fall LTM event. Groundwater samples were analyzed for volatile petroleum hydrocarbons (VPH) and benzene, toluene, ethylbenzene, xylenes (BTEX); alkalinity; and total metals (arsenic, iron, and manganese).
- **AOCs 32 and 43A –** Annual water level measurements at 26 locations and groundwater sampling at four monitoring wells were conducted during the spring LTM event. Groundwater samples were analyzed for volatile organic compounds (VOCs), VPH and BTEX, and total metals (arsenic, iron, and manganese).
- **DCL –** Annual landfill gas vent monitoring, monthly operation and maintenance of the leachate pump station, annual sampling of the leachate, and an annual landfill cap inspection were conducted. The DCL leachate sampling consists of collecting one sample and analyzing the sample for VOCs, semi-volatile organic compounds, pesticides/polychlorinated biphenyl (PCBs), total petroleum hydrocarbons, total metals (select list), total suspended solids, pH, total phenolics, and total cyanide. Semi-annual water level measurements at seven locations, and semi-annual groundwater sampling at four locations were conducted during the spring and fall LTM events. Groundwater samples were analyzed for VPH and BTEX, EPH and target PAHs, pesticides, total metals (select list), total dissolved solids (TDS), anions (chloride and sulfate), nitrate and nitrite, alkalinity, total cyanide, and chemical oxygen demand (COD).
- **Grant HA and 37-mm Impact Area** – Annual screening for unexploded ordnance (UXO) in the Impact Area, performed by sweeping 10% of the site with a metal detector.
- In addition to the above activities, annual LUC inspections and interviews were conducted at each AOC.

1.2 Site Description and History

The former Fort Devens Army Installation is located in the towns of Ayer and Shirley in Middlesex County, and Harvard and Lancaster in Worcester County, Massachusetts, approximately 35 miles northwest of Boston, Massachusetts. The installation occupied approximately 9,260 acres and was composed of the North, Main, and South Posts (Figure 1). Route 2 divides the South Post from the Main and North Posts. The Nashua River runs through the North, Main, and South Posts. The area surrounding Devens is largely residential.

The area around Devens was occupied by residential homes and farmland until 1917, when Camp Devens was established as a temporary training area for soldiers during World War I and used for a variety of training missions until 1990. In 1932, the site was named Fort Devens and made a permanent installation with the primary mission of commanding, training, and providing logistical support for non-divisional troop units. The installation also supported the Army Readiness Regional and National Guard units in the New England area. Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act of 1986, Devens was placed on the National Priorities List on November 21, 1989, because of identified environmental contamination at several sites.

Devens was identified for cessation of operations and closure under Public Law 101-510, the Defense Base Realignment and Closure (BRAC) Act of 1990, and officially closed in March 1996. As part of the Devens BRAC program, portions of the property formerly occupied by Fort Devens were retained by the Army for reserve forces training and renamed the Devens Reserve Forces Training Area. Areas not retained as part of the Devens Reserve Forces Training Area have been either transferred or are in the process of being transferred to the

Massachusetts Development and Finance Agency (MassDevelopment) for reuse and redevelopment and to other federal agencies as noted below.

1.3 Groundwater Hydrology

Depth to water was measured prior to sampling of any wells at the AOCs within a 24-hour period. Plotting the synoptic groundwater elevation data allows for determination of groundwater flow direction, essential in understanding contaminant migration and evaluating the effectiveness of the monitoring well network. Groundwater and surface water elevations for the spring and fall 2020 LTM events are provided in Tables 1 and 2, respectively. 2020 groundwater gradients are expressed in feet per foot (ft/ft) and AOC-specific groundwater elevation data are presented in sections specific to each AOC.

Annual precipitation data for 2004 through 2020, as reported from the Fitchburg, Massachusetts weather station, are presented in Table 3. The data indicate precipitation across the area in January, as well as May through October 2020, was less than average for the period of record; February and March 2020 were near average for the period of record; and April, November, and December 2020 were greater than average for the period of record. The overall precipitation in 2020 (36.57 inches) was lower than the average of 43.31 inches for the period of record.

1.4 2020 Long-Term Monitoring Activities

1.4.1 Groundwater Sampling

Sampling activities were coordinated with the USACE – New England District; BRAC Environmental Coordinator office; and the contracted analytical laboratory. The laboratory provided the sampling supplies (sample containers, packing material, custody seals, and coolers) to the sampling team per the specific sample requirements in Table 4. Sampling equipment consisted of water quality meters, turbidity meters, bladder pumps, peristaltic pumps, and water levels meters that were tested before use. Well construction details (Table 5) were maintained on site during the sampling events to confirm well screen interval information as needed. The condition of the monitoring well network at each LTM site was inspected during the 2020 sampling events. Observations, if noted, are contained within the field sampling logs in Appendix A. Monitoring wells were found to be in good overall condition, and well locks were replaced if needed.

Monitoring wells were purged and sampled in accordance with *Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells* (USEPA 2017b). Low-flow bladder or peristaltic pumps were used, as described in the LTMMP (Sovereign/HGL 2015). Samples submitted for dissolved metals analyses were field filtered through 0.45-micron filters directly into preserved sample bottles.

Non-dedicated sampling and monitoring equipment was decontaminated in accordance with the QAPP (S-A JV 2020). Field duplicate samples were collected during sampling events at each AOC, at the rate of 10 percent (%) (i.e., one per 10 samples), to evaluate field precision. Matrix spike/matrix spike duplicate pairs (one set per AOC) were also submitted to evaluate matrix effects on field and analytical precision and accuracy.

The field instruments used to measure water quality parameters (temperature, dissolved oxygen [DO], pH, oxidation-reduction potential [ORP], specific conductance, and turbidity) were calibrated twice daily (before and after field use) in accordance with the manufacturer's instructions and the *Calibration of Field Instruments Standard Operating Procedure* (USEPA 2017a). Equipment calibration log forms are presented in Appendix A. No instrument error was noted during the spring or fall LTM events.

Investigation-derived waste was not generated during the 2020 LTM activities. Purge water from wells was returned to the ground in proximity to sample collection in accordance with the LTMMP (Sovereign/HGL 2015).

1.4.2 Laboratory Testing

Eurofins TestAmerica Laboratories, Inc. (Eurofins) was the primary contract laboratory for the analysis of water samples for the spring and fall 2020 LTM events. Eurofins is compliant with the *Department of Defense (DoD) Quality Systems Manual for Environmental Laboratories, Version 5.3* (DoD 2019) under the DoD Environmental Laboratory Accreditation Program (ELAP) and holds current accreditation in accordance with the National ELAP for all applicable analytical methods.

Eurofins subcontracted all VPH/EPH samples to Katahdin Analytical Services of Westbrook, Maine, which were analyzed using the Massachusetts Department of Environmental Protection (MassDEP) analytical methods. Katahdin Analytical Services holds the MassDEP certification and DoD ELAP accreditation for these analyses.

Laboratory analytical results for water samples collected during the 2020 LTM events are discussed in Sections 2 through 6. Laboratory analytical reports are presented in Appendix B.

1.4.3 Data Validation

Quality assurance and quality control (QC) samples were collected and analyzed during the spring and fall 2020 groundwater sampling events to evaluate sample collection, transportation, and analysis procedures. Field duplicate samples were collected from monitoring wells 57M-96-11X (AOC 57, May 2020), ZVM-95-18X (AOC 69W, October 2020), XGM-94-06X (AOC 43G, October 2020), 32M-01-18XBR (AOC 32-43A, May 2020), and LFM-99-05A (DCL, May and October 2020).

Data validation was completed on all laboratory deliverables by Laboratory Data Consultants, Inc. of Carlsbad, California. The analytical results from the 2020 LTM events were evaluated for data acceptability in accordance with the *USEPA Region 1 Environmental Data Review Program Guidance* (USEPA 2018), the *DoD Quality Systems Manual for Environmental Laboratories, Version 5.3* (DoD 2019), and the laboratory's defined acceptance limits. The method requirements for the USEPA SW-846 QC guidance and the MassDEP VPH and EPH methods were also used as supplemental information.

The following laboratory QC deficiencies were noted during data validation:

- **AOCs 32 and 43A / Spring 2020**
  - Due to a laboratory error, the VOC analysis for all samples collected during the spring 2020 sampling event were performed outside of the method specified 14-day holding time (analyzed 15 days from sample collection). The results for all reported VOCs in the samples were qualified as estimated (UJ/J) with a potential for low bias in the reported concentrations.
  - The recoveries of the MassDEP VPH surrogate compound 2,5-dibromotoluene were less than the control limits in samples 32M-01-14XOB-SPR20 and 32M-01-17XBR-SPR20. The results for all analytes reported in the MassDEP VPH analysis were qualified as estimated (UJ) in samples 32M-01-14XOB-SPR20 and 32M-01-17XBR-SPR20 with a potential for low bias in the reported results.

- **AOC 57 / Spring 2020**
  - The difference in the arsenic results between the field duplicate samples 57M-96-11X-SPR20 and AOC57-DUP01-SPR20 slightly exceeded the acceptance criteria (relative percent difference 35.6% / acceptance criteria 30%). Field precision was not achieved, and the sample may not be representative of site conditions.
- **DCL / Spring 2020**
  - The recoveries of the pesticides aldrin, heptachlor, and p,p'-DDE were less than the control limit in the laboratory control sample analyzed in association with sample LFM-99-O2B-SPR20. The associated results were qualified as estimated (UJ) with a potential for low bias in the reported results.
- **DCL / Fall 2020**
  - As discussed in Section 6.3, while the arsenic result was acceptable based on quality control review, the arsenic result from monitoring well LFM-99-02B was determined to be unusable due to anomalously high concentrations in comparison to the historical arsenic concentrations at this location. The JV instructed Eurofins to rerun the sample within the holding time, and the result from the reanalysis was non-detect at the limit of detection of 1.5 micrograms per liter (µg/L), consistent with historical results. The non-detect arsenic result from the reanalysis was used for well LFM-99-02B. The laboratory indicated the initial result may have been due to contamination introduced in the preparatory step for this sample and that the contamination seemed to be isolated to the sample in question because the other samples in the batch including the method blank were non-detect for arsenic.
  - The recovery of C9-C18 aliphatics, hexachlorocyclopentadiene, hexachloroethane, and 1,3-diochlorobenzene were less than the control limits in the laboratory control sample associated with the MassDEP EPH analysis. The results for C9-C18 aliphatics in field samples DCL-DUP01-FAL20, LFM-99-02B-FAL20, LFMJ-99-05A-FAL20, and LFM-99-06ARP-FAL20, and hexachlorocyclopentadiene, hexachloroethane, and 1,3-diochlorobenzene in sample DCL LEACHATE_FAL20 were qualified as estimated (UJ) with a potential for low bias in the reported results. In addition, the surrogate compound 5-alpha-androstane exhibited a recovery less than the control limits in sample LFM-99-06ARP-FAL20. The results for all reported MassDEP EPH analytes in this samples were qualified as estimated (UJ) with a potential for low bias in the reported concentrations.
  - The recovery of C10-C28 petroleum hydrocarbons was less than the control limits in the laboratory control sample associated with the SW846 8015D analysis. In addition, the recovery of the surrogate compound o-terphenyl was less than the control limit in sample DCL Leachate_FAL20. The C10-C28 petroleum hydrocarbons result in sample DCL LEACHATE_FAL20 was qualified as estimated (J) with a potential for low bias in the reported concentration due to the low laboratory control sample recovery and surrogate recovery.
  - The recovery of the PCBs surrogate compound decachlorobiphenyl was less than the control limits in sample DCL LEACHATE_FAL20. The results for all PCB analytes were qualified as estimated (UJ) with a potential for low bias in the reported results.

- **AOC 43G / Fall 2020**
  - The initial calibration verification associated with MassDEP VPH analysis exhibited results for naphthalene and C9-C12 aliphatics above the acceptance criteria. The detected results of naphthalene and C9-12 aliphatics in samples Army Air Force Exchange Service (AAFES)-2-FAL20 and XGM-97-12X-FAL20 and C9-C12 aliphatics in sample XGM-93-02X-FAL20 were qualified as estimated (J) with a potential for high bias in the reported results.
- **AOC 69W / Fall 2020**
  - The matrix spike and matrix spike duplicate performed using sample 69WP-13-01-FAL20 exhibited recoveries for iron less than the acceptance criteria. The iron result in sample 69WP-13-01-FAL20 was qualified as estimated (J) with a potential for low bias in the reported result.
  - The recoveries of C9-C18 aliphatics and/or naphthalene were less than the control limits in the laboratory control sample associated with the MassDEP EPH analysis. The results for C9-C18 aliphatics and naphthalene in all field samples (except for ZWM-99-24X-FAL20, which was only qualified as estimated for C9-C18 aliphatics) were qualified as estimated (UJ) with a potential for low bias in the reported results. In addition, the surrogate compounds 5-alpha-androstane and/or o-terphenyl exhibited recoveries less than the control limits in samples 69W-94-13-FAL20, ZWM-01-25X-FAL20, ZWM-95-15X-FAL20, ZWM-99-22X-FAL20, ZWM-99-23X-FAL20, and ZWM-99-24X-FAL20. The results for all reported MassDEP EPH analytes in these samples were qualified as estimated (UJ/J) with a potential for low bias in the reported concentrations.

Laboratory Data Consultants, Inc. reviewed and updated the database with appropriate data qualifiers as needed. Laboratory analyses were confirmed to have been performed in general compliance with the precision, accuracy, representativeness, completeness, comparability, and sensitivity requirements listed in the QAPP (S-A JV 2020), with the exceptions noted above. Sample results that were qualified as estimated (UJ/J) due to quality control exceedances are usable with caution. No significant QC deficiencies were noted (i.e., no results were rejected), and analytical results reported for the 2020 LTM samples were deemed valid and usable for all purposes.

1.4.4 Data Evaluation

The analytical results for each AOC were compared to the respective monitoring criteria or cleanup goals (CGs) established in the applicable ROD. Arsenic results in groundwater were compared to the 10 µg/L maximum contaminant level (MCL) that was promulgated in 2006, which is lower than the cleanup standard that was previously established in the site-specific RODs. Results are discussed in the AOC-specific sections that follow. Table 6 presents the site-specific contaminants of concern (COCs) and the associated CGs or comparison criteria for each AOC. Table 7 presents the DCL leachate discharge limits set by MassDevelopment in accordance with the Industrial Discharge Permit.

2 Area of Contamination 57

2.1 Site Background

AOC 57 is located between Barnum Road and Cold Spring Brook on the northeast side of what was formerly the Main Post of Devens in the town of Harvard, Massachusetts (Figure 1). AOC 57 is located within a Zone II aquifer protection area for the Town of Ayer Grove Pond public water supply wells. The area that includes AOC 57 was used primarily for storage and maintenance of military vehicles. AOC 57 consists of three sub-areas (Areas 1, 2, and 3) located south to southeast of Building 3713 and former Buildings 3756, 3757, and 3758 (Figure 2). Each sub-area includes an upland area that slopes downward to a delineated wetland area bordering Cold Spring Brook. The sub-areas received stormwater runoff and waste from vehicle maintenance at former vehicle storage yards related to former Buildings 3713, 3757, and 3758.

A No Further Action ROD was completed for Area 1 (Harding 2001) following the removal of PAH-contaminated soil in 1997. The associated investigation revealed contaminated groundwater, soil, and sediment in Area 2. The Army completed a limited soil removal action at Area 2 in 1994, and it was discovered that contamination extended beyond the limits originally estimated. Approximately 1,300 cubic yards (yd^3) of soil were removed, and the site was transferred to the remedial investigation (RI)/feasibility study (FS) process. During spring 1999, a soil removal action focusing on PCBs and EPH in soil was performed at Area 3 based on data obtained from the RI.

Areas 2 and 3 are depicted on Figures 3 and 4, respectively. In June 2000, the Army completed an RI at AOC 57 Areas 2 and 3 that revealed the presence of residual contamination at both sites. A ROD for Areas 2 and 3 was issued in September 2001 and selected Excavation (For Possible Future Use) and LUCs for Area 2, and Excavation (To Accelerate Groundwater Cleanup) and LUCs for Area 3. Details of the excavations and product recovery activities are in the 2004 Removal Action Completion Report (Conti Environmental, Inc. 2004). The data collected during the RI activities prompted an Explanation of Significant Differences in March 2004 to add EPH as a COC for Area 2.

Construction of a solar panel manufacturing facility between Areas 2 and 3 and Barnum Road (112 Barnum Road; Figure 2) was completed in 2009. The current occupant, Jabil, produces healthcare products.

An active irrigation well is located adjacent to the building at 78 Barnum Road (Figure 2). The well is 505 feet deep and is believed to be an open borehole bedrock well. The property manager has indicated the well is used for lawn care for the property from spring to fall and there is no flow meter to record the daily flow rate or volume of water used.

In March 2019, multiple debris areas were identified at AOC 57 between Areas 2 and 3, southeast of the walking path located behind 112 Barnum Road (Figure 2). Debris included rusted vehicle parts (metal debris, tires, and bumpers) and other smaller piles of rusted scrap metal (empty drums and containers). Large concrete slabs were also found. The Army submitted a draft Debris Removal Workplan to regulatory agencies and plans to implement the work plan once complete.

2.2 Groundwater Hydrology

During May 2020 LTM, water levels were collected at a total of 19 wells and piezometers prior to groundwater sampling, as presented in Table 1. A groundwater elevation contour map is presented on Figure 5 (Areas 2 and 3). Data indicate that shallow groundwater flows toward Cold Spring Brook to the south/southeast, consistent with historical groundwater flow observations.

The groundwater hydraulic gradients for shallow groundwater within Area 2 and Area 3 for May 2020 were approximately 0.012 ft/ft and 0.025 ft/ft, respectively (Figure 5). The calculated hydraulic gradients and depicted flow directions are consistent with those for previous years.

2.3 Groundwater and Surface Water Sampling

Groundwater and surface water in Area 3 has been sampled in the spring on an annual basis since 2008. The sampling program was modified in the LTMMP during 2015 to suspend sampling at Area 2; however, gauging of Area 2 wells continues. Groundwater at AOC 57 is sampled annually in the spring. The May 2020 spring LTM event consisted of collecting groundwater samples from two Area 3 monitoring wells. Groundwater samples were analyzed for total and dissolved metals (arsenic, iron, and manganese). One surface water location was also sampled during the spring 2020 LTM and was analyzed for total and dissolved metals (arsenic, iron, and manganese). The May 2020 groundwater and surface water analytical results for Area 3 are summarized in Tables 8 and 9, respectively.

2.3.1 May 2020 Data Summary

In-Text Table 1, below, summarizes the AOC 57 detected groundwater results that exceed the CG specified in the ROD (Harding 2001). Results of additional analytes screened against groundwater monitoring criteria and surface water benchmarks are included in Tables 8 and 9, respectively. Figure 6 shows exceedances of the groundwater CG and surface water results compared to the surface water benchmarks for analyses required per the LTMMP. Appendix D summarizes the data for 2003 through 2020, and Appendix E provides the Mann-Kendall trend analyses.

In-Text Table 1 - AOC 57 Area 3 Contaminant of Concern CG Exceedances, May 2020

Well Identification	Analyte	Groundwater CG (µg/L)[1]	Detected Result (µg/L)
57M-95-03X	Arsenic (Total)	10	42
57M-96-11X	Arsenic (Total)	10	300 J

Notes:
[1] The CG for arsenic in groundwater is the MCL standard.
µg/L = microgram per liter
CG = cleanup goal
J = estimated concentration

Total arsenic concentrations at well 57M-95-03X have been relatively stable, at or below 60 µg/L, since 2005 (average of 33 µg/L since the fall 2004 event). Total arsenic concentrations at well 57M-96-11X have varied more broadly over time, fluctuating between 100 and 300 (estimated) µg/L from 2004 through 2020. There is not a statistically significant trend at either well.

One surface water sample was collected from location 57-SW1; the results did not exceed surface water benchmarks.

2.3.2 Water Quality Parameters

General water quality chemistry parameters (pH, temperature, specific conductivity, ORP, DO, and turbidity) were measured at each well while sampling and were used to determine groundwater stabilization prior to sampling. Final readings prior to collection of each sample are included in Table 8.

ORP and DO data can be used to determine whether reducing or oxidizing conditions are present in groundwater. Low ORP values (below 50 millivolts [mV]) and DO concentrations below 1 milligram per liter (mg/L) are generally associated with reducing conditions. Reducing conditions are a typical byproduct of the biodegradation of fuel products and may result in solubilizing of naturally occurring arsenic (and other oxidation-reduction-sensitive metals such as iron and manganese) in soils to groundwater. This results in these compounds being detected in groundwater. DO and ORP at 57M-96-11X (ORP of 63.8 mV and DO of 0.28 mg/L) and 57M-95-03X (ORP of -116 mV and DO of 5.45 mg/L) indicate groundwater at these wells is mildly reducing. These locations are located hydraulically downgradient of the Area 3 source area where arsenic likely solubilized.

2.4 Land-Use Controls, Interviews, and Inspection

AOC 57 is owned by the Army but is leased to MassDevelopment per a Lease in Furtherance of Conveyance agreement. Under the Lease in Furtherance of Conveyance agreement, MassDevelopment must comply with the LUCs of the September 2001 ROD to limit the potential exposure to the residual contaminated soil and groundwater under both existing and future site conditions. The LUCs ensure that exposure to any remaining contaminated soils beneath the site is controlled and prohibit the groundwater extraction for industrial or potable water supply use. The site-specific annual LUC checklist, including physical on-site inspection and interview components, was developed in 2007 for use during LUC verification activities to ensure control requirements are being met. Appendix F contains the completed checklist.

An interview was conducted on January 27, 2021 with Mr. Roy Herzig (MassDevelopment) and Mr. Neil Angus (Devens Enterprise Commission) regarding the following items:

- Familiarity with the LUCs imposed upon the property and documentation of these controls.
- Excavations (planned or emergency) that may involve soils and groundwater in Areas 2 or 3.
- Proposed plans for property sale, future redevelopment and construction, or demolition activities at the site.

The current tenant of the property at 112 Barnum Road, Jabil, Inc., has expanded their ownership within the building, but there has been no external expansion of the building. Jabil needs to obtain approval from MassDevelopment before any construction. If the proposed construction lies within or encroaches upon property within the AOC 57 LUC boundaries, MassDevelopment must obtain approval from the Base Realignment and Closure Cleanup Team before starting any construction-related and/or intrusive soil activities. In 2020, a permit was issued for loading dock modifications and a new addition at the 112 Barnum Road property; no work was conducted outside of the existing paved area, and any ground disturbance was limited.

An annual in-depth LUC inspection was performed in December 2020 to identify the following:

- Any signs of increased exposure potential to the public from soil and/or surface water contaminants.
- Any evidence that groundwater extraction wells were installed at the site.
- Any evidence of site use changes.

No evidence of increased exposure potential was observed during the 2020 annual inspection (Appendix F).

2.5 Conclusions

After the removal of the source area in soil, natural attenuation processes have effectively reduced the remaining concentrations of site COCs (tetrachloroethene, cadmium, 1,4 dichlorobenzene, PCBs, and extractable petroleum hydrocarbon C11-C22 aromatic carbon range) to below their respective remediation goals without offsite migration.

The 2020 LTM results at AOC 57 are consistent with the conceptual site model (CSM; HGL 2008). Total arsenic was detected above the CG in wells 57M-95-03X and 57M-96-11X, consistent with historical observations. There is not a statistically significant trend at either well. Groundwater flow at AOC 57 is towards Cold Spring Brook; surface water samples collected from location 57-SW-1, adjacent to Area 3, have not identified arsenic concentrations at levels greater than the USEPA Water Quality Criterion (monitoring benchmark) of 150 µg/L since 2003. Dissolved iron concentrations at 57-SW-1 have exceeded the monitoring benchmark of 1,000 µg/L in 13 of 17 sampling events completed since 2006, but dissolved iron concentrations were below the monitoring benchmark in the 2019 and 2020 sampling events.

The remedial action selected in the ROD included the implementation of LUCs to limit potential exposure to contaminated soil and groundwater under both existing and future site use. 2020 LUC inspections and interviews indicate the LUCs continue to be in place and in effect.

3 Area of Contamination 69W

3.1 Site Background

AOC 69W is located by the northeast corner of the intersection of Jackson Road and Antietam Street on the northern portion of what was formerly the Main Post at Devens (Figure 1), within the Zone II area associated with the MacPherson Well (Figure 7). It is currently being used for the Francis W. Parker Charter Essential School (former Devens Elementary School [Building 215]), its associated parking lot, and the adjacent lawn extending approximately 300 feet northwest to Willow Brook (Figure 7).

Historical impacts at AOC 69W are attributed to two separate releases of No. 2 heating oil in 1972 and 1978. The 1972 release occurred during the installation of a new 10,000-gallon underground storage tank (UST). The 1978 release resulted from a failed piping joint in the oil pipes that led to the old boiler. Actions, including installation of an oil recovery system, were performed to recover released fuel and oily water from each release (HLA 1999a). A removal action was performed in 1998 for soils and to remove the oil recovery system. The soil removal action was limited by the presence of the building.

The ROD issued for AOC 69W in June 1999 selected Limited Action as the remedy for subsurface soils and groundwater and included LTM, LUCs, and five-year reviews. LTM was developed to monitor for off-site migration of contaminants and verify that concentrations decreased over time. The 1999 ROD listed arsenic and VPH/EPH to be analyzed. Sampling for VPH was discontinued in 2014; concentrations were below criteria from 2009 through 2013. Well-point 69WP-13-01 was installed in 2013 to monitor for potential migration of manganese based on manganese detected at 69WP-08-01 in 2008.

3.2 Groundwater Hydrology

During fall 2020 LTM, water levels were collected from a total of 16 wells and piezometers (Table 2). A water table elevation contour map is presented on Figure 8. Data from the fall 2020 LTM event indicates that groundwater flows in a north-northwestern direction, and groundwater gradient of 0.007 ft/ft (Figure 8) was calculated. The calculated hydraulic gradients and depicted flow directions are generally consistent with those for previous years.

3.3 Groundwater Sampling

Groundwater at AOC 69W is sampled annually in the fall. Fall 2020 LTM consisted of collecting groundwater samples from eight monitoring wells and two well points (Table 10). In accordance with the 2015 LTMMP, the groundwater samples were analyzed for EPH and target PAHs and/or dissolved metals (arsenic, iron, and manganese).

3.3.1 October 2020 Data Summary

In-Text Table 2, below, summarizes the AOC 69W detected groundwater results that exceed the CG specified in the ROD (HLA 1999a). Results of additional analytes screened against monitoring criteria are included in Table 10. Figure 9 shows exceedances of the CG and monitoring criteria for analyses required per the LTMMP. Historical data at AOC 69W from 2000 through 2020 are presented in Appendix D. Mann-Kendall trend analyses are included in Appendix E.

In-Text Table 2 - AOC 69W Contaminant of Concern CG Exceedances, October 2020

Well Identification	Analyte	Groundwater CG (µg/L)[1]	Detected Result (µg/L)
69W-94-13	Arsenic (Dissolved)	10	32
ZWM-99-22X	Arsenic (Dissolved)	10	130

Notes:

[1] The CG for arsenic in groundwater is the MCL standard.
µg/L = microgram per liter
CG = cleanup goal

Dissolved arsenic concentrations detected above the CG at 69W-94-13 and ZWM 99-22X are consistent with historical observations. Neither well exhibits a statistically significant dissolved arsenic concentration trend over time (Appendix E). Dissolved arsenic has also exceeded the CG in wells ZWM-95-15X and ZWM-99-23X on a more sporadic basis, but concentrations were below the CG at each of these locations in 2020.

3.3.2 Water Quality Parameters

Table 10 presents the readings for final field measured general water quality chemistry parameters (pH, temperatures, specific conductivity, ORP, DO, and turbidity) taken before collection of each groundwater sample. At AOC 69W, as was described above in Section 2.3.2 for AOC 57, low DO and ORP, indicating reducing conditions in groundwater, generally correlate with increased detected concentrations of metals. Well ZWM-99-22X, for example, had low ORP and DO concentrations (-33.9 mV and 0.51 mg/L, respectively) and the highest concentration of arsenic detected (130 µg/L) in October 2020.

3.3.3 Land-Use Controls, Interviews, and Inspection

Ownership of AOC 69W was transferred from the Army to MassDevelopment in August 2007. MassDevelopment later transferred ownership of AOC 69W to the Francis W. Parker Charter Essential School, the current owner. LUCs were implemented to limit potential exposure to contaminated soil and groundwater under existing and future site conditions, per the 1999 ROD and a subsequent deed (Army and MassDevelopment 2007). LUCs ensure that the remaining contaminated soils beneath and adjacent to the building are not excavated and prohibit groundwater extraction from the site for industrial or potable water supply use. Land use is evaluated as part of the five-year review process to ensure control requirements are being met. A site-specific annual LUC checklist (Appendix F), including physical onsite inspection and interview components, was developed in 2007 for use during LUC verification activities.

An interview was conducted on January 27, 2021 with Mr. Roy Herzig (MassDevelopment) and Mr. Neil Angus (Devens Enterprise Commission). In addition, Ms. Michelle McKenna (Business Manager of Francis W. Parker Charter Essential School) was contacted via email on January 8, 2021. Each party was interviewed with respect to the following items:

- Familiarity with the LUCs imposed upon the property and documentation of these controls.
- Excavations (planned or emergency) north of the school within the Excavated Soils Management Area (ESMA) delineated on Figure 7.
- The source of public drinking water for the property.
- Proposed plans for property sale, future redevelopment, and construction or demolition activities at the site.

In an email to S-A JV and USACE dated March 1, 2021, Ms. McKenna indicated that an internal heating, ventilation, and air conditioning project was completed in 2020 (not located near the ESMA) and a planned sidewalk/retaining wall project is currently on hold due to the coronavirus pandemic.

An annual LUC inspection was performed on December 9, 2020 to identify any of the following:

- Signs of increased exposure potential to the public from soil and/or surface water contaminants.
- Evidence (repaved cut marks or penetrations in the pavement) within the ESMA that have not been otherwise identified and properly documented by the property owner.
- Evidence that groundwater extraction wells had been installed at the site.
- Evidence of site use changes.

There were no excavations or penetrations through pavement within the ESMA observed during 2020. No groundwater extraction wells have been installed on the site and no evidence of increased exposure potential was observed.

3.4 Conclusions

The 2020 LTM results are consistent with the CSM. The LTM dataset indicate that arsenic concentrations have remained fairly consistent since 2009, VPH is no longer sampled due to being below criteria, and EPH results were below monitoring criteria in 2020. EPH concentrations exhibit a statistically significant decreasing trend at the two wells where exceedances have occurred since fall 2002. The detected dissolved metal concentrations fluctuate in response to oxidation-reduction conditions in the shallow groundwater. Over time, as the reducing conditions return to oxidizing conditions, the concentrations of elevated dissolved metals are anticipated to decrease.

The ROD remedy includes LUCs to limit potential exposure to contaminated soil and groundwater under both existing and future site use. 2020 LUC inspections and interviews indicate the LUCs continue to be in place and in effect.

4 Area of Contamination 43G

4.1 Site Background

AOC 43G is in the central portion of the former Main Post of Fort Devens (Figure 1), at the southwestern corner of Pine Road and Queenstown Street, as depicted on Figure 10. AOC 43G consists of the former AAFES gas station (Areas 2 and 3) and historical Gas Station G (Area 1) and has been the subject of RIs associated with petroleum contamination resulting from the past operations. The former gas station was used as a motor pool fueling station during the World War II era. USTs identified at AOC 43G have been removed.

In October 1996, the Army conducted an FS to evaluate potential remedial alternatives and signed a ROD to document the selected remedy. The selected remedial action includes intrinsic bioremediation, groundwater and contaminant modeling, and long-term groundwater monitoring. Intrinsic bioremediation is a remedial approach that relies on natural attenuation processes to remediate contaminants in the subsurface. Components of the selected remedy include assessment, data collection, groundwater modeling, LTM, annual reporting to USEPA and MassDEP, and performing five-year reviews.

4.2 Groundwater Hydrology

During fall 2020 LTM, water level measurements were performed at a total of 11 wells at AOC 43G. Table 2 presents the groundwater elevations and Figure 11 depicts a groundwater elevation contour map. The groundwater flow direction is to the east/southeast consistent with the local topography, eventually discharging to surface water via an unnamed tributary to Robbins Pond and to Robbins Pond itself. The calculated hydraulic gradient (0.053 ft/ft; Figure 11) and depicted flow direction are generally consistent with those for previous years.

4.3 Groundwater Sampling

Groundwater at AOC 43G is sampled annually in the fall. Fall 2020 LTM at AOC 43G consisted of collecting groundwater samples from eight monitoring wells (Table 11), similar to the Fall 2019 LTM monitoring event completed by KGS. In accordance with the 2015 LTMMP, the groundwater samples were analyzed for VPH and BTEX, alkalinity, and/or total metals (arsenic, iron, and manganese).

4.3.1 October 2020 Data Summary

In-Text Table 3, below, summarizes the AOC 43G detected groundwater results that exceed the CGs specified in the ROD (USEPA 1996). Results of additional analytes screened against monitoring criteria are included in Table 11. Figure 12 shows exceedances of the CGs and monitoring criteria for analyses required per the LTMMP. Appendix D contains the AOC 43G historical data from 1999 through 2020, while Appendix E presents the Mann-Kendall statistical trend analyses of selected wells.

In-Text Table 3 - AOC 43G Contaminant of Concern CG Exceedances, October 2020

Well Identification	Analyte	Groundwater CG (µg/L)[1]	Detected Result (µg/L)
AAFES-2	Iron (Total)	9,100	17,000
	Manganese (Total)	375	3,200
AAFES-7	Manganese (Total)	375	3,400
XGM-93-02X	Manganese (Total)	375	1,200
XGM-94-06X	Manganese (Total)	375	1,800 (2,200*)
XGM-94-07X	Iron (Total)	9,100	12,000
	Manganese (Total)	375	4,500
XGM-94-08X	Iron (Total)	9,100	11,000
	Manganese (Total)	375	7,100
XGM-97-12X	Iron (Total)	9,100	18,000
	Manganese (Total)	375	1,300

Notes:

[1] The CG for iron is the background level. The CG for manganese is a site-specific goal established as part of the LTM plan for the site (HGL 2008).
* = Duplicate sample collected from well XGM-94-06X.
µg/L = microgram per liter
CG = cleanup goal

Total manganese exceeded the 375 µg/L CG at seven of eight sampled wells. Concentrations were observed to be consistent with historical data. Of the wells evaluated using Mann-Kendall, four of five had statistically significant decreasing trends for total manganese: AAFES-2, XGM-93-02X, XGM-94-04X, and XGM 97-12X. There was not a statistically significant trend at well AAFES-7.

Total iron exceeded the 9,100 µg/L CG at four of eight sampled wells. There was a statistically significant decreasing trend in total iron concentrations at the three wells evaluated: AAFES-2, XGM-93-02X, and XGM-97-12X.

4.3.2 Water Quality Parameters

Table 11 presents the readings for final field measured general water quality chemistry parameters (pH, temperatures, specific conductivity, ORP, DO, and turbidity) taken before collection of each groundwater sample. The ORP and DO data (Table 11) indicate reducing or moderately reducing conditions in groundwater at five of the eight wells sampled (AAFES-2, XGM-93-02X, XGM-97-12X, XGM-94-06X, and XGM-94-07X). Exceedances of the CGs for iron and manganese are observed at each of these locations. Historical data indicates that the oxidation-reduction conditions and associated metals concentrations are variable at several locations. A more consistent relationship between ORP and DO and oxidation-reduction-sensitive metals concentrations might be observed if dissolved metals were analyzed rather than total metals at AOC 43G.

4.4 Land-Use Controls, Interview, and Inspection

AOC 43G is currently under Army ownership. Per the October 1996 ROD, substantive requirements of LUCs that restrict access to contaminated groundwater and soil are in place at AOC 43G. The September 2007 Addendum to the Real Property Master Plan (Army 2007) included supplemental information on LUCs established under BRAC and Comprehensive Environmental Response, Compensation, and Liability Act programs that are applicable to AOC 43G. The LUCs were designed to protect the integrity and effectiveness of the remedy. Any proposed actions that affect the AOC 43G property must meet the following ROD requirements:

- Ensure that the property is not used for residential purposes and prohibit the use of groundwater beneath the site.
- If the Army transfers the property by lease or deed, an Environmental Baseline Survey will be conducted to ensure that the remedy remains protective by incorporating all necessary environmental protection provisions within the Finding of Suitability to Transfer and the property transfer deed.
- Any intrusive construction work must consider that residual soil and groundwater contamination has been documented for AOC 43G, and such actions should be coordinated with the Department of Public Works and the BRAC.

Appendix F contains a site-specific annual LUC checklist, including physical on-site inspection and interview components. Mr. Robert Simeone, the BRAC Environmental Coordinator, was contacted via email regarding the following items:

- Familiarity with the LUCs imposed upon the property and documentation of these controls.
- Source of public drinking water for the property.
- Proposed plans for property sale, future redevelopment and construction, or demolition activities at the site.

Mr. Simeone stated in an email received on January 7, 2021 that there were no changes to the property during 2020 (Appendix F).

An annual LUC inspection was performed on December 9, 2020 to identify the following:

- Any signs of increased exposure potential to the public from soil and/or surface water contaminants.
- Any evidence that groundwater extraction wells had been installed at the site.
- Any evidence of site use changes.

No evidence of the above was observed during the 2020 annual LUC inspection (Appendix F).

4.5 Conclusions

Based on the previous remedial activities performed at AOC 43G and evaluation of the available monitoring data, the 2020 monitoring results are consistent with the CSM. The LTM dataset indicate that there is a general decreasing trend in total manganese and total iron concentrations at wells that exceed the CGs for these COCs.

The ROD remedy includes LUCs to limit potential exposure to contaminated soil and groundwater under both existing and future site use. The 2020 LUC inspections and interviews indicate the LUCs continue to be in place and in effect.

5 Areas of Contamination 32 and 43A

5.1 Site Background

AOCs 32 and 43A are located east of Cook Street and north of Independence Drive (Figure 13). A portion of AOC 32 intersects a MassDEP 310 Code of Massachusetts Regulations 22.02 Zone II aquifer protection area associated with the five Grove Pond wells (Public Water Supply IDs 2019000-01G, 2019000-02G [inactive], 2019001-06G, 2019001-07G, and 2019001-08G).

AOC 32 (Defense Reutilization and Marketing Office Yard) was an active materials storage facility from approximately 1964 to 1995. It consisted of three fenced areas where various materials were processed and stored, and contained a former waste oil UST (UST #13). The tank was removed in 1992 and associated contaminated soils were excavated and disposed of off-site. COCs at AOC 32 include select VOCs and metals (arsenic and manganese). Monitored natural attenuation (MNA) is the selected remedy for groundwater contamination. Figure 13 shows the new warehouse at AOC 32 overlying the footprint of the former features.

AOC 43A (Petroleum, Oils, and Lubricants Storage Area) served as the central distribution point for all gasoline stations at Fort Devens during the 1940s and 1950s and was subsequently used to store fuels for various purposes. The distribution facility consisted of a main gasoline station, a pump house, four 12,000-gallon USTs, one 10,000-gallon UST, two 12,000-gallon aboveground storage tanks, and two 8,000-gallon aboveground storage tanks. Gasoline was delivered by rail car and transferred to the tanks. Site investigation indicated that low levels of xylenes and an elevated level of petroleum hydrocarbons existed in the subsurface soils. MNA was chosen as the selected remedy for groundwater and incorporated into the 1998 ROD (Horne 1998).

A remedial action, consisting of in-situ chemical oxidation via persulfate injections, was implemented in February 2009 to augment the MNA remedy at AOC 32 in the vicinity of the former USTs. The remedial action targeted the remaining site COCs, including the dichlorobenzene (DCB) isomers, at well 32M-01-18XBR. The findings and conclusions for this remedial action are reported in the 2009 AOCs 32 & 43A Persulfate Injection Letter Report (HGL 2009).

5.2 Groundwater Hydrology

During the May 2020 LTM event, water level measurements were collected from a total of 26 monitoring wells and piezometers screened in both the overburden and bedrock aquifers. Table 1 presents the water level measurements. Groundwater elevation contour maps prepared for the overburden and bedrock aquifers in AOCs 32 and 43A (Figures 14 and 15, respectively) show that groundwater generally flows to the south/southwest with a component of southeasterly flow on the east side of the area, consistent with the site's historical flow patterns. The following hydraulic gradients were calculated based on May 2020 LTM data:

- Overburden, to the south/southwest: approximately 0.017 ft/ft (Figure 14)
- Overburden, to the southeast: approximately 0.010 ft/ft (Figure 14)
- Bedrock, to the south/southwest: approximately 0.018 ft/ft (Figure 15)
- Bedrock, to the southeast: approximately 0.051 ft/ft (Figure 15)

The calculated hydraulic gradients and depicted flow directions are generally consistent with those for previous years.

Three sets of overburden and bedrock well pairs were assessed with respect to the presence of vertical gradients. As shown in In-Text Table 4, below, slight negative vertical gradients at these wells indicate there is a minor upward flow component at each location. Upward vertical gradients at well pairs 43M-01-16 and 43M-01-17 are consistent with the site's historical flow patterns, though the magnitude of the upward gradient at these locations in 2019 was greater. In 2019, there was a downward vertical gradient at well pair 43M-01-20-XBR rather than an upward gradient. Changes in the vertical gradients between 2019 and 2020 may be due to differences in precipitation between 2019 and 2020 (Table 3). There are no COCs in groundwater that exceed CGs at AOC 43A where these well pairs are located.

In-Text Table 4 – AOCs 32 and 43A Vertical Gradients, May 2020

Location[1]	Depth to Water (ft below MPE)	Groundwater Elevation (ft NAVD 88)	Bottom of Screen (ft NAVD 88)	Top of Screen (ft NAVD 88)	Mid-Point of Screen (ft NAVD 88)	Mid-Point of Screen Separation (ft)	Vertical Gradient May 2020
43M-01-16-XOB	23.37	233.51	223.13	233.13	228.13	23.56	**-0.007**
43M-01-16-XBR	23.17	233.67	199.57	209.57	204.57		
43M-01-17-XOB	24.94	233.14	225.11	235.11	230.11	24.07	**-0.009**
43M-01-17-XBR	24.94	233.35	201.04	211.04	206.04		
43M-01-20-XOB	24.89	232.51	223.64	233.64	228.64	44.05	**-0.002**
43M-01-20-XBR	24.70	232.60	179.59	189.59	184.59		

Notes:

[1] The OB and BR designations associated with the location (i.e., well identification) denote overburden and bedrock, respectively.
[2] A negative vertical gradient indicates an upward vertical gradient, and a positive vertical gradient indicates a downward vertical gradient.
ft = feet
MPE = measuring point elevation
NAVD 88 = North American Vertical Datum of 1988

The bedrock in this area, as described by core samples obtained from the borings at well locations 32Z-01-06XBR and 43M-01-20XBR, is comprised of a metamorphic suite of rock types, with mottled white-gray fine to coarse grained gneiss and gray aphanitic to medium grained quartzite present at 32Z-01-06XBR and light gray aphanitic to coarse grained conglomerate with gneissic foliation at 43M-01-20-XBR.

5.3 Groundwater Sampling

LTM activities at AOCs 32 and 43A were conducted in May 2020. In accordance with the 2015 LTMMP (Sovereign/HGL 2015), four wells were sampled for VOCs, VPH and BTEX, and total metals (arsenic, iron, and manganese).

5.3.1 May 2020 Data Summary

In-Text Table 5, below, summarizes the AOCs 32 and 43A detected groundwater results that exceed the CGs specified in the ROD (Horne 1998). Results of additional analytes screened against monitoring criteria are included in Table 12. Figure 16 shows exceedances of the CGs and monitoring criteria for analyses required per the LTMMP. Appendix D includes historical data from 2006 through 2020, while Appendix E presents the Mann-Kendall statistical trend analyses of selected wells.

In-Text Table 5 - AOCs 32 and 43A Contaminant of Concern CG Exceedances, May 2020

Well Identification	Analyte	Groundwater CG (µg/L)[1]	Detected Result (µg/L)
32M-01-14XOB	Arsenic (Total)	10	31
32M-01-18XBR	Manganese (Total)	3,500	25,000
	1,2-dichlorobenzene (1,2-DCB)	600	1,500 J
	1,3-dichlorobenzene (1,3-DCB)	100	250 J
	1,4-dichlorobenzene (1,4-DCB)	5	170 J

Notes:
[1] The CG for arsenic and select VOCs in groundwater is the MCL; the CG for manganese in groundwater is the background level.
µg/L = microgram per liter
CG = cleanup goal
J = estimated concentration

Arsenic has been periodically detected above CG at well 32M-01-14XOB. The current arsenic concentration in well 32M-01-14XOB (31 µg/L) is greater than the CG but is well below the historical high of 90 µg/L in 2015. There is not currently a statistically significant trend for arsenic at well 32M-01-14XOB.

Following in-situ chemical oxidation injections in 2009, concentrations of 1,2-DCB, 1,3-DCB, and 1,4-DCB in well 32M-01-18XBR decreased significantly. While concentrations in 2020 were higher than those in 2019, concentrations of 1,3-DCB and 1,4-DCB at well 32M-01-18XBR exhibit a statistically significant decreasing trend (Appendix E). Manganese at well 32M-01-18XBR exceeded the CG in 2020, but also has a statistically significant decreasing trend (Appendix E).

5.3.2 Water Quality Parameters

General water quality chemistry parameters (pH, temperature, specific conductivity, ORP, DO, and turbidity) were measured at each of the four sampled wells concurrent with low-flow sampling and were used to verify groundwater stabilization within each well before sampling (Table 12). The ORP and DO data recorded prior to sampling (Table 12) indicate that groundwater at AOCs 32 and 43A is generally oxidizing. Concentrations of arsenic and manganese in groundwater are expected to continue to decrease over time as they come out of solution under oxidizing conditions.

5.4 Land-Use Controls, Interviews, and Inspection

Ozark Automotive Distributers, Inc. (a division of O'Reilly Automotive, Inc.) currently operates the property at AOCs 32 and 43A. LUCs were established per the 1998 ROD to limit potential exposure to the contaminated soil and groundwater under both the existing and future site conditions and were incorporated into the deed upon transfer to MassDevelopment. The LUCs were included in the deed when O'Reilly Automotive subsequently purchased the property. The LUCs ensure that exposure to any remaining contaminated soils beneath the site is controlled and groundwater extraction for industrial or potable water supply is not permitted. LUCs are verified during annual sampling events. Appendix F contains a site-specific annual LUC checklist, including physical on-site inspection and interview components.

An interview was conducted on January 27, 2021 with Mr. Roy Herzig (MassDevelopment) and Mr. Neil Angus (Devens Enterprise Commission). In addition, Mr. John Bounds (O'Reilly Automotive, Inc.) was contacted separately and responded in an email dated January 23, 2021 (Bounds and Pahl 2021). Each party was asked about the following items:

- Familiarity with the LUCs imposed upon the property and documentation of these controls.
- Excavations (planned or emergency) that may involve soils and groundwater.
- Proposed plans for property sale, future redevelopment, and construction or demolition activities at the site.

Mr. Herzig, Mr. Angus, and Mr. Bounds confirmed that the building remains owned and operated by O'Reilly Automotive, Inc. Mr. Bounds confirmed that there have been no changes at the facility and there was no ground disturbance at the site during 2020.

An annual in-depth LUC inspection was performed on December 9, 2020 to identify any of the following:

- Signs of increased exposure potential to the public from soil and/or surface water contaminants.
- Evidence that groundwater extraction wells had been installed at the site.
- Evidence of site use changes.

MassDevelopment supplies potable water to the warehouse on the property. No evidence of the above was observed during the 2020 annual LUC inspection (Appendix F).

5.5 Conclusions

Groundwater flow at AOCs 32 and 43A in 2020 was generally consistent with the site's historical flow patterns. 2020 groundwater elevations indicate a minor upward flow component from bedrock to overburden. The magnitude of the upward vertical gradient was less in 2020 than it was in 2019 and, at one location, a downward vertical gradient changed to an upward vertical gradient in 2020. Changes in the vertical gradients from 2019 and 2020 may be due to reduced rainfall in 2020, as compared to rainfall during 2019 (Table 3). There are no COCs in groundwater that exceed CGs at AOC 43A where the overburden/bedrock well pairs used to calculate vertical gradients are located.

At source area well 32M-01-18XBR, concentrations of 1,2-DCB, 1,3-DCB, 1,4 DCB, and manganese exceeded their respective CGs in 2020. Three of these compounds (1,3-DCB, 1,4-DCB, and manganese) were evaluated using Mann-Kendall and have statistically significant decreasing trends in concentrations over time (Appendix E). Arsenic exceeded the CG at downgradient well 32M-01-14XOB. There were no other exceedances of CGs for COCs during the 2020 sampling event.

The ROD remedy includes LUCs to limit potential exposure to contaminated soil and groundwater under both existing and future site use. 2020 LUC inspections and interviews indicate the LUCs continue to be in place and in effect.

6 Devens Consolidation Landfill

6.1 Site Background

The DCL was constructed on the former Fort Devens golf course driving range to accommodate excavated material from seven remedial areas consisting of two study areas (SAs), four AOCs, and one pesticide removal project at three Devens HAs. The seven DCL contributor sites were:

- SA 12: construction debris and yard waste (approximately 8,700 yd^3)
- SA 13: yard-waste (approximately 10,000 yd^3)
- AOC 9: wood, concrete, asphalt, metal, brick, glass, and tree stumps (approximately 121,000 yd^3)
- AOC 11: wood-frame hospital demolition debris (approximately 35,000 yd^3)
- AOC 40: construction debris, ash, stumps, and logs (approximately 125,000 yd^3)
- AOC 41: non-explosive material and household debris (approximately 1,500 yd^3)
- HAs Grant, Locust, and Cavite: soils and walling material (approximately 3,530 tons)

The DCL and the contributor sites are shown on Figures 17 and 1, respectively.

The ROD included on-site or off-site disposal options (HLA 1999b). On-site landfill construction alternative was selected as the preferred alternative. Construction of the DCL began in September 2000 and was complete in November 2002. The Remedial Action Closure Report (Shaw Environmental Inc. [formerly Stone and Webster, Inc.] 2003) was accepted, certifying that the DCL was constructed and capped in accordance with the ROD, and was meeting the performance standards and/or response objectives of the remedial action. The ROD required subsequent collection of samples from groundwater monitoring wells at DCL, in accordance with 310 Code of Massachusetts Regulations 19-132, to assess remedy effectiveness. LTM has been performed since completion of DCL construction.

In 2020, the USACE operated and inspected the landfill facility, and KGS and the S-A JV conducted the groundwater and leachate discharge sampling. Landfill leachate is discharged to the Devens sewage system under an industrial wastewater discharge permit. Effluent criteria (established in 2006 and updated in 2009) and reporting requirements are specified in the leachate discharge permit.

In addition to the monitoring activities (Section 6.5), annual landfill maintenance activities were completed in 2020, including mowing of the landfill cap.

6.2 Groundwater Hydrology

During both spring and fall 2020 LTM at DCL, water level measurements were performed at a total of seven wells and piezometers. Tables 1 and 2 included the measurements and corresponding calculated groundwater elevations for spring and fall 2020, respectively. Groundwater flow is to the northeast, as shown on Figures 18 and 19 for spring and fall 2020, respectively. The gradient was approximately 0.047 ft/ft (Figure 18) and 0.043 ft/ft (Figure 19) in spring and fall 2020, respectively. These observations are consistent with historical observations at DCL.

6.3 Groundwater Sampling

Groundwater sampling is completed semiannually in accordance with the LTMMP (Sovereign/HGL 2015). A total of four wells were sampled in spring 2020, and three wells were sampled in fall 2020 (well LFM-03-07 was dry). Samples were analyzed for the following parameters: VPH, EPH, pesticides, total metals (select list), TDS, chloride/sulfate, nitrate/nitrite, alkalinity, cyanide, and COD. Tables 13 and 14 present the analytical results for the spring and fall 2020 LTM wells.

Water level measurements were performed at monitoring wells LFM-99-01B, LFM-99-03B, and LFM 99-05B during the spring and fall 2020 LTM events to evaluate if these wells should also be sampled. If the depth to water is less than the "trigger" depth (i.e., higher water table elevation), there is a potential that groundwater may have come into contact with the bottom of the landfill, triggering the requirement to also sample these locations. In-Text Table 6, below, lists the shallow "trigger" depths, along with groundwater elevations from spring and fall 2020. Sampling of these wells was not required in 2020, as the elevation for all wells was below the "trigger."

In-Text Table 6. Water Level Readings for Select DCL Monitoring Wells, Spring and Fall 2020 LTM

Well Identification	Top of Casing Elevation (ft NAVD 88)	Groundwater Elevation "Trigger" for Required Sampling (ft NAVD 88)	Groundwater Elevation Spring 2020 (ft NAVD 88)	Groundwater Elevation Fall 2020 (ft NAVD 88)
LFM-99-01B	350.67	345 or above	325.92	322.11
LFM-99-03B	342.08	335 or above	302.90	297.58
LFM-99-05B	316.58	315 or above	298.89	292.63

Notes:

ft = feet

NAVD 88 = North American Vertical Datum of 1988

6.3.1 2020 LTM Data Summary

Tables 13 and 14 summarize analytical results from spring and fall 2020 LTM, respectively. Concentrations of EPH, VPH, pesticides, total metals, and cyanide were either non-detect or below the monitoring criteria, consistent with historical data collected since 2003. Except for arsenic in well LFM-99-02B (22 µg/L, fall 2020), total metals were either non-detect or detected below the respective monitoring criteria. As described in Section 1.4.3, the fall 2020 arsenic concentration in well LFM-99-02B from the initial analysis was unusual compared to the historical data for arsenic at that location, which has typically been below the detection limit. The sample was reanalyzed by the lab and the result from the reanalysis was non-detect at the limit of detection of 1.5 µg/L, consistent with historical results. The non-detect arsenic result from the reanalysis was reported for well LFM-99-02B in Table 14 and Appendix D. Results of spring and fall 2020 general chemistry parameters (total cyanide, COD, TDS, chloride, sulfate, nitrate/nitrite, and total alkalinity) were consistent with historical data (Tables 13 and 14). Appendix D contains the DCL historical data from 2003 through 2020.

6.3.2 Water Quality Parameters

General water quality chemistry parameters (pH, temperature, specific conductivity, ORP, DO, and turbidity) were measured at each of the sampled wells concurrent with low-flow sampling, and used to verify groundwater stabilization within each well before sampling. Tables 13 and 14 provide the final field readings taken before collection of each groundwater sample. Groundwater at these wells is generally aerobic (ORP greater than 50 mV and DO greater than 1 mg/L). Historically, COC detections at DCL wells have been sporadic and low concentration. No definitive correlation has been established between measured water quality parameters and the presence or absence of contamination in the sampled wells.

6.4 Leachate System Monitoring

The DCL is permitted to discharge industrial wastewater to the Devens Sewerage System in accordance with Industrial Discharge Permit No. 017 granted by MassDevelopment. Leachate sampling is performed each year between October 1 and December 31, and self-monitoring reports are due to MassDevelopment by January 5 the following year. On October 23, 2020, samples were collected from the leachate system building (located to the east of the landfill) and submitted to Eurofins for analysis of VOCs, semi-volatile organic compounds, pesticides, PCBs, gasoline-range organics, total metals (select list), total suspended solids, pH, total phenolics, and total cyanide. Table 15 presents the analytical results. There were no permit exceedances for any parameters.

In addition to the leachate sampling, the DCL system is inspected monthly and leachate discharge volumes are recorded. Monitoring results are used to calculate leachate discharge quantities for comparison with historical discharge data. As shown in Table 16, the annual leachate discharge quantity from 2020 (232,469 gallons) is generally consistent with measurements collected since 2007.

6.5 Landfill Inspection and Gas Monitoring

Since its completion, the DCL has been inspected on a routine basis to ensure controls remain in place to be protective of human health and the environment. The inspection frequency was changed from semi-annual to annual in 2008 LTMMP (HGL 2008). Since the cap was completed in 2002, post-closure inspection and monitoring has now been performed for 19 years. Planning should commence for the performance time and metrics to reduce long-term monitoring and sampling activities, or to perform them as a reduced frequency, after 30 years, in accordance with RCRA Subtitle C landfill cap regulations for post-closure monitoring periods of performance.

KGS and S-A JV personnel inspected the DCL landfill on October 29, 2020 and recorded observations regarding the vegetative cover, vegetation types, erosion, settlement, and general condition of various features. Appendix G provides the full Fall 2020 inspection report. Primary findings are summarized below:

- The landfill cap and perimeter drainage system were found to be in good condition, with no apparent settlement or significant erosion.
- In general, the vegetative cap appeared healthy. As noted during previous inspections, some small, woody shrub species have invaded both the perimeter drainage system and the landfill cap itself. The woody vegetation is cut low to the ground during annual mowing.
- The perimeter fence is in poor condition adjacent to the security gate. Despite this, the fence along with the security gate and perimeter drainage system minimize potential entry onto the landfill cap by motor vehicles. These access limitations appear to be adequate.

- The cap drainage system was observed to be in good condition. Drainage channels were free of sediment and debris, with no significant settlement or stone displacement. The gabion slope drains were in good condition, with minimal vegetation present.
- Perimeter toe drains were in good condition and appeared to be functioning properly, with no visible signs of erosion or stability issues.
- The detention basin northeast of the DCL was also noted to be in good condition. Its pond drains, culvert, and outfall areas were generally free of debris and vegetative growth.
- Label tags noted as missing from gas vents will be replaced.

Routine and general landfill maintenance activities that will continue to be performed include annual mowing and control of encroaching vegetation, such as clearing large/woody vegetative growth from the cap, drainage channels, and riprap. Small shrubs growing on the landfill cap should continue to be cut low during the annual mowing, and/or cut as flush to the ground as feasible during the annual maintenance program.

Annual mowing of the cap will be done in early fall to avoid harming ground-nesting songbirds. Mowing will include the adjacent open field and detention pond areas. The areas of topsoil damaged from heavy mowing equipment should be filled in with topsoil and reseeded to prevent further erosion.

The annual inspection of landfill cap components will continue. The inspection should continue to be performed in the fall, soon after mowing is completed (i.e., within 1-2 weeks) and preferably within 48 hours after a precipitation event to help inspect the effectiveness of surface runoff in the drainage swales. Landfill gas monitoring should be performed on a dry day.

In 2016, a building was constructed at 85 Patton Road, Devens, Massachusetts, approximately 150 feet east of the southeastern edge of the landfill. MassDEP had requested that gas probes be installed between the landfill and the new structure and that landfill gas monitoring be conducted to evaluate whether landfill gas is migrating from the landfill through soil and/or in groundwater that could create hazardous condition in the area of the new structure. The Army prepared the Work Plan for Installation of Perimeter Landfill Gas Monitoring Wells (KGS 2018) and installed and sampled three gas probes (LFGM-18-01, LFGM-18-02, and LFGM-18-03) on December 7, 2018 (Figure 17). Appendix G presents the results of sampling of the three gas probes conducted on October 29, 2020. Methane, the primary explosive landfill gas COC that could be generated from the DCL, was not detected (0% lower explosive limit). VOC results ranged from 0.0 to 0.2 parts per million and carbon dioxide ranged from 0.0% to 1.3%. Hydrogen sulfide and carbon monoxide were not detected. Therefore, no soil gas hazard for occupants of the adjacent building was identified.

6.6 Land-Use Controls, Interviews, and Inspection

MassDevelopment owns the DCL property and granted the Army a permanent easement in 2001 to build and operate the landfill (Army and MassDevelopment 2001). DCL contributor sites AOC 9, AOC 40, and SA 13 were transferred from the Army to MassDevelopment in March 2006. The March 2006 deed included use restrictions on the contributor sites to prevent residential development of the properties (Army and MassDevelopment 2006).

LUC inspections are conducted per the LTMMP (Sovereign/HGL 2015). Appendix F contains site-specific annual LUC checklists for the DCL and its contributor sites, including physical on-site inspection and interview components.

An interview was conducted on January 27, 2021 with Mr. Roy Herzig (MassDevelopment) and Mr. Neil Angus (Devens Enterprise Commission) regarding the following items:

- Familiarity with the LUCs imposed upon the property and documentation of these controls.
- Excavations (planned or emergency) that may involve soils and groundwater.
- Proposed plans for property sale, future redevelopment, and construction or demolition activities at the site.

No changes at the DCL in 2020 were identified by the interviewees.

An annual in-depth LUC inspection was performed on December 9, 2020 to identify any of the following:

- Signs of increased exposure potential to the public from soil and/or surface water contaminants.
- Evidence that groundwater extraction wells had been installed at the site.
- Evidence of site use changes.

No evidence of the above was observed during the 2020 annual LUC inspection (Appendix F).

In addition to the on-site DCL inspection, a LUC inspection of the DCL contributor sites (AOC 9, AOC 40, and SA 13) was performed in 2020. Findings revealed no abnormalities or changes in land-use (Appendix F), and there was no evidence of residential development at the contributor sites.

6.7 Conclusions

The 2020 results for the DCL groundwater monitoring wells are consistent with groundwater results from previous LTM events. The 2020 wet chemistry parameters were generally consistent with previous results. There were no exceedances of the DCL Wastewater Discharge Permit No. 017 criteria for leachate in October 2020.

The ROD remedy and 2008 LTMMP include LUCs to limit potential exposure to contaminated soil and groundwater under both existing and future site use. 2020 LUC inspections and interviews indicate the LUCs continue to be in place and in effect for both the DCL and contributor sites (AOC 9, AOC 40, and SA 13). Per the requirements of the 2006 transfer deed, these contributor sites are not being used, or under development, for residential purposes.

7 Housing Areas and 37-mm Impact Area

7.1 Site Background

The Grant HA, Oak HA, Maple HA, and 37-mm Impact Area are located within the Main Post, between Hospital Road, El Carney Street, and the Nashua River. Figure 20 illustrates the location of the HAs and 37-mm Impact Area (Impact Area). Historical records indicate that training was conducted within the wooded areas from 1917 until a multi-family housing development was constructed in the late 1950s. A 37-mm range was located along the western boundary of the Grant HA with an approximate 2-acre impact area on the northern slope of Oak Hill.

In 1994 and 1995, the USACE completed a facility-wide archival search to document the locations of all the training areas and ranges at Devens. Based on the findings of this study, several former weapons training ranges within the former installation were identified. Several potential munitions and explosives of concern (MEC) sites were identified. The Grant HA, along with portions of the Oak and Maple HAs, were designated as Area 11. A 1995 munitions response investigation confirmed the presence of MEC throughout Area 11, with a clustering of MEC located at the southern end of the area (USACE 1995). In 1996, MEC removal actions were performed at the Impact Area and extending into the former Oak and Maple HAs. The removal action is summarized in the Final Removal Action Report (Human Factors Applications, Inc. 1996). All historical removal actions were documented in the Preliminary Assessment/Supplemental Site Inspection Comprehensive Report (Weston 2008).

A ROD for the Grant HA and Impact Area was signed in 2009. The remedial action objective is to prevent direct contact with UXO, which may remain in the soils at the site. As noted in the ROD, the LUCs are “preventative for direct contact as they educate the contractor and resident as to the potential presence of UXO and the actions to be taken if presumed UXO is encountered, which included not handling the UXO” (Weston 2009). Pursuant to the ROD, a Land-Use Control Implementation Plan (LUCIP) was issued in May 2011 (U.S. Army BRAC Environmental Division, Army Garrison Fort Devens 2011). LUCs for the Grant HA are addressed through affirmative actions which include the following:

- Public education to property owners, residents, as well as any construction and/or utility contractors via utility bill inserts, educational materials posted on a community website, and training for contractors conducting ground intrusive activities on the property.
- A deed notice that will be inserted into any Grant HA deeds by MassDevelopment to convey there is no evidence of additional UXO present at the site, but that the possibility does remain that UXO could be discovered in the future.

Additionally, the LUCIP indicates that LUCs for the Impact Area are addressed through institutional controls, access restrictions, affirmative measures, and prohibitive directives including the following:

- Institutional controls to be implemented through a Grant of Environmental Restrictions and Easements.
- Access controls would be implemented using signage and fencing to restrict public access.
- Public education to property owners, residents, as well as any construction and/or utility contractors conducting ground intrusive activities on the property.
- Prohibitive directives to include restrictions on all ground intrusive activities.
- Annual site inspections to evaluate the access controls, monitor the potential presence of surficial UXO, and evaluate the overall effectiveness of the LUCs.

The Army conducts annual reviews, including interviews and a physical inspection of the Impact Area, to confirm the overall effectiveness and compliance with the established LUCs in the Grant HA and the Impact Area. If deemed necessary, the annual review of the LUCs at the Grant HA may also include a physical inspection. The annual review of the LUCs at Grant HA also includes verification that the website, utility bill inserts, UXO awareness training, inclusion of the Supplemental Deed Notice in deeds conveying the Grant HA (or portions thereof) and other requirements set forth in this LUCIP are being properly implemented.

Separately, the Oak and Maple HAs were evaluated and a Focused FS Addendum was prepared to address the former Oak and Maple HAs, which recommended LUCs (Sovereign/HGL 2013). The remedy for the former Oak and Maple HAs was incorporated within the Grant HA and Impact Area site via an Explanation of Significant Differences (Sovereign/HGL 2014). Additions to the ROD for to the Oak and Maple HAs include the following:

- Pre-construction clearance of selected grids at the Oak HA.
- A MEC physical preview of any proposed construction footprint.
- Future MEC construction support for all intrusive activities in areas where construction support has not previously been conducted.
- The inclusion of a deed notice for the prohibition of residential reuse within the LUCs.
- LUC affirmative measures for public education.

The application of LUCs was specified by the LUCIP Addendum, Former Oak and Maple HAs, Former Fort Devens Army Installation, Devens, Massachusetts (USACE 2017).

The Grant HA is currently zoned for residential reuse per the 1994 Devens Reuse Plan (Vanasse Hangen Brustlin 1994). MassDevelopment executed and properly recorded a Grant of Environmental Restrictions and Easements for the Grant HA, which was recorded at the Worcester Registry of Deeds on December 19, 2011, book 48291, page 138. The Oak and Maple HA is zoned for commercial construction. The Impact Area future reuse is restricted.

7.2 Land-Use Controls

The annual LUC checklist for the Grant HA and Impact Area, including physical on-site inspection (if deemed necessary) and interview components is included in Appendix F. An interview was conducted with Mr. Roy Herzig (MassDevelopment) and Mr. Neil Angus (Devens Enterprise Commission) on January 21, 2020 to discuss compliance with the LUCs at Grant, Oak, and Maple HAs. The following items were evaluated:

- Discuss any reports during the reporting year of any objects discovered on the site, including any findings of UXO.
- Verify the existence of an educational website for the public.
- Verify the inclusion of required utility bill inserts.
- Verify the posting of utility bill insert in a conspicuous location.
- Verify distribution of current soils management policy to construction.
- Verify that awareness training is being conducted (if construction activities occurred during the reporting year).
- Verify that supplemental deed notice has been included in deeds conveying portion of the Grant HA.

Appendix F also includes the interview notes for the Grant, Oak, and Maple HAs. The LUC requirements are being met, and there were no UXOs discovered on the site during 2020. Proper signage remains in-place and all contractors are required to attend pre-construction meetings where UXO awareness information is presented. Copies of the Soils Management Plan and UXO information are available on the Devens Enterprise Commission website (www.devensec.com). Mr. Herzig and Mr. Angus indicated that the Impact Area is scheduled to be sold in 2021 as part of a land sale agreement, but that the area would continue to be fenced off and excluded from construction activities.

Within the Grant HA, Phase II residential development construction continues. A total of 17 residences / condominiums have been completed since 2019, and construction of 34 additional residences began or were completed during 2020. To support the work, a geotechnical investigation was performed in 2020 in the western part of the Grant HA, as well as the Maple HA, pursuant to an approved work plan and soil management plan. Supplemental deed notices have been provided to all construction contractors in accordance with the LUC provisions. Appendix F contains copies of the deed notice and utility bill insert. In addition, all contractors are provided with copies of the Devens Soil Management Policy and are required to implement all requirements within the documents.

LUCs were verified during the Impact Area property site visit on September 10, 2020. The inspection was performed to identify the following:

- Land-use conditions (fencing, signage, and vegetation)
- Any areas of UXO concern, performed by sweeping 10% of the site with a metal detector
- Any evidence of site use changes

A UXO screening was also conducted on September 10, 2020. The fence around the Impact Area was inspected for damage and a metal detector was used to sweep the ground. No UXO were detected, and metal detector findings were limited to other metallic objects (e.g., tin can, nail, concrete bar with rebar). A total of six locations were observed where fallen trees have (or appear to have) caused minor damage to the fencing. The access gates and signage were both observed to be in good condition. Overall, the findings of the site inspection revealed no abnormalities.

7.3 Conclusions

The remedial action objective for the HAs and Impact Area is to prevent direct contact with UXO that may remain at the site(s). During the 2020 review period, the former Grant, Oak, and Maple HAs, and the Impact Area were subject to annual LUC interviews, on-site inspections, as well as other affirmative measures and prohibitive directives (e.g., distribution of educational materials, providing awareness courses for site workers and residents, implementing deed notices, and maintaining signage). Results of the annual compliance monitoring indicate that no deviations or deficiencies to the LUCs were evident and corrective action(s) were not necessary.

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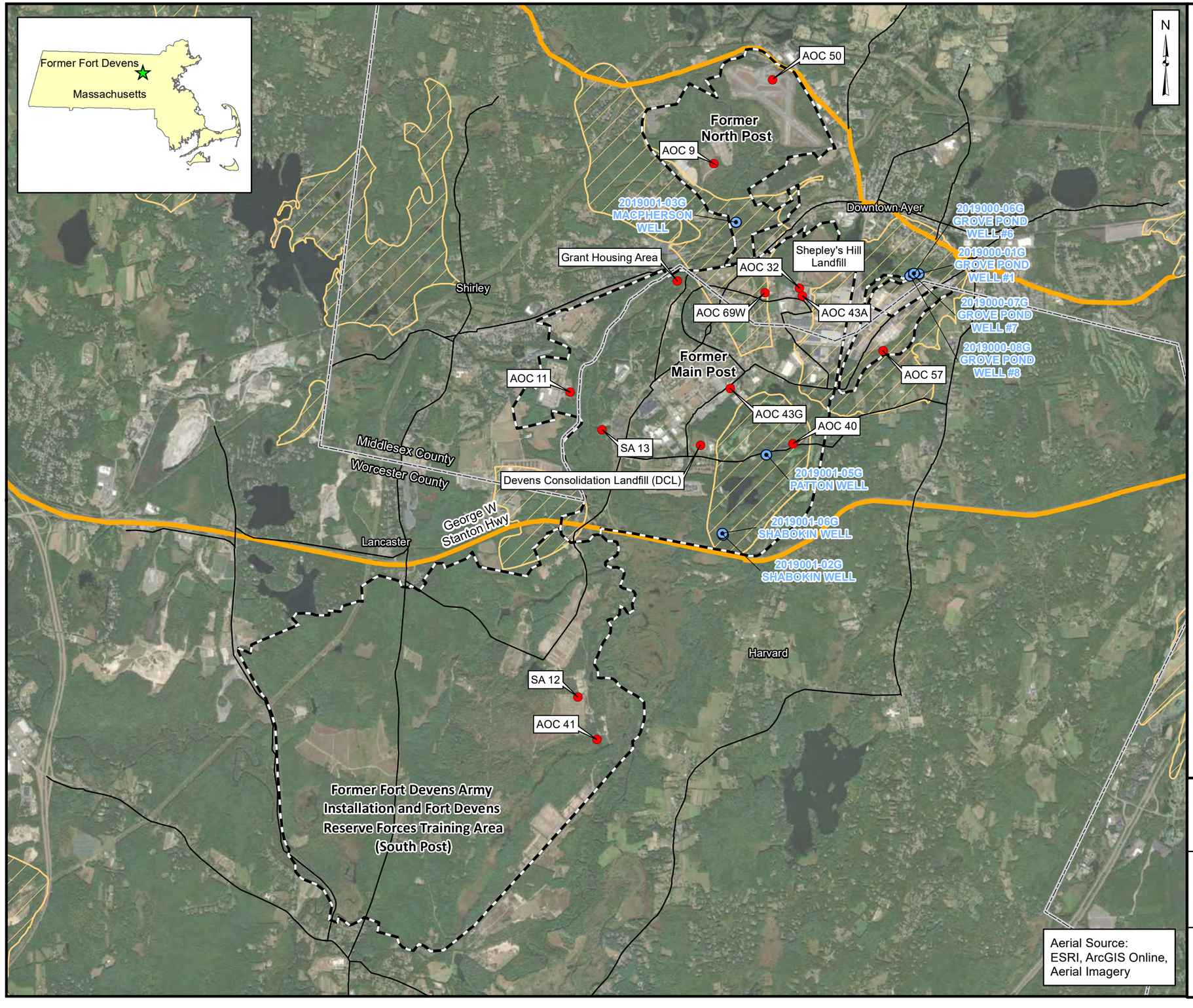
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Figures



Legend

- Former Fort Devens Boundary
- Area of Contamination (AOC)
- Water Supply Well
- County Line
- Highway
- Major Road
- MassDEP Zone II Wellhead Protection Area

MassDEP = Massachusetts Department of Environmental Protection

0 1 2
Miles

2020 Main Post Annual Report
Former Fort Devens Army Installation
Devens, Massachusetts

Site Location
Former Fort Devens
Army Installation

SERES
ARCADIS
a joint venture

Figure
1



Legend

- Former Fort Devens Boundary
- Area of Contamination (AOC)
- Former Building
- Irrigation Well (approximate location)
- Stream
- Walking Trail
- Topographic Contour (ft AMSL)

Notes:
1. The entirety of AOC 57 lies within a MassDEP Zone II Wellhead Protection Area.

ft AMSL = feet above mean sea level
MassDEP = Massachusetts Department of Environmental Protection

0 200 400
Feet

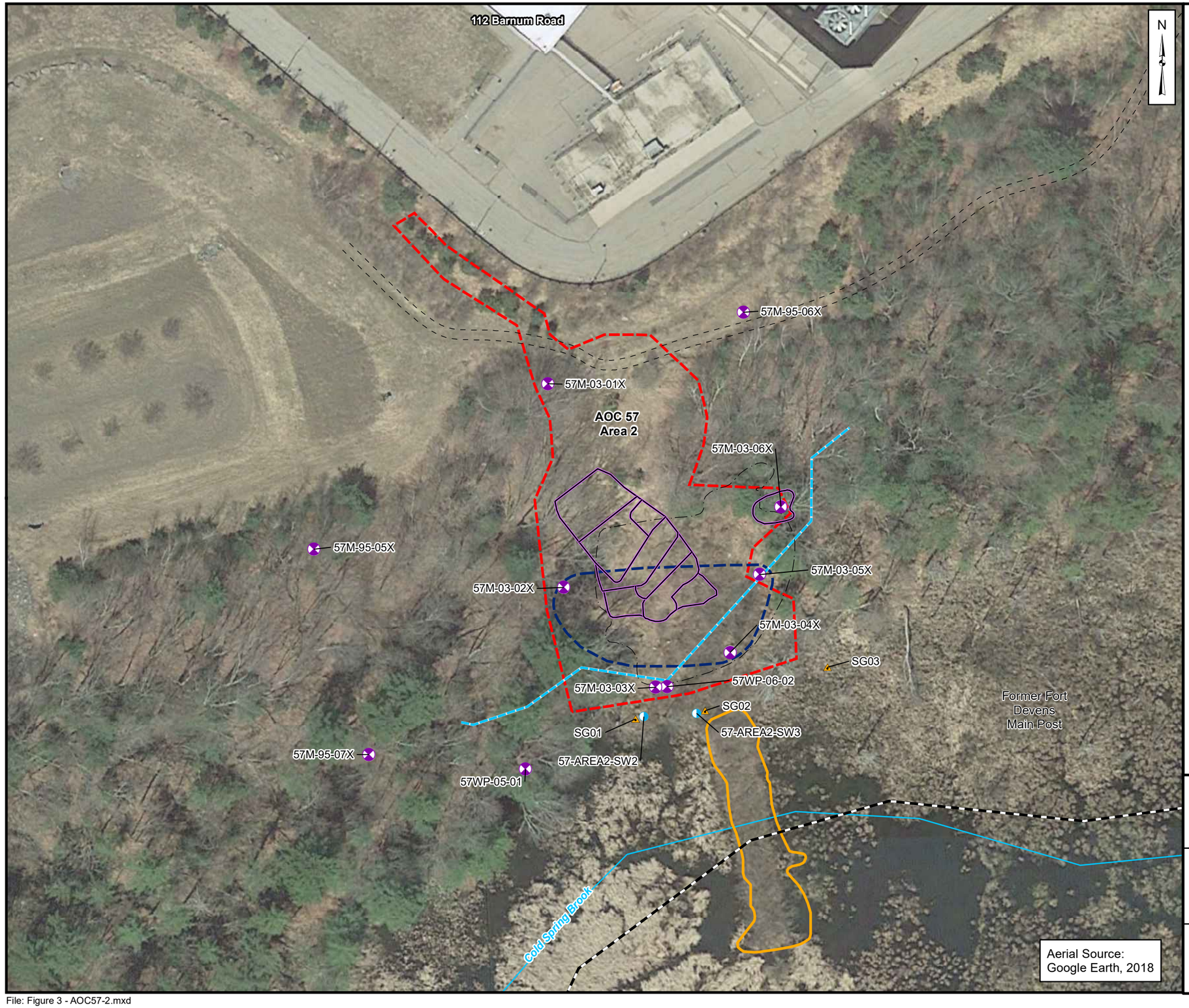
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Devens, Massachusetts

Site Layout
AOC 57
Areas 1, 2, & 3

SERES
ARCADIS
a joint venture

Figure
2

File: Figure 2 - AOC57 Site Layout.mxd



Legend

- Former Fort Devens Boundary
- Area of Contamination (AOC)
- LTM Well - Gauge Only
- Staff Gauge
- Surface Water Sample Location
- Final Excavation Limit (2003)
- Conti Excavation Limit (2002)
- Flagged Wetland Limits
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on fall 2003 to spring 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Containment Dam
- Stream
- Walking Trail

Notes:
1. The entirety of AOC 57 lies within a MassDEP Zone II Wellhead Protection Area.

LTM = long-term monitoring
MassDEP = Massachusetts Department of Environmental Protection

0 50 100
Feet

2020 Main Post Annual Report
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Devens, Massachusetts

Site Layout
AOC 57
Area 2

SERES
ARCADIS
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Figure
3

File: Figure 3 - AOC57-2.mxd



Legend

- Area of Contamination (AOC)
- LTM Sample Well
- LTM Well - Gauge Only
- Well Point - Gauge Only
- LTM Piezometer
- Surface Water Sample Location
- Monitoring Well - Abandoned (2012)
- Monitoring Well - Destroyed
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on Fall 2003 to Spring 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Alternate III-2a Estimated Soil Excavation Area
- Stream
- Walking Trail
- Topographic Contour (ft AMSL)

Notes:
1. The entirety of AOC 57 lies within a MassDEP Zone II Wellhead Protection Area.
2. Well 57M-96-09X is buried by construction.

ft AMSL = feet above mean sea level
LTM = long-term monitoring
MassDEP = Massachusetts Department of Environmental Protection

0 50 100
Feet

2020 Main Post Annual Report
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Devens, Massachusetts

Site Layout
AOC 57
Area 3

SERES
ARCADIS
a joint venture

Figure
4

File: Figure 4 - AOC57-3.mxd

N

57M-96-09X

AOC 57
Area 3

57M-95-03X
(222.5)

B

B'

246

226

112 Barnum Road

57M-96-10X
(222.16)

57M-96-12X
(221.25)

57M-96-11X
(229.74)

57WP-06-03
(219.94)

57M-96-13X
(221.24)

218

57P-98-03X
(218.14)

57P-98-04X
(217.70)

222

57M-95-06X
(222.14)

57-AREA3-SW1

236

221

220

219

A

57M-03-01X
(221.85)

AOC 57
Area 2

57M-03-06X
(219.48)

57M-95-05X
(220.99)

57M-03-02X
(220.04)

57M-03-05X
(219.36)

Sump-2
Sump-3
Sump-4
Sump-1

SG03

A'

57M-03-03X
(219.25)

57M-03-04X
(219.25)

SG01

SG02

57M-95-07X
(219.95)

57-AREA2-SW2

57-AREA2-SW3

57WP-06-02
(219.48)

57WP-05-01

Cold Spring Brook

Aerial Source:
Google Earth, 2019

Legend

- Former Fort Devens Boundary
- Area of Contamination (AOC)
- LTM Well - Gauge Only
- Well Point - Gauge Only
- LTM Piezometer
- Staff Gauge
- Former Surface Water Sample Location
- Sump
- Monitoring Well - Destroyed
- LTM Sample Well
- Groundwater Elevation Contour (ft NAVD88) (Contour Interval = 1 ft)
- A——A' Groundwater Gradient Calculation Location
- Final Excavation Limit (2003)
- Conti Excavation Limit (2002)
- Flagged Wetland Limits
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on fall 2003 to spring 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Containment Dam
- Stream
- Topographic Contour (ft AMSL)
- (218.14) Groundwater Elevation (ft NAVD88)

Notes:
1. The entirety of AOC 57 lies within a MassDEP Zone II Wellhead Protection Area.

ft AMSL = feet above mean sea level
LTM = long-term monitoring
MassDEP = Massachusetts Department of Environmental Protection
NAVD88 = North American Vertical Datum of 1988

0 50 100
Feet

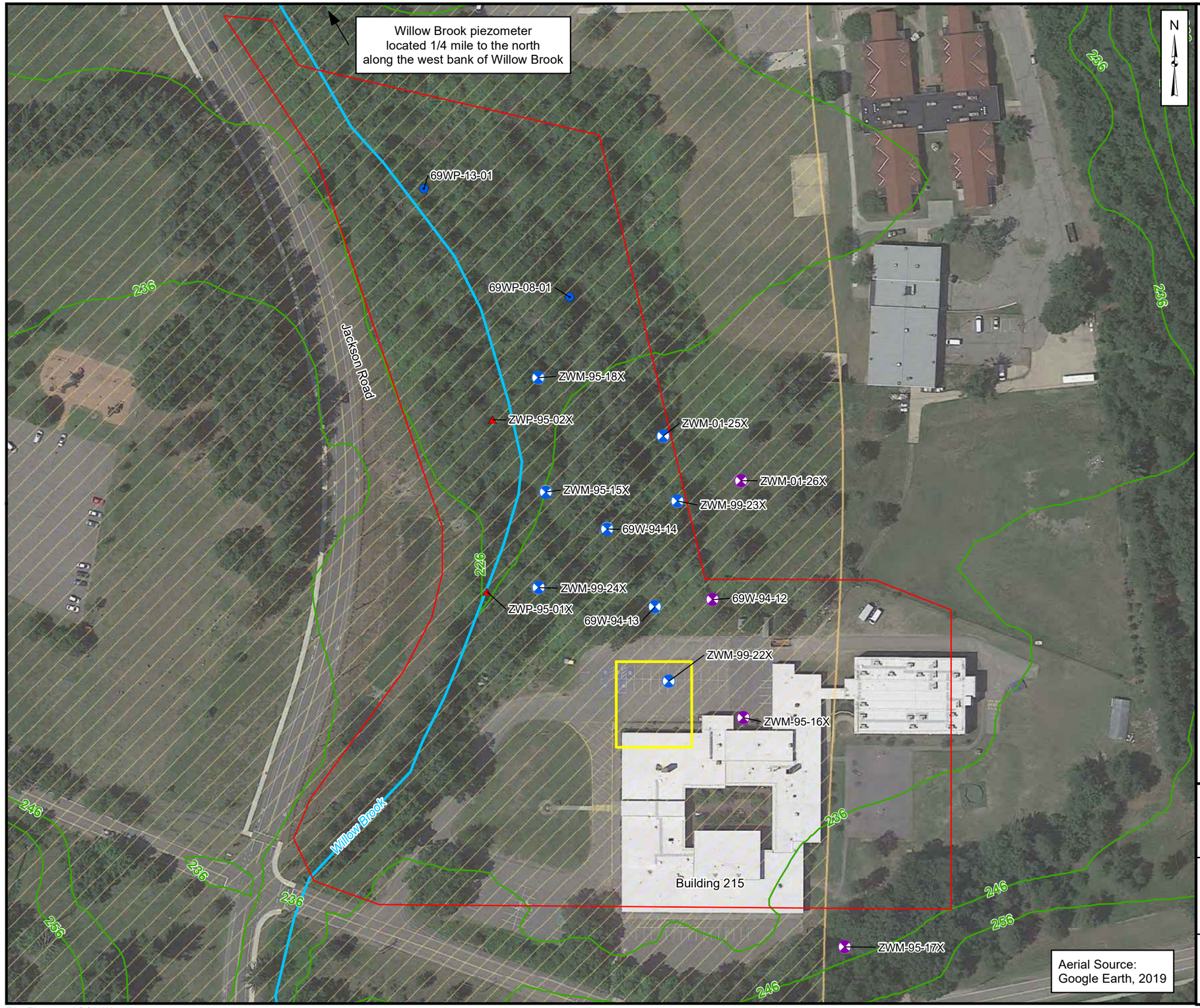
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Groundwater Elevation Contour Map
AOC 57 - Areas 2 & 3
May 2020

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Figure
5

File: Figure 5 - AOC57_2&3_GWC0520.mxd



Legend

- Parcel Boundary
- LTM Sample Well
- LTM Sample Well Point
- LTM Well - Gauge Only
- LTM Piezometer
- Surface Water Course
- Excavated Soils Management Area
- Topographic Contour (Ft AMSL)
- MassDEP Zone II Wellhead Protection Area

ft AMSL = feet above mean sea level
LTM = long-term monitoring
MassDEP = Massachusetts Department of Environmental Protection

0 200 400
Feet

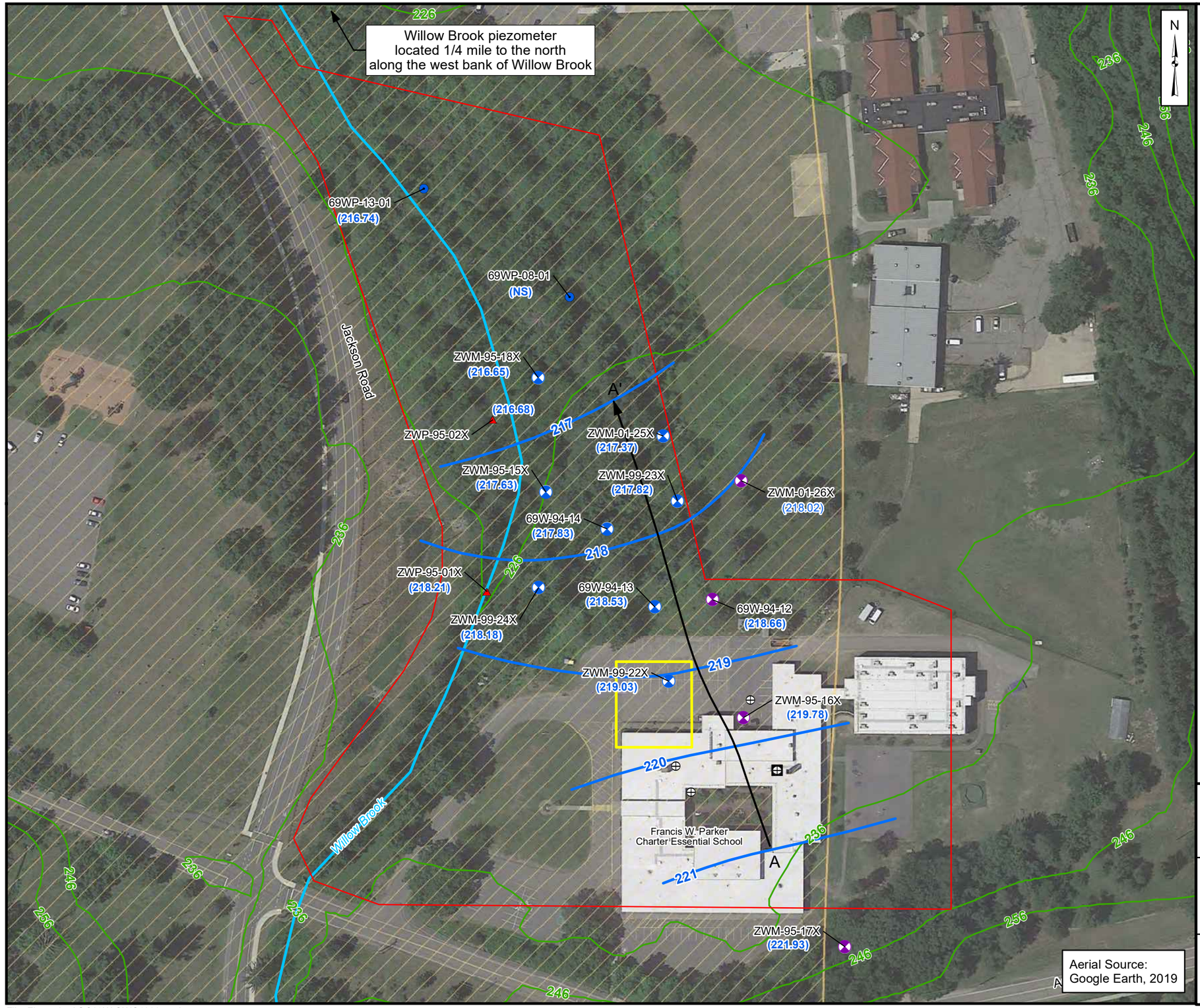
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Site Layout
AOC 69W

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Figure
7

File: Figure 7 - AOC69W.mxd



Legend

- Parcel Boundary
- LTM Sample Well
- LTM Sample Well Point
- LTM Well - Gauge Only
- LTM Piezometer
- Monitoring Well - Abandoned (2012)
- Monitoring Well - Presumed Destroyed
- Groundwater Elevation Contour (ft NAVD88) (Contour Interval = 1 ft)
- A——A' Groundwater Gradient Calculation Location
- Surface Water Course
- Excavated Soils Management Area
- Topographic Contour (ft AMSL)
- MassDEP Zone II Wellhead Protection Area
- (219.78) Groundwater Elevation (ft NAVD88)

Notes:
1. AOC 69W lies within the MassDEP Zone II Wellhead Protection Area for the MacPherson well.

ft AMSL = feet above mean sea level
LTM = long-term monitoring
MassDEP = Massachusetts Department of Environmental Protection
NAVD88 = North American Vertical Datum of 1988

0 200 400
Feet

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Groundwater Elevation Contour Map
AOC 69W
October 2020

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Figure
8

File: Figure 8 - AOC69W GWC1020.mxd

Willow Brook piezometer
located 1/4 mile to the north
along the west bank of Willow Brook

69WP-13-01	10/23/2020 Result (µg/L)
Arsenic (Dissolved)	< 3.0
Iron (Dissolved)	17,000 J
Manganese (Dissolved)	240

69WP-13-01

ZWM-95-18X	10/23/2020 Result (µg/L)
Arsenic (Dissolved)	< 3.0
Iron (Dissolved)	< 50
Manganese (Dissolved)	14

ZWM-95-18X

69WP-08-01	10/23/2020 Result (µg/L)
Arsenic (Dissolved)	< 3.0
Iron (Dissolved)	5,900
Manganese (Dissolved)	360

69WP-08-01

Jackson Road

ZWM-01-25X	10/23/2020 Result (µg/L)
Arsenic (Dissolved)	2.90 J
Iron (Dissolved)	200
Manganese (Dissolved)	1,700

ZWM-01-25X

ZWM-95-15X	10/23/2020 Result (µg/L)
Arsenic (Dissolved)	7.0
Iron (Dissolved)	5,000
Manganese (Dissolved)	360

ZWP-95-02X

ZWM-95-15X

ZWM-01-26X

ZWM-99-23X	10/23/2020 Result (µg/L)
Arsenic (Dissolved)	5.30
Iron (Dissolved)	470
Manganese (Dissolved)	110

ZWM-99-23X

69W-94-14	10/23/2020 Result (µg/L)
Arsenic (Dissolved)	< 3.0
Iron (Dissolved)	< 50
Manganese (Dissolved)	19

69W-94-14

69W-94-13	10/23/2020 Result (µg/L)
Arsenic (Dissolved)	**32**
Iron (Dissolved)	3,300
Manganese (Dissolved)	970

ZWM-99-24X	10/23/2020 Result (µg/L)
Arsenic (Dissolved)	< 3.0
Iron (Dissolved)	120
Manganese (Dissolved)	39

ZWM-99-24X

ZWP-95-01X

69W-94-13

69W-94-12

ZWM-99-22X

ZWM-99-22X	10/23/2020 Result (µg/L)
Arsenic (Dissolved)	**130**
Iron (Dissolved)	13,000
Manganese (Dissolved)	910

ZWM-95-16X

Building 215

Willow Brook

ZWM-95-17X

Aerial Source:
Google Earth, 2019

N

Legend

- LTM Sample Well
- LTM Sample Well Point
- LTM Well - Gauge Only
- LTM Piezometer
- Parcel Boundary
- Surface Water Course
- Excavated Soils Management Area
- Topographic Contour (ft AMSL)
- MassDEP Zone II Wellhead Protection Area

Notes:

Cleanup Goals (µg/L)	
Arsenic (Dissolved)	10
Monitoring Criteria (µg/L)	
Iron (Dissolved)	9,100
Manganese (Dissolved)	375

1. Bold concentrations indicate exceedances of Groundwater Cleanup Goal.
2. AOC 69W lies within the MassDEP Zone II Wellhead Protection Area for the MacPherson well.

ft AMSL = feet above mean sea level
J = estimated value
LTM = long-term monitoring
MassDEP = Massachusetts Department of Environmental Protection
NA = not analyzed
U = not detected
µg/L = micrograms per liter

0 200 400
Feet

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Metals Concentrations in Groundwater
AOC 69W
October 2020

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Figure 9

File: Figure 9 - AOC69W GW Results - Oct2020.mxd

N

Pine Road
Queenstown Street
Feinburg Road

325
315
315
295
266
276
256
285
305
295
305
315
325
305
295
285
276
266
256
266
276
285
295
305
315
325
305
295
285
276
266
256
236

Former Gasoline USTs (Removed in 1996)
Former Covered Gasoline Pump Islands
Former Sand and Gas Trap (Removed in 1996)
Former Waste Oil UST (Removed in 1992)
Former Waste Oil AST (Removed in 1996)
Former Gasoline USTs (Removed in 1990)

43GPZ-19-03
43GPZ-19-02
43GPZ-19-06
43GPZ-19-05
43GPZ-19-04
43GPZ-19-01

AAFES-5
AAFES-2
AAFES-6R
AAFES-7
XGM-97-12X
XGM-93-02X
XGM-94-07X
XGM-94-04X
XGM-94-08X
XGM-94-06X
XGM-94-10X

Aerial Source:
Google Earth, 2018

Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Monitoring Well
- Piezometer
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on 1999 to 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Area 1
- Former Gasoline UST(s)
- Former Waste Oil UST
- Former Waste Oil AST
- Former UST Area
- Topographic Contour (ft AMSL)
- MassDEP Zone II Wellhead Protection Area

AST = aboveground storage tank
ft AMSL = feet above mean sea level
LTM = long-term monitoring
MassDEP = Massachusetts Department of Environmental Protection
UST = underground storage tank

0 200 400
Feet

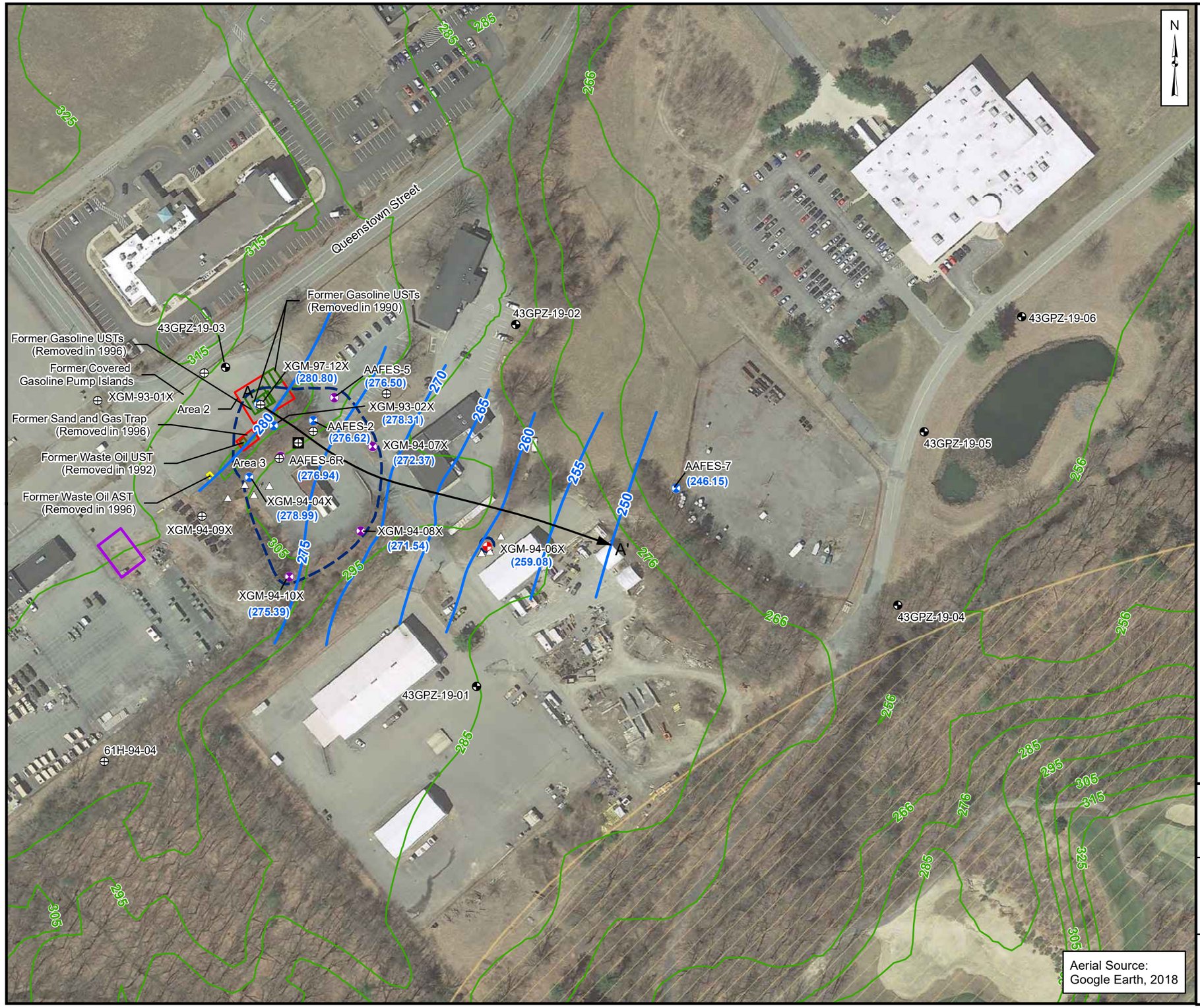
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Site Layout
AOC 43G

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Figure
10

File: Figure 10 - AOC43G.mxd



Aerial Source: Google Earth, 2018

Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Piezometer - Abandoned
- Monitoring Well
- Monitoring Well - Abandoned
- Monitoring Well - Presumed Destroyed
- Piezometer
- Groundwater Elevation Contour (ft NAVD88) (Contour Interval = 5 ft)
- A——A' Groundwater Gradient Calculation Location
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on 1999 to 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Area 1
- Former Gasoline UST(s)
- Former Waste Oil UST
- Former Waste Oil AST
- Former UST Area
- Topographic Contour (ft AMSL)
- MassDEP Zone II Wellhead Protection Area
- (247.15) Groundwater Elevation (ft NAVD88)

Notes:
AST = aboveground storage tank
ft AMSL = feet above mean sea level
LTM = long-term monitoring
MassDEP = Massachusetts Department of Environmental Protection
NAVD88 = North American Vertical Datum of 1988
UST = underground storage tank

0 200 400
Feet

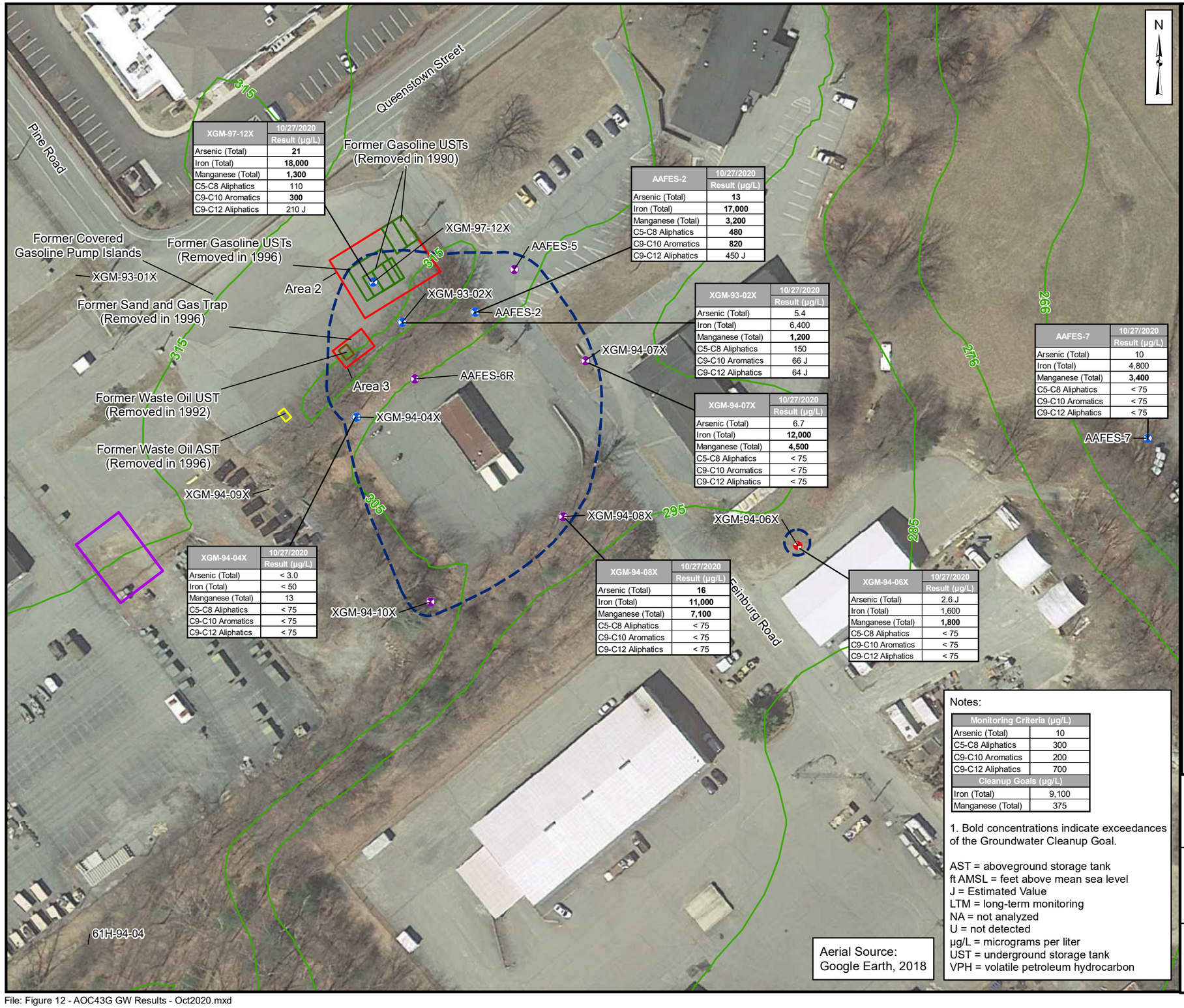
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Groundwater Elevation Contour Map
AOC 43G
October 2020

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Figure
11

File: Figure 11 - AOC43G GWC1020.mxd



XGM-97-12X	10/27/2020 Result (µg/L)
Arsenic (Total)	**21**
Iron (Total)	**18,000**
Manganese (Total)	**1,300**
C5-C8 Aliphatics	110
C9-C10 Aromatics	**300**
C9-C12 Aliphatics	210 J

AAFES-2	10/27/2020 Result (µg/L)
Arsenic (Total)	**13**
Iron (Total)	**17,000**
Manganese (Total)	**3,200**
C5-C8 Aliphatics	**480**
C9-C10 Aromatics	**820**
C9-C12 Aliphatics	450 J

XGM-93-02X	10/27/2020 Result (µg/L)
Arsenic (Total)	5.4
Iron (Total)	6,400
Manganese (Total)	**1,200**
C5-C8 Aliphatics	150
C9-C10 Aromatics	66 J
C9-C12 Aliphatics	64 J

XGM-94-07X	10/27/2020 Result (µg/L)
Arsenic (Total)	6.7
Iron (Total)	**12,000**
Manganese (Total)	**4,500**
C5-C8 Aliphatics	< 75
C9-C10 Aromatics	< 75
C9-C12 Aliphatics	< 75

AAFES-7	10/27/2020 Result (µg/L)
Arsenic (Total)	10
Iron (Total)	4,800
Manganese (Total)	**3,400**
C5-C8 Aliphatics	< 75
C9-C10 Aromatics	< 75
C9-C12 Aliphatics	< 75

XGM-94-04X	10/27/2020 Result (µg/L)
Arsenic (Total)	< 3.0
Iron (Total)	< 50
Manganese (Total)	13
C5-C8 Aliphatics	< 75
C9-C10 Aromatics	< 75
C9-C12 Aliphatics	< 75

XGM-94-08X	10/27/2020 Result (µg/L)
Arsenic (Total)	**16**
Iron (Total)	**11,000**
Manganese (Total)	**7,100**
C5-C8 Aliphatics	< 75
C9-C10 Aromatics	< 75
C9-C12 Aliphatics	< 75

XGM-94-06X	10/27/2020 Result (µg/L)
Arsenic (Total)	2.6 J
Iron (Total)	1,600
Manganese (Total)	**1,800**
C5-C8 Aliphatics	< 75
C9-C10 Aromatics	< 75
C9-C12 Aliphatics	< 75

Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Monitoring Well
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on 1999 to 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Area 1
- Former Gasoline UST(s)
- Former Waste Oil UST
- Former Waste Oil AST
- Former UST Area
- Topographic Contour (ft AMSL)

0 100 200
Feet

Aerial Source: Google Earth, 2018

Notes:

Monitoring Criteria (µg/L)	
Arsenic (Total)	10
C5-C8 Aliphatics	300
C9-C10 Aromatics	200
C9-C12 Aliphatics	700
Cleanup Goals (µg/L)	
Iron (Total)	9,100
Manganese (Total)	375

1. Bold concentrations indicate exceedances of the Groundwater Cleanup Goal.

AST = aboveground storage tank
ft AMSL = feet above mean sea level
J = Estimated Value
LTM = long-term monitoring
NA = not analyzed
U = not detected
µg/L = micrograms per liter
UST = underground storage tank
VPH = volatile petroleum hydrocarbon

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VPH and Metals Concentrations in Groundwater, AOC 43G
October 2020

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Figure 12

File: Figure 12 - AOC43G GW Results - Oct2020.mxd



Legend

- LTM Sample Well
- LTM Well - Periodic Gauge Only
- MassDEP Zone II Wellhead Protection Area
- Former Storage Tank(s)
- Former Building
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Remaining Bedrock Outcrop
- Topographic Contour (ft AMSL)

AST = aboveground storage tank
DRMO = Defense Reutilization and Marketing Office
ft AMSL = feet above mean sea level
LTM = long-term monitoring
MassDEP = Massachusetts Department of Environmental Protection
UST = underground storage tank

0 200 400
Feet

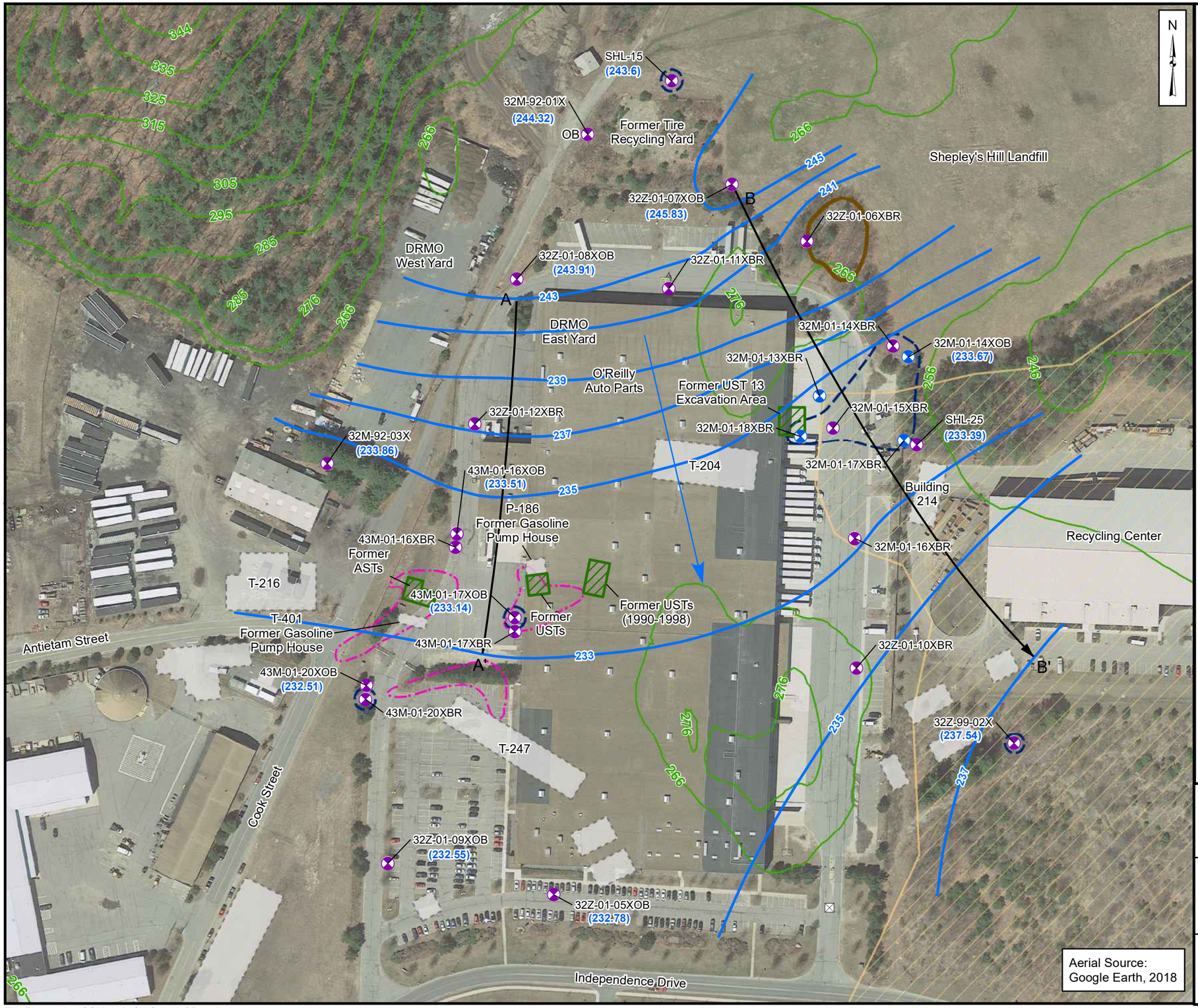
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Site Layout
AOC 32/43A

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Figure
13

File: Figure 13 - AOC32-43A.mxd



Legend

- LTM Sample Well
- LTM Well - Periodic Gauge Only
- Monitoring Well - Paved Over
- Groundwater Contour (ft NAVD88) (Interval = 2 ft)
- Groundwater Flow Direction
- A——A' Groundwater Gradient Calculation Location
- MassDEP Zone II Wellhead Protection Area
- Former Storage Tank(s)
- Former Building
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)
- TPH Soil Contamination
- Remaining Bedrock Outcrop
- Topographic Contour (Ft AMSL)
- (242.33) Groundwater Elevation (ft NAVD88)

AST = aboveground storage tank
DRMO = Defense Reutilization and Marketing Office
ft AMSL = feet above mean sea level
LTM = long-term monitoring
MassDEP = Massachusetts Department of Environmental Protection
NAVD88 = North American Vertical Datum of 1988
TPH = total petroleum hydrocarbons
UST = underground storage tank

0 200 400
Feet

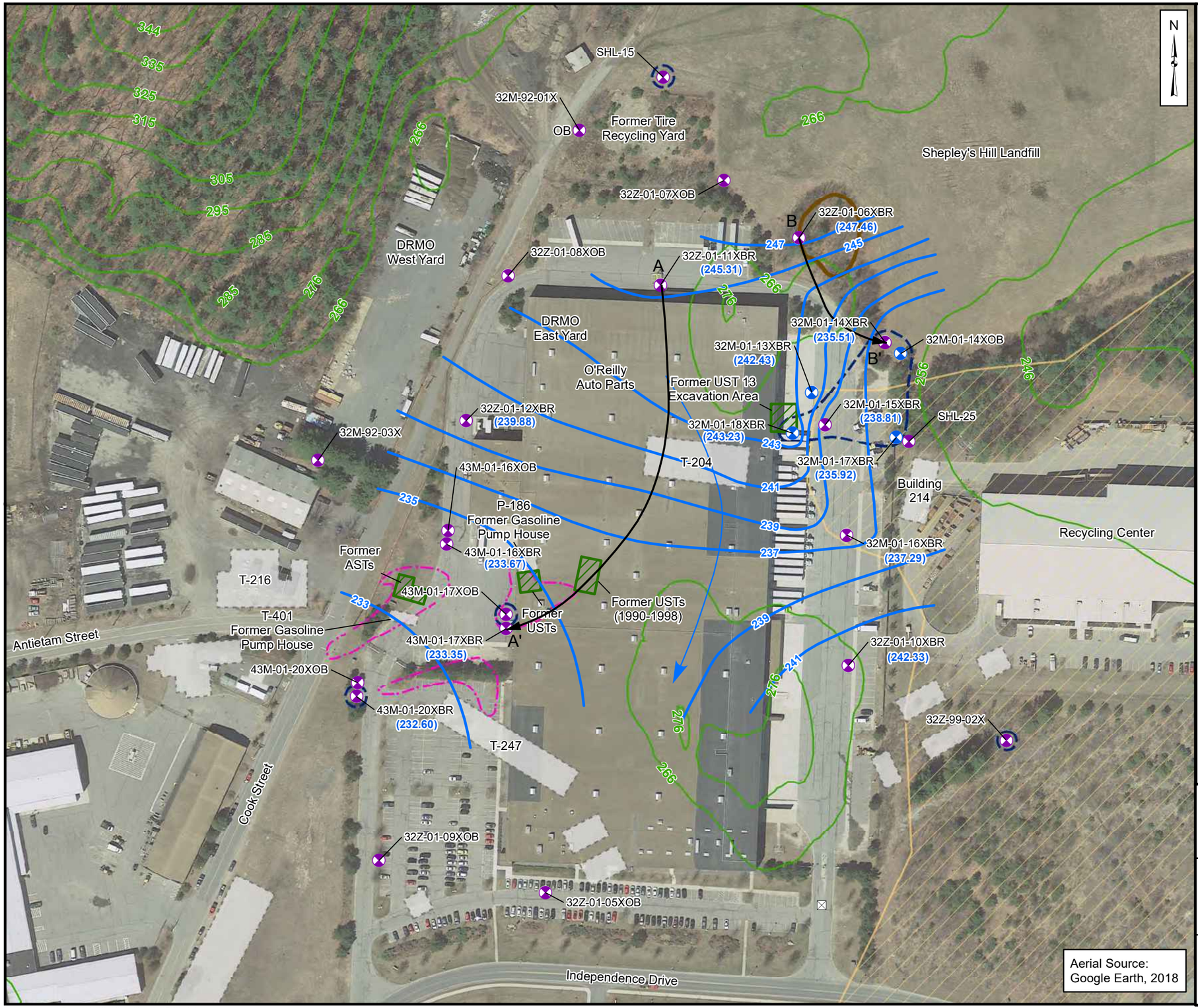
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Groundwater Elevation Contour Map
Overburden Wells, AOC 32 and AOC 43A
May 2020

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Figure
14

File: Figure 14 - AOC32-43A_GWC-0520 OB.mxd



Legend

- LTM Sample Well
- LTM Well - Periodic Gauge Only
- Monitoring Well - Paved Over
- Groundwater Contour (ft NAVD88) (Interval = 2 ft)
- Groundwater Flow Direction
- A——A' Groundwater Gradient Calculation Location
- MassDEP Zone II Wellhead Protection Area
- Former Storage Tank(s)
- Former Building
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)
- TPH Soil Contamination
- Remaining Bedrock Outcrop
- Topographic Contour (ft AMSL)
- (242.33) Groundwater Elevation (ft NAVD88)

ft AMSL = feet above mean sea level
AST = aboveground storage tank
DRMO = Defense Reutilization and Marketing Office
LTM = long-term monitoring
MassDEP = Massachusetts Department of Environmental Protection
NAVD88 = North American Vertical Datum of 1988
TPH = total petroleum hydrocarbons
UST = underground storage tank

0 200 400
Feet

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Former Fort Devens Army Installation
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Groundwater Elevation Contour Map
Bedrock Wells, AOC 32 and AOC 43A
May 2020

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Figure
15

File: Figure 15 - AOC32-43A_GWC-0520 BR.mxd

Notes:

Monitoring Criteria	
VPH	**Result (µg/L)**
C9-C10 Aromatics	200
Ethylbenzene	700
VOCs	**Result (µg/L)**
Chlorobenzene	100

Cleanup Goal	
VOCs	**Result (µg/L)**
1,2-Dichlorobenzene	600
1,3-Dichlorobenzene	100
1,4-Dichlorobenzene	5
Metals	**Result (µg/L)**
Arsenic (Total)	10
Manganese (Total)	3,500

1. Bold concentrations indicate exceedances of the Groundwater Cleanup Goal.

AST = aboveground storage tank
DRMO = Defense Reutilization and Marketing Office
ft AMSL = feet above mean sea level
J = estimated value
LTM = long-term monitoring
MassDEP = Massachusetts Department of Environmental Protection
TPH = total petroleum hydrocarbons
U = non-detect
µg/L = micrograms per liter
UST = underground storage tank
VOCs = volatile organic compounds
VPH = volatile petroleum hydrocarbon

32M-01-13XBR	5/14/2020 Result (µg/L)
Arsenic (Total)	< 3.0
Manganese (Total)	5.50 J
1,2-Dichlorobenzene	1.20 J
1,3-Dichlorobenzene	< 1.0
1,4-Dichlorobenzene	< 1.0
Chlorobenzene	< 0.5
Ethylbenzene	< 75
C9-C10 Aromatics	< 3.8

32M-01-14XOB	5/14/2020 Result (µg/L)
Arsenic (Total)	**31**
Manganese (Total)	1,900
1,2-Dichlorobenzene	< 1.0
1,3-Dichlorobenzene	< 1.0
1,4-Dichlorobenzene	< 1.0
Chlorobenzene	< 0.5
Ethylbenzene	< 75
C9-C10 Aromatics	< 3.8

32M-01-18XBR	5/14/2020 Result (µg/L)
Arsenic (Total)	8.80
Manganese (Total)	**25,000**
1,2-Dichlorobenzene	**1,500 J**
1,3-Dichlorobenzene	**250 J**
1,4-Dichlorobenzene	**170 J**
Chlorobenzene	970 J
Ethylbenzene	**800 J**
C9-C10 Aromatics	**1,000 J**

32M-01-17XBR	5/14/2020 Result (µg/L)
Arsenic (Total)	< 3.0
Manganese (Total)	4.60 J
1,2-Dichlorobenzene	< 1.0
1,3-Dichlorobenzene	< 1.0
1,4-Dichlorobenzene	< 1.0
Chlorobenzene	< 0.5
Ethylbenzene	< 75
C9-C10 Aromatics	< 3.8

SHL-15
32M-92-01X
Former Tire Recycling Yard
32Z-01-07XOB
32Z-01-06XBR
DRMO West Yard
32Z-01-08XOB
32Z-01-11XBR
DRMO East Yard
O'Reilly Auto Parts
Former UST 13 Excavation Area
32M-01-14XBR
32M-01-14XOB
32M-01-13XBR
32M-01-15XBR
32M-01-17XBR
SHL-25
32Z-01-12XBR
32M-92-03X
T-204
32M-01-18XBR
Building 214
32M-01-16XBR
Recycling Center
43M-01-16XOB
43M-01-16XBR
P-186 Former Gasoline Pump House
Former ASTs
T-216
Former USTs (1990-1998)
T-401 Former Gasoline Pump House
Former USTs
43M-01-17XBR
43M-01-17XOB
Antietam Street
32Z-01-10XBR
43M-01-20XOB
43M-01-20XBR
32Z-99-02X
T-247
Cook Street
32Z-01-09XOB
32Z-01-05XOB
Independence Drive
Aerial Source: Google Earth, 2018

N

Legend

- LTM Sample Well
- LTM Well - Periodic Gauge Only
- MassDEP Zone II Wellhead Protection Area
- Former Storage Tank(s)
- Former Building
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)
- TPH Soil Contamination
- Remaining Bedrock Outcrop
- Topographic Contour (ft AMSL)

0 200 400
Feet

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Devens, Massachusetts

VOCs, VPH, and Metals Concentrations in Groundwater, AOC 32/43A
May 2020

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Figure 16

File: Figure 16 - AOC32-43A GW Results - May2020.mxd



Legend

- Gas Vent
- Monitoring Well - Destroyed
- LTM Sample Well
- LTM Well - Gauge Only
- Landfill Gas Monitoring Well
- Topographic Contour (ft AMSL)
- MassDEP Zone II Wellhead Protection Area

ft AMSL = feet above mean sea level
LTM = long-term monitoring
MassDEP = Massachusetts Department of Environmental Protection

Note: Monitoring wells LFM-99-01B, LFM-99-02B, LFM-99-03B, and LFM-99-05B are screened in bedrock.

0 200 400
Feet

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Former Fort Devens Army Installation
Devens, Massachusetts

Site Layout
Devens Consolidated Landfill

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Figure
17

File: Figure 17 - DCL_SITE.mxd



Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Gas Vent
- Monitoring Well - Destroyed
- Landfill Gas Monitoring Well
- Groundwater Elevation Contour (ft NAVD88) (Contour Interval = 5 ft)
- Groundwater Flow Direction
- A——A' Groundwater Gradient Calculation Location
- Topographic Contour (ft AMSL)
- MassDEP Zone II Wellhead Protection Area
- (298.89) Groundwater Elevation (ft NAVD88)

ft AMSL = feet above mean sea level
LTM = long-term monitoring
NAVD88 = North American Vertical Datum of 1988

Note: Monitoring wells LFM-99-01B, LFM-99-02B, LFM-99-03B, and LFM-99-05B are screened in bedrock.

0 200 400
Feet

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Former Fort Devens Army Installation
Devens, Massachusetts

Groundwater Elevation Contour Map
Devens Consolidated Landfill
May 2020

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Figure
18

File: Figure 18 - DCL GWC0520.mxd



Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Gas Vent
- Monitoring Well - Destroyed
- Landfill Gas Monitoring Well
- Groundwater Elevation Contour (ft NAVD88) (Contour Interval = 5 ft)
- Groundwater Flow Direction
- A——A' Groundwater Gradient Calculation Location
- Topographic Contour (ft AMSL)
- MassDEP Zone II Wellhead Protection Area
- (292.63) Groundwater Elevation (ft NAVD88)

ft AMSL = feet above mean sea level
LTM = long-term monitoring
NAVD88 = North American Vertical Datum of 1988

Note: Monitoring wells LFM-99-01B, LFM-99-02B, LFM-99-03B, and LFM-99-05B are screened in bedrock.

0 200 400
Feet

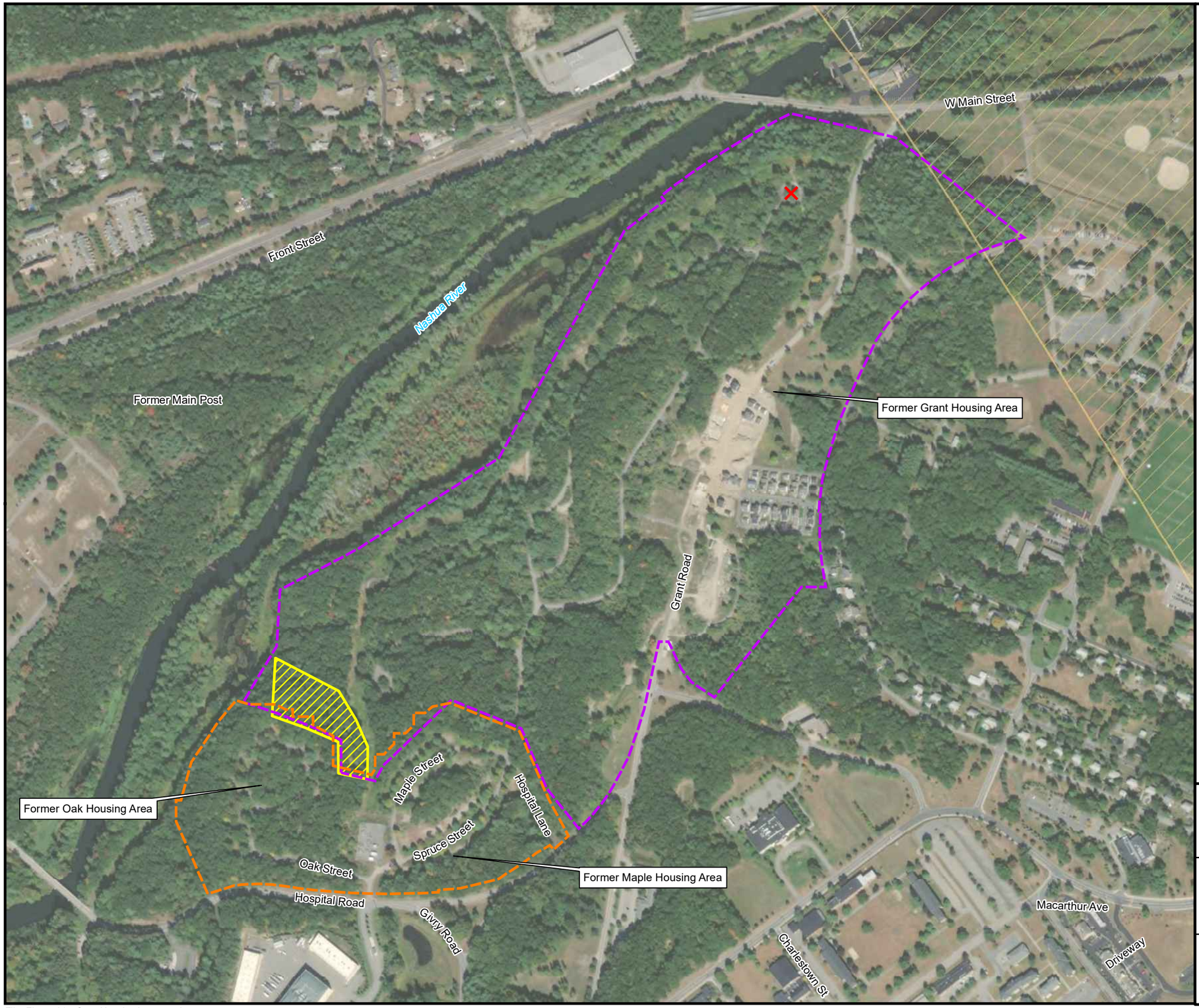
2020 Main Post Annual Report
Former Fort Devens Army Installation
Devens, Massachusetts

Groundwater Elevation Contour Map
Devens Consolidated Landfill
October 2020

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Figure 19

File: Figure 19 - DCL GWC1020.mxd



Legend

- Former Grant Housing Area
- Former Maple Housing Area
- 37-mm Impact Area
- Approximate Former Firing Location
- MassDEP Zone II Wellhead Protection Area

0 500 1,000
Feet

2020 Main Post Annual Report
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Site Location
Grant Housing Area / Oak and Maple Housing Areas / 37-mm Impact Area

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Figure
20

File: Figure 20 - GrantHousingAreas.mxd

Tables

Table 1
Groundwater Elevations Spring 2020 LTM Event
2020 Annual Operations, Maintenance, and Monitoring Report
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Site Name	Well Identification[1]	Date of Gauging	DTW (ft below MPE)	MPE (ft NAVD 88)	Groundwater Elevation (ft NAVD 88)
DCL	LFM-03-07	5/14/2020	16.88	315.14	298.26
	LFM-99-01B	5/13/2020	24.75	350.67	325.92
	LFM-99-02B	5/13/2020	15.88	353.83	337.95
	LFM-99-03B	5/13/2020	39.18	342.08	302.90
	LFM-99-05A	5/13/2020	20.65	316.58	295.93
	LFM-99-05B	5/13/2020	17.69	316.58	298.89
	LFM-99-06ARP	5/13/2020	14.52	337.84	323.32
AOC 57	57M-03-01X	5/13/2020	13.88	235.73	221.85
	57M-03-02X	5/13/2020	4.80	224.84	220.04
	57M-03-03X	5/13/2020	0.75	220.00	219.25
	57M-03-04X	5/13/2020	2.14	221.39	219.25
	57M-03-05X	5/13/2020	2.52	221.88	219.36
	57M-03-06X	5/13/2020	2.39	221.87	219.48
	57M-95-03X	5/13/2020	10.29	232.79	222.50
	57M-95-05X	5/13/2020	14.16	235.15	220.99
	57M-95-06X	5/13/2020	12.25	234.39	222.14
	57M-95-07X	5/13/2020	2.41	222.36	219.95
	57M-96-10X	5/13/2020	6.59	228.75	222.16
	57M-96-11X	5/13/2020	13.64	232.79	219.15
	57M-96-12X	5/13/2020	4.55	225.80	221.25
	57M-96-13X	5/13/2020	4.34	225.58	221.24
	57P-98-03X	5/13/2020	2.25	220.39	218.14
	57P-98-04X	5/13/2020	4.05	221.75	217.70
	57WP-05-01	5/13/2020	1.67	NS	NS
	57WP-06-02	5/13/2020	0.81	220.29	219.48
	57WP-06-03	5/13/2020	0.57	220.51	219.94
AOC 32/43A	32M-01-13XBR	5/14/2020	15.45	257.88	242.43
	32M-01-14XBR	5/14/2020	20.55	256.06	235.51
	32M-01-14XOB	5/14/2020	22.89	256.56	233.67
	32M-01-15XBR	5/14/2020	18.89	257.70	238.81
	32M-01-16XBR	5/14/2020	20.21	257.50	237.29
	32M-01-17XBR	5/14/2020	23.19	259.11	235.92
	32M-01-18XBR	5/14/2020	15.09	258.32	243.23
	32M-92-01X	5/14/2020	15.85	260.17	244.32
	32M-92-03X	5/14/2020	26.16	260.02	233.86
	32Z-01-05XOB	5/14/2020	27.82	260.60	232.78
	32Z-01-06XBR	5/14/2020	14.39	261.85	247.46
	32Z-01-07XOB	5/14/2020	13.65	259.48	245.83
	32Z-01-08XOB	5/14/2020	16.58	260.49	243.91
	32Z-01-09XOB	5/14/2020	24.82	257.37	232.55
	32Z-01-10XBR	5/14/2020	15.08	257.41	242.33
	32Z-01-11XBR	5/14/2020	16.19	261.50	245.31
	32Z-01-12XBR	5/14/2020	17.97	257.85	239.88
	32Z-99-02X	5/14/2020	22.17	259.71	237.54
	43M-01-16XBR	5/14/2020	23.17	256.84	233.67
	43M-01-16XOB	5/14/2020	23.37	256.88	233.51
	43M-01-17XBR	5/14/2020	24.94	258.29	233.35
	43M-01-17XOB	5/14/2020	24.94	258.08	233.14
	43M-01-20XBR	5/14/2020	24.70	257.30	232.60
	43M-01-20XOB	5/14/2020	24.89	257.40	232.51

Table 1
Groundwater Elevations Spring 2020 LTM Event
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Site Name	Well Identification[1]	Date of Gauging	DTW (ft below MPE)	MPE (ft NAVD 88)	Groundwater Elevation (ft NAVD 88)
AOC 32/43A (cont.)	SHL-15	5/14/2020	16.32	259.92	243.60
	SHL-25	5/14/2020	24.62	258.01	233.39

Notes:

[1] The OB and BR designations associated with select well identifications denote wells screened in overburden and bedrock, respectively.

AOC = Area of Contamination

DCL = Devens Consolidation Landfill

DTW = depth to water

ft = feet

LTM = long-term monitoring

MPE = measuring point elevation

NAVD 88 = North American Vertical Datum of 1988

NS = not surveyed

Table 2
Groundwater Elevations Fall 2020 LTM Event
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

Site Name	Well Identification	Date of Gauging	DTW (ft below MPE)	MPE (ft NAVD 88)	Groundwater Elevation (ft NAVD 88)
AOC 43G	AAFES-2	10/27/2020	25.10	301.72	276.62
	AAFES-5	10/27/2020	23.30	299.80	276.50
	AAFES-6R	10/27/2020	21.80	298.74	276.94
	AAFES-7	10/27/2020	12.65	258.80	246.15
	XGM-93-02X	10/27/2020	30.70	309.01	278.31
	XGM-94-04X	10/27/2020	21.70	300.69	278.99
	XGM-94-06X	10/27/2020	24.99	284.07	259.08
	XGM-94-07X	10/27/2020	22.45	294.82	272.37
	XGM-94-08X	10/27/2020	27.44	298.98	271.54
	XGM-94-10X	10/27/2020	26.57	301.96	275.39
	XGM-97-12X	10/27/2020	27.90	308.70	280.80
DCL	LFM-03-07	10/23/2020	Dry	315.14	Dry
	LFM-99-01B	10/23/2020	28.56	350.67	322.11
	LFM-99-02B	10/23/2020	21.59	353.83	332.24
	LFM-99-03B	10/23/2020	44.50	342.08	297.58
	LFM-99-05A	10/23/2020	26.05	316.58	290.53
	LFM-99-05B	10/23/2020	23.95	316.58	292.63
	LFM-99-06ARP	10/23/2020	19.11	337.84	318.73
AOC 69W	69W-94-12	10/22/2020	9.48	228.14	218.66
	69W-94-13	10/22/2020	8.46	226.99	218.53
	69W-94-14	10/22/2020	9.39	227.22	217.83
	69WP-08-01	10/22/2020	5.55	220.70	215.15
	69WP-13-01	10/22/2020	3.96	220.70	216.74
	Willow Brook PZ	10/23/2020	3.09	218.17	215.08
	ZWM-01-25X	10/22/2020	7.34	224.71	217.37
	ZWM-01-26X	10/22/2020	8.79	226.81	218.02
	ZWM-95-15X	10/22/2020	7.38	225.01	217.63
	ZWM-95-16X	10/22/2020	7.80	227.58	219.78
	ZWM-95-17X	10/22/2020	15.90	237.83	221.93
	ZWM-95-18X	10/22/2020	5.50	222.15	216.65
	ZWM-99-22X	10/22/2020	7.69	226.72	219.03
	ZWM-99-23X	10/22/2020	7.26	225.08	217.82
	ZWM-99-24X	10/22/2020	7.67	225.85	218.18
	ZWP-95-01X	10/22/2020	7.83	226.04	218.21
	ZWP-95-02X	10/22/2020	6.15	222.83	216.68

Notes:
-- = not measured
AOC = Area of Contamination
DCL = Devens Consolidation Landfill
DTW = depth to water
ft = feet
LTM = long-term monitoring
MPE = measuring point elevation
NAVD 88 = North American Vertical Datum of 1988

Table 3
Monthly Precipitation Data
2020 Annual Operations, Maintenance, and Monitoring Report
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Devens, Massachusetts

Month	Year																	Average
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
January	0.75	3.46	4.58	2.72	2.38	2.49	3.31	3.66	2.18	1.38	2.18	2.73	1.48	3.00	2.19	3.40	1.68	**2.56**
February	1.32	2.17	2.28	1.21	8.85	2.51	6.05	4.11	1.12	2.91	3.16	0.55	3.36	2.34	3.07	3.00	3.05	**3.00**
March	2.97	4.08	0.53	3.97	5.28	2.40	10.61	4.08	1.25	2.31	4.16	1.03	3.12	3.86	2.88	1.95	3.34	**3.40**
April	7.67	5.47	2.21	7.09	3.61	4.00	1.43	5.05	2.87	1.62	3.25	0.33	1.89	4.85	5.25	6.72	5.40	**4.04**
May	3.43	4.25	7.32	4.37	1.99	3.97	3.37	3.81	3.13	5.38	3.29	0.10	2.04	6.21	1.61	3.12	1.85	**3.48**
June	1.67	3.87	9.31	1.56	4.02	6.41	3.53	5.69	4.03	8.53	1.76	2.76	1.04	3.97	4.71	5.56	1.93	**4.14**
July	4.72	1.67	1.71	6.25	6.35	9.61	4.01	2.27	1.46	3.46	4.10	1.73	1.92	3.37	3.49	3.64	2.94	**3.69**
August	2.77	2.56	4.38	1.40	4.66	2.64	3.58	10.99	4.92	2.09	2.25	1.17	2.55	1.83	10.10	4.00	1.15	**3.71**
September	7.35	1.67	2.87	2.25	8.05	1.28	2.48	6.94	3.06	1.64	1.07	3.23	0.05	4.54	7.79	0.48	1.23	**3.29**
October	1.91	13.46	6.10	3.35	1.81	3.99	6.17	7.12	5.12	1.28	5.22	3.60	4.58	9.12	4.12	6.01	4.18	**5.13**
November	3.42	4.40	6.38	2.67	3.66	3.43	3.92	3.94	0.47	2.66	3.60	1.66	3.27	1.22	8.81	0.62	4.67	**3.46**
December	3.89	3.79	1.77	3.67	3.78	3.69	4.08	4.84	3.39	3.46	4.44	2.10	3.40	2.50	3.61	0.28	5.15	**3.40**
TOTAL	**41.87**	**50.85**	**49.44**	**40.51**	**54.44**	**46.42**	**52.54**	**62.50**	**33.00**	**36.72**	**38.48**	**20.99**	**28.70**	**46.81**	**57.63**	**38.78**	**36.57**	**43.31**

Notes:
Monthly data retrieved from the National Oceanic and Atmospheric Administration (NOAA) data inventory (NOWData - NOAA Online Weather Data).
Values given in total inches of precipitation per month
Source Location: Fitchburg Municipal Airport, Massachusetts Weather Station

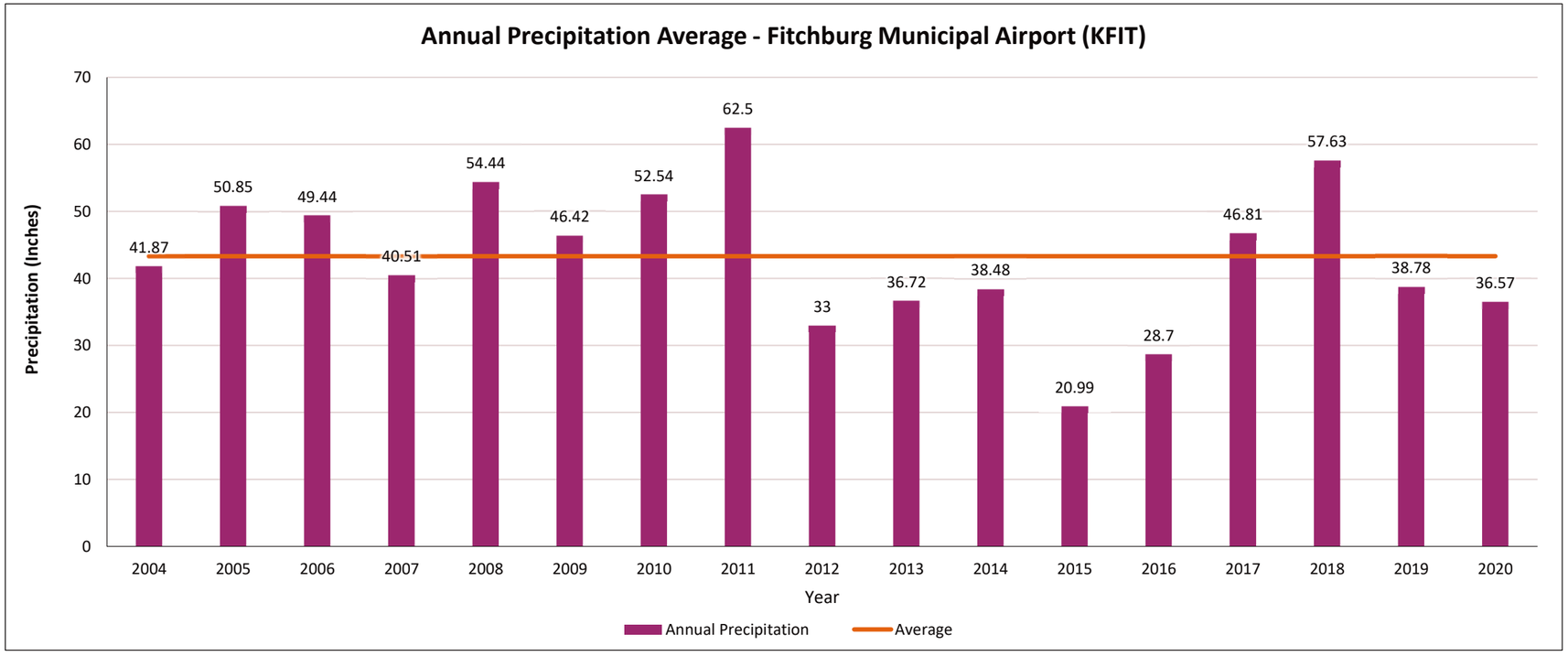


Table 4
Analytical Methods, Containers, Holding Times, and Preservatives
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
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Site/Events	Parameter	Analytical Method[1]	Target Analytes	Sample Container[2]	Preservative	Holding Time
AOC 57 (Spring)	Dissolved Metals*	SW6010C/6020A	As, Fe, Mn	1 x 250-ml Polyethylene	HNO_3 to pH < 2; 4°± 2°C	180 Days
	Total Metals	SW6010C/6020A	As, Fe, Mn	1 x 250-ml Polyethylene	HNO_3 to pH < 2; 4°± 2°C	180 Days
AOC 32/43A (Spring)	VOCs	SW8260B	TAL	3 x 40-ml vials with teflon septa screw caps; no headspace	HCl to pH < 2; 4°± 2°C	14 Days
	VPH	MADEP-VPH-04-1.1	VPH/BTEX	3 x 40-ml vials with teflon septa screw caps; no headspace	HCl to pH < 2; 4°± 2°C	14 Days
	Total Metals	SW6010C/6020A	As, Fe, Mn	1 x 250-ml Polyethylene	HNO_3 to pH < 2; 4°± 2°C	180 Days
AOC 69W (Fall)	EPH	MADEP-EPH-04-1.1	EPH	2 x 1-Liter Glass Amber with Teflon- lined lid	HCl to pH < 2; 4°± 2°C	7 Days (extraction) 40 Days (analyses)
	Dissolved Metals*	SW6010C/6020A	As, Fe, Mn	1 x 250-ml Polyethylene	HNO_3 to pH < 2; 4°± 2°C	180 Days
AOC 43G (Fall)	VPH	MADEP-VPH-04-1.1	VPH/BTEX	3 x 40-ml vials with teflon septa screw caps; no headspace	HCl to pH < 2; 4°± 2°C	14 Days
	Total Metals	SW6010C/6020A	As, Fe, Mn	1 x 250-ml Polyethylene	HNO_3 to pH < 2; 4°± 2°C	180 Days
	Alkalinity	SM2320B	None	1 x 250-ml Polyethylene	Store at 4°± 2°C	14 Days
DCL (GW) (Spring/Fall)	VPH	MADEP-VPH-04-1.1	VPH/BTEX	3 x 40-ml vials with teflon septa screw caps; no headspace	HCl to pH < 2; 4°± 2°C	14 Days
	EPH	MADEP-EPH-04-1.1	EPH	2 x 1-Liter Glass Amber with Teflon- lined lid	HCl to pH < 2; 4°± 2°C	7 Days (extraction) 40 Days (analyses)
	Pesticides	SW8081A	TAL	2 x 1-Liter Glass Amber with Teflon- lined lid	Store at 4°± 2°C	7 Days (extraction) 40 Days (analyses)
	Select Metals (Total)	SW6010C/6020A	Select Metals for DCL Groundwater: As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Se, Ag	1 x 250-ml Polyethylene	HNO_3 to pH < 2; 4°± 2°C	180 Days
	Mercury	SW7470A	Hg			28 days
	Cyanide (Total)	SW9012B	Cyanide (Total)	1 x 250-ml Polyethylene	NAOH to pH > 12; 4°± 2°C	14 Days
	TDS	SM2540C-11	None	1 x 500-ml Polyethylene	Store at 4°± 2°C	7 days
	Anions	SW9056A	Chloride, Sulfate	1 x 125-ml Polyethylene	Store at 4°± 2°C	28 days
	Alkalinity	SM2320B	None	1 x 250-ml Polyethylene	Store at 4°± 2°C	14 Days
DCL (GW) (Spring/Fall, cont.)	COD	410.4	None	1 x 250-ml Polyethylene	H_2SO_4 to pH < 2; 4°± 2°C	28 Days
	Nitrate/Nitrite as N	E353.2	Nitrate/Nitrite as N	1 x 500-ml Polyethylene	H_2SO_4 to pH < 2; 4°± 2°C	28 Days
DCL (Leachate) (Fall)	Select Metals (Total)	SW6010C/6020A	Select Metals for DCL Leachate: Al, As, Cd, Cr, Cu, Pb, Ni, Ag, Zn	1 x 250-ml Polyethylene	HNO_3 to pH < 2; 4°± 2°C	180 Days
	Mercury	SW7470A	Hg	1 x 250-ml Polyethylene	HNO_3 to pH < 2; 4°± 2°C	28 days
	Cyanide (Total)	SW9012B	Cyanide (Total)	1 x 250-ml Polyethylene	NAOH to pH > 12; 4°± 2°C	14 Days
	TSS/pH	SM2540D/SW9040C		1 x 1-liter Polyethylene	Store at 4°± 2°C	7 days
	TPH as DRO	SW8015B	DRO	2 x 1-Liter Glass Amber with Teflon- lined lid	Store at 4°± 2°C	7 Days (extraction) 40 Days (analyses)
	Total Phenolics	SW9065	Total Phenols	1 x 250-ml amber	H_2SO_4 to pH < 2; 4°± 2°C	28 days
	TTO (VOCs)	624.00	VOCs	3 x 40-ml vials with teflon septa screw caps; no headspace	HCl to pH < 2; 4°± 2°C	14 Days
	TTO (SVOCs)	625.00	SVOCs	2 x 1-liter amber	Store at 4°± 2°C	7 Days (extraction) 40 Days (analyses)
	TTO (Pesticides/ PCBs)	SW8081B/8082A	Pesticides/PCBs	2 x 1-liter amber	Store at 4°± 2°C	7 Days (extraction) 40 Days (analyses)

Notes:
* Samples submitted for dissolved metals are field filtered.
[1] "Methods for Chemical Analysis of Water and Wastes", Cincinnati, OH, March 1979, EPA 600-4-79-020.
"Test Methods for Evaluating Solid Waste, Physical and Chemical Methods", EPA SW-846, Update 8, 2014.
[2] Additional sample containers/volumes are required for matrix quality control samples.

°C = degrees Celsius
AOC = Area of Contamination
BTEX = benzene, toluene, ethylbenzene, and xylenes
COD = chemical oxygen demand
DCL = Devens Consolidation Landfill
EPA = United States Environmental Protection Agency
EPH = extractable petroleum hydrocarbon
GW = groundwater
PCB = polychlorinated biphenyl
SVOC = semi-volatile organic compound
TAL = Target Analyte List
TDS = total dissolved solids
TTO = total toxic organics
VOC = volatile organic compound
VPH = volatile petroleum hydrocarbon

Table 5
Monitoring Wells, Well Points, Piezometers, and Surface Water Locations Selected for Long-Term Monitoring
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

Location ID[1]	Location Description	Sampling Rationale	Top of Casing Elevation (ft NAVD88)	Ground Surface Elevation (ft NAVD88)	Top of Screen Interval (ft BTOR)	Bottom of Screen Interval (ft BTOR)	Top of Screen Interval (ft NAVD88)	Bottom of Screen Interval (ft NAVD88)
AOC 57 (Annual Sampling)								
57-SW-1	Area 3 – At downgradient fringe of excavation. Active seeps seem likely to be temporal.	Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	--	--	--	--	--	--
57M-03-01X	Area 2 - Upgradient location.	LTM water level only.	237.10	234.70	12.40	22.40	224.70	214.70
57M-03-02X	Area 2 - On west fringe of remedial excavation.	LTM water level only.	226.30	224.50	3.80	13.80	222.50	212.50
57M-03-03X	Area 2 - On southern fringe of remedial excavation and at wetland limit.	LTM water level only.	222.84	221.54	3.30	13.30	219.54	209.54
57M-03-04X	Area 2 – On southern fringe of remedial excavation and at wetland limit.	LTM water level only.	223.22	221.42	3.80	13.80	219.42	209.42
57M-03-05X	Area 2 - On southeastern fringe of remedial excavation and at wetland	LTM water level only.	223.53	221.63	3.90	13.90	219.63	209.63
57M-03-06X	Area 2 – On east fringe of remedial excavation.	LTM water level only.	223.76	222.26	3.50	13.50	220.26	210.26
57M-95-03X	Area 3 - Downgradient of source.	Sentry well. Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	234.17	231.68	9.49	19.49	224.68	214.68
57M-95-05X	Area 2 - West of and upgradient of excavation limit.	LTM water level only.	236.51	234.07	12.44	22.44	224.07	214.07
57M-95-06X	Area 2 – West of and cross gradient of excavation limit.	LTM water level only.	235.76	233.62	14.22	24.22	221.54	211.54
57M-95-07X	Area 2 – East of and cross gradient of excavation limit.	LTM water level only.	223.77	222.56	4.21	14.21	219.56	209.56
57M-96-10X	Area 3 – On west fringe of 1999 excavation area.	LTM water level only.	228.75	226.29	5.46	15.46	223.29	213.29
57M-96-11X	Area 3 – Downgradient well.	Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	223.58	221.38	4.20	14.20	219.38	209.38
57M-96-12X	Area 3 – West of and cross gradient of excavation limit.	LTM water level only.	227.07	224.02	5.05	15.05	222.02	212.02
57M-96-13X	Area 3 - West of and cross gradient of excavation limit.	LTM water level only.	226.93	224.26	4.67	14.67	222.26	212.26
57P-98-03X	Area 3 – Southeast of monitoring well 57M-96-11X.	LTM water level only.	221.78	--	--	--	--	--
57P-98-04X	Area 3 - Southwest of monitoring well 57M-96-11X.	LTM water level only.	222.92	--	--	--	--	--
57WP-05-01	Area 2 – Southwest of Staff Gauge 01.	LTM water level only.	--	--	0*	2*	--	--
57WP-06-02	Area 2 - Adjacent to monitoring well 57M-03-03X.	LTM water level only.	222.11	--	20	25	19.00	24.00
57WP-06-03	Area 3 – Adjacent to monitoring well 57M-96-11X.	LTM water level only.	221.89	--	15	20	206.89	201.89
AOC 69W (Annual Sampling)								
69W-94-12	East of 69W-94-13.	LTM water level only.	228.14	225.65	--	--	--	--
69W-94-13	North of paved area near source area.	Source area well. Monitor for decrease in COC concentrations.	226.99	224.50	9.09	19.09	220.50	210.50
69W-94-14	Approx. 30 feet upgradient of Willow Brook wetlands.	Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	227.22	224.73	5.49	15.49	221.73	211.73
69WP-08-01	Downgradient of ZWM-01-25X.	Sentry well point for manganese delineation.	220.70	--	10*	13*	--	--
69WP-13-01	Downgradient of 69WP-08-01.	Sentry well point for manganese delineation.	220.70	--	10*	13*	--	--
Willow Brook Piezometer	Approximately ¼ mile north of site along Willow Brook.	LTM water level only.	218.17	216.80	--	--	--	--
ZWM-01-25X	Downgradient well northeast of ZWM-95-15X.	Sentry well.	224.71	222.58	6.13	16.13	218.58	208.58
ZWM-01-26X	Northeast of ZWM-99-23.	Sentry well. Water level and quality parameters only.	226.81	224.36	6.45	16.45	220.36	210.36
ZWM-95-15X	Near former underground concrete vault.	Sentry well. Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	225.01	222.14	8.74	18.74	219.14	209.14
ZWM-95-16X	Southeast of ZWM-99-22X, near loading dock.	LTM water level only.	227.58	228.21	5.67	15.67	221.91	211.91

Table 5
Monitoring Wells, Well Points, Piezometers, and Surface Water Locations Selected for Long-Term Monitoring
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

Location ID[1]	Location Description	Sampling Rationale	Top of Casing Elevation (ft NAVD88)	Ground Surface Elevation (ft NAVD88)	Top of Screen Interval (ft BTOR)	Bottom of Screen Interval (ft BTOR)	Top of Screen Interval (ft NAVD88)	Bottom of Screen Interval (ft NAVD88)
AOC 69W (Annual Sampling, cont.)								
ZWM-95-17X	Southeast of school.	Background well. Water level and quality parameters only.	237.83	235.27	14.76	24.76	223.07	213.07
ZWM-95-18X	Approx. 120 feet downgradient of the concrete vault.	Sentry well. Monitor for off-site migration.	222.15	219.93	7.44	17.44	216.93	206.93
ZWM-99-22X	Paved source area.	Replacement of destroyed well 69W-94-10. Monitor for decrease in COC concentrations.	226.72	226.89	4.66	14.66	222.09	212.09
ZWM-99-23X	Downgradient well east of Willow Brook and northeast of 69W-94-14.	Sentry well. Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	225.08	223.40	6.63	16.63	220.40	210.40
ZWM-99-24X	Downgradient well east of Willow Brook and southwest of 69W-94-14.	Sentry well. Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	225.85	222.83	8.54	18.54	220.33	210.33
ZWP-95-01X	Along Willow Brook, west of ZWM-99-24X.	LTM water level only.	226.04	223.63	12.41	14.41	213.63	211.63
ZWP-95-02X	West side of Willow Brook, northwest of ZWM-95-15X.	LTM water level only.	222.83	219.91	12.42	14.42	210.41	208.41
AOC 43G (Annual Sampling)								
AAFES-2	East-southeast of former gasoline USTs.	Source well. Monitor intrinsic remediation.	301.72	299.90	18.30	33.30	283.70	268.70
AAFES-5	East of former gasoline USTs.	LTM water level only.	299.80	300.40	15.22	30.22	284.90	269.90
AAFES-6R	South of well XGM-93-02X.	LTM water level only.	298.74	296.77	16.97	26.97	279.80	269.80
AAFES-7	Approx. 620 feet southeast of former gasoline USTs.	Monitor potential for manganese off-site migration.	257.77	256.10	6.70	16.70	252.01	242.01
XGM-93-02X	South of former gasoline USTs.	Source well. Monitor intrinsic remediation.	309.01	309.80	28.00	39.00	281.80	271.80
XGM-94-04X	Approx. 100 feet south of former gasoline USTs.	Sentry well. Monitor potential for off-site migration.	300.69	298.30	20.50	30.50	280.20	270.20
XGM-94-06X	Supplemental SI location from KGS	Supplemental SI location from KGS.	284.07	--	17.00	27.00	267.07	257.07
XGM-94-07X	Approx. 180 feet east southeast of former gasoline USTs.	LTM water level only.	294.82	292.20	19.60	29.60	275.20	265.20
XGM-94-08X	Approx. 230 feet southeast of former gasoline USTs.	LTM water level only.	298.98	296.40	26.10	36.10	272.90	262.90
XGM-94-10X	Approx. 250 feet south of former gasoline USTs.	LTM water level only.	301.96	299.60	23.80	33.80	278.10	268.10
XGM-97-12X	At location of former gasoline USTs.	Source well. Monitor intrinsic remediation.	308.70	--	24.00	34.00	284.83	274.83
AOCs 32 and 43A (Annual Sampling)								
32M-01-13XBR	Between truck bays 33 and 34 on east side of the building.	Source area well.	257.88	258.27	13.25	23.25	244.60	234.60
32M-01-14XBR	Outside of perimeter fence northeast of 32M-01- 13XBR.	LTM water level only.	256.06	254.30	35.81	45.81	220.30	210.30
32M-01-14XOB	Outside of perimeter fence northeast of 32M-01-13XBR.	Downgradient well.	256.56	254.40	19.52	29.52	237.10	227.10
32M-01-15XBR	Southeast of 32M-01-13XBR in paved access road on east side of the building.	LTM water level only.	257.70	257.91	34.16	44.16	223.40	213.40
32M-01-16XBR	Opposite from bay 20 on east side of the building.	LTM water level only.	257.50	257.72	20.79	30.79	236.70	226.70
32M-01-17XBR	Just inside perimeter fence on east side of the building.	Downgradient well.	258.69	256.30	43.79	53.79	214.90	204.90
32M-01-18XBR	Just east of the building at truck bay 29.	Source area well.	258.32	258.63	13.74	23.74	244.60	234.60
32M-92-01X	North of the building on west edge of former Tire Recycling Yard.	LTM water level only.	260.17	257.60	16.23	26.23	243.90	233.90
32M-92-03X	West of the building and just north of former DRMO Warehouse.	LTM water level only.	260.02	258.00	25.19	35.19	235.00	225.00
32Z-01-05XOB	Western end of parking lot to the south of the building.	LTM water level only.	260.60	261.00	25.10	35.10	235.50	225.50
32Z-01-06XBR	In vegetation north of northeast corner of the building.	LTM water level only.	261.85	260.00	18.60	28.60	243.30	233.30

Table 5
Monitoring Wells, Well Points, Piezometers, and Surface Water Locations Selected for Long-Term Monitoring
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

Location ID[1]	Location Description	Sampling Rationale	Top of Casing Elevation (ft NAVD88)	Ground Surface Elevation (ft NAVD88)	Top of Screen Interval (ft BTOR)	Bottom of Screen Interval (ft BTOR)	Top of Screen Interval (ft NAVD88)	Bottom of Screen Interval (ft NAVD88)
AOCs 32 and 43A (Annual Sampling, cont.)								
32Z-01-07XOB	North of the building on southeast corner of former Tire Recycling Yard.	LTM water level only.	259.48	257.20	15.01	25.01	244.50	234.50
32Z-01-08XOB	Slightly northwest of the building.	LTM water level only.	260.49	258.00	14.53	24.53	246.00	236.00
32Z-01-09XOB	Western edge of parking lot near southwest corner of the building.	LTM water level only.	257.37	257.80	23.07	33.07	234.30	224.30
32Z-01-10XBR	In paved access road east of the building.	LTM water level only.	257.41	257.82	12.12	22.12	245.30	235.30
32Z-01-11XBR	In paved access road north of the building.	LTM water level only.	261.50	262.04	8.42	18.42	253.00	243.00
32Z-01-12XBR	In paved access road just north of truck bays on west side of the	LTM water level only.	257.85	258.28	27.78	37.78	230.10	220.10
32Z-99-02X	East of the building.	LTM water level only.	259.99	257.60	16.89	31.89	243.10	228.10
43M-01-16XBR	Opposite door B5 on west side of the building.	LTM water level only.	256.84	257.04	47.27	57.27	209.50	199.50
43M-01-16XOB	Opposite door B5 on west side of the building.	LTM water level only.	256.88	257.12	23.75	33.75	233.10	223.10
43M-01-17XBR	Near door B4 on west side of the building.	LTM water level only.	258.29	258.54	47.25	57.25	211.00	201.00
43M-01-17XOB	Near door B4 on west side of the building.	LTM water level only.	258.08	258.57	22.97	32.97	235.10	225.10
43M-01-20XBR	Western edge of paved access road on west side of the building.	LTM water level only.	257.30	257.86	67.71	77.71	189.60	179.60
43M-01-20XOB	Western edge of paved access road on west side of the building.	LTM water level only.	257.40	257.86	23.76	33.76	233.90	223.90
SHL-15	North of the building on north edge of former Tire Recycling Yard.	LTM water level only.	259.92	258.20	16.30	26.30	243.20	233.20
SHL-25	Outside of perimeter fence on east side of the building; adjacent to well 32M-01-17XBR.	LTM water level only.	258.01	256.30	25.00	35.00	233.30	223.30
DCL (Semi-Annual Sampling)								
LFM-99-01B	West edge of property between landfill and Queenstown St.	LTM water level only.	350.67	326.20	24.77	34.07	325.90	316.60
LFM-99-02B	Southwest edge of property near intersection of Queenstown St. and Patton Rd.	Monitor for changes in downgradient conditions.	353.83	353.03	16.50	26.50	337.33	327.33
LFM-99-03B	Northern edge of property.	LTM water level only.	342.08	341.28	40.58	49.88	301.50	292.20
LFM-99-05A	Near northeast toe of landfill.	Monitor for changes in downgradient conditions.	316.58	315.78	20.70	30.70	295.88	285.88
LFM-99-05B	Near northeast toe of landfill.	LTM water level only.	316.58	315.78	53.18	57.48	263.40	259.10
LFM-99-06ARP	East of landfill and south of LFM-03-07.	Monitor for changes in downgradient conditions.	337.84	337.04	20.20	35.20	317.64	302.64
LFM-03-07	East of the landfill and south of the channel to the collection pond.	Monitor for changes in downgradient conditions.	315.14	315.68	10.90	20.90	304.24	294.24

Notes:

[1] The OB and BR designations associated with the location ID denote overburden and bedrock, respectively.

* feet below ground surface
(m) = depth from metal casing

AOC = Area of Contamination
COC = chemical of concern
DRMO = Defense Reutilization and Marketing
ft = feet
ft BTOR = feet below top of riser
KGS = KOMAN Government Solutions, LLC
LTM = long-term monitoring
NA = Not available
NAVD 88 = North American Vertical Datum of 1988
SI = Site Investigation
UST = underground storage tank

Table 6
AOC-Specific Action Levels
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

Chemical of Concern	MCP GW-1[1] (µg/L)	Background[2] (µg/L)	MCL[3] (µg/L)	Cleanup Goal[4] (µg/L)	Monitoring Criteria[4] (µg/L)
AOC 57 Area 3 - Building 3713 Fuel Oil Spill Site					
Arsenic	10	10.5	10	10	NS
AOC 69W - Fort Devens Elementary School Fuel Oil Spill Site					
Arsenic	10	10.5	10	10	NS
Iron	NS	9,100	NS	NS	9,100
Manganese	NS	291	NS	NS	291
EPH[5]					
C9-C18 Aliphatic Hydrocarbons	700	NS	NS	NS	700
C19-C36 Aliphatic Hydrocarbons	14,000	NS	NS	NS	14,000
C11-C22 Aromatic Hydrocarbons	200	NS	NS	NS	200
AOC 43G - Historical Gas Station Motor Pool Fueling Station Site					
Iron	NS	9,100	NS	9,100	NS
Manganese	NS	291	NS	375[6]	NS
VOCs					
Benzene	5.0	ND	5.0	5.0	NS
Toluene	1,000	ND	1,000	1,000	NS
Ethylbenzene	700	ND	700	700	NS
Xylenes (total)	10,000	ND	10,000	10,000	NS
VPH[5]					
C5-C8 Aliphatic Hydrocarbons	300	NS	NS	NS	300
C9-C12 Aliphatic Hydrocarbons	700	NS	NS	NS	700
C9-C10 Aromatic Hydrocarbons	200	NS	NS	NS	200
AOCs 32 and 43A - Former POL Storage Area					
Arsenic	10	10.5	10	10	NS
Manganese	NS	3,500	NS	3,500	NS
VOCs					
Chlorobenzene	100	NS	100	NS	100
Vinyl Chloride	2.0	NS	2.0	2.0	NS
1,2-dichloroethene (trans)	100	NS	100	100	NS
1,2-dichloroethene (cis)	55	NS	70	55	NS
1,1,1-trichloroethane	200	NS	200	NS	5.0
Trichloroethene	5.0	NS	5.0	5.0	NS
1,2-dichlorobenzene	600	NS	600	600	NS
1,3-dichlorobenzene	100	NS	NS	600	NS
1,4-dichlorobenzene	5.0	NS	75	5.0	NS
VPH[5]					
Benzene	5.0	NS	5.0	NS	5.0
Ethylbenzene	700	NS	700	NS	700
Xylenes, total	10,000	NS	10,000	NS	10,000
Toluene	1,000	NS	1,000	NS	1,000
C5-C8 Aliphatic Hydrocarbons	300	NS	NS	NS	300
C9-C12 Aliphatic Hydrocarbons	700	NS	NS	NS	700
C9-C10 Aromatic Hydrocarbons	200	NS	NS	NS	200
EPH[5]					
C9-C18 Aliphatic Hydrocarbons	700	NS	NS	NS	700
C19-C36 Aliphatic Hydrocarbons	14,000	NS	NS	NS	5,000
C11-C22 Aromatic Hydrocarbons	200	NS	NS	NS	200
Devens Consolidation Landfill (DCL) - Landfilling Waste From SAs and AOCs					
VPH[5]					
C5-C8 Aliphatic Hydrocarbons	300	NS	NS	NS	300
C9-C12 Aliphatic Hydrocarbons	700	NS	NS	NS	700
C9-C10 Aromatic Hydrocarbons	200	NS	NS	NS	200
Methyl tert-butyl ether	70	NS	NS	NS	70
Benzene	5.0	NS	5.0	NS	5.0
Toluene	1,000	NS	1,000	NS	1,000
Ethylbenzene	700	NS	700	NS	700
Xylenes, total	10,000	NS	10,000	NS	10,000
Naphthalene	140	NS	NS	NS	140
EPH[5]					
C9-C18 Aliphatic Hydrocarbons	700	NS	NS	NS	700
C19-C36 Aliphatic Hydrocarbons	5,000	NS	NS	NS	5,000
C11-C22 Aromatic Hydrocarbons	200	NS	NS	NS	200
Target PAH Analytes					
2-Methylnaphthalene	10	NS	NS	NS	10
Acenaphthene	20	NS	NS	NS	20
Acenaphthylene	30	NS	NS	NS	30
Anthracene	60	NS	NS	NS	60
Benzo(a)anthracene	1.0	NS	NS	NS	1.0
Benzo(a)pyrene	0.20	NS	0.2	NS	0.2
Benzo(b)fluoranthene	1.0	NS	NS	NS	1.0
Benzo(g,h,i)perylene	50	NS	NS	NS	50
Benzo(k)fluoranthene	1.0	NS	NS	NS	1.0
Chrysene	2.0	NS	NS	NS	2.0
Dibenzo(a,h)anthracene	0.50	NS	NS	NS	0.50
Fluoranthene	90	NS	NS	NS	90
Fluorene	30	NS	NS	NS	30

Table 6
AOC-Specific Action Levels
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

Chemical of Concern	MCP GW-1[1] (µg/L)	Background[2] (µg/L)	MCL[3] (µg/L)	Cleanup Goal[4] (µg/L)	Monitoring Criteria[4] (µg/L)
Indeno(1,2,3-cd)pyrene	0.50	NS	NS	NS	0.50
Naphthalene	140	NS	NS	NS	140
Phenanthrene	40	NS	NS	NS	40
Pyrene	60	NS	NS	NS	60
Pesticides					
Hexachlorobenzene	1.0	NS	1.0	NS	1.0
4,4'-DDD (p,p'-DDD)	0.20	NS	NS	NS	0.20
4,4'-DDE (p,p'-DDE)	0.05	NS	NS	NS	0.05
4,4'-DDT (p,p'-DDT)	0.30	NS	NS	NS	0.3
Aldrin	0.50	NS	NS	NS	0.5
alpha-BHC	500	NS	NS	NS	500
beta-BHC	2.0	NS	NS	NS	2.0
delta-BHC	100	NS	NS	NS	100
Dieldrin	0.10	NS	NS	NS	0.10
Endosulfan	10	NS	NS	NS	10
Endrin	2.0	NS	2.0	NS	2.0
Gamma-BHC (Lindane)	0.20	NS	0.20	NS	0.20
Heptachlor	0.40	NS	0.40	NS	0.40
Heptachlor epoxide	0.20	NS	0.20	NS	0.20
Methoxychlor	40	NS	40	NS	40
Total Chlordane	2.0	NS	2.0	NS	2.0
Toxaphene	100	NS	3.0	NS	100
Metals					
Arsenic	10	NS	10	NS	10
Barium	2,000	NS	2,000	NS	2,000
Cadmium	5.0	NS	5.0	NS	5.0
Chromium	100	NS	100	NS	100
Copper	NS	NS	1,300	NS	1,300
Iron	NS	NS	NS	NS	NS
Lead	15	NS	15	NS	15
Manganese	NS	NS	NS	NS	NS
Silver	100	NS	NS	NS	100
Selenium	50	NS	50	NS	50
Mercury	2.0	NS	2.0	NS	2.0
Wet Chemistry					
Solids, Total Dissolved	NS	NS	NS	NS	500,000
Anions					
Chloride	NS	NS	NS	NS	250,000
Sulfate	NS	NS	NS	NS	250,000
Nitrate/Nitrite					
Nitrate/Nitrite (as N)	NS	NS	10,000	NS	10,000
Alkalinity, Total					
As CaCO3	NS	NS	NS	NS	NS
Cyanide					
Cyanide, total	200	NS	200	NS	200
COD					
Chemical Oxygen Demand	NS	NS	NS	NS	NS

Notes:

[1] MassDEP MCL GW-1 Standards: 310.CMR 40.0000, 2014.

[2] Background concentrations determined from selected locations in each AOC.

[3] Drinking Water Standards and Health Advisories", Spring 2012, USEPA Office of Water.

[4] Cleanup goals were established by respective AOC RODs; Monitoring Criteria are used if the ROD did not include cleanup goals for listed analytes.

[5] EPH and VPH concentrations are evaluated against MCP standards for comparison purposes, but the standards are not considered cleanup goals under the ROD.

[6] Risk based concentration.

µg/L = microgram per liter
AOC = Area of Contamination
COD = chemical oxygen demand
EPH = extractable petroleum hydrocarbon
MassDEP = Massachusetts Department of Environmental Protection
MCL = maximum contaminant level
MCP = Massachusetts Contingency Plan
ND = not detected
NS = no standard
PAH = polycyclic aromatic hydrocarbon
POL = Petroleum, Oils, and Lubricants
ROD = Record of Decision
SA = Study Area
USEPA - United States Environmental Protection Agency
VOC = volatile organic compound
VPH = volatile petroleum hydrocarbon

Table 7
DCL Leachate Discharge Permit No. 17 Limits
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

Analytical Fraction	Parameter	Discharge Limitation (mg/L)*
Metals Composite	Arsenic	0.20
	Chromium (total)	0.40
	Cadmium	0.045
	Copper	0.75
	Lead	0.20
	Nickel	0.60
	Silver	0.30
	Zinc	0.70
	Mercury	0.001
TSS	Total Suspended Solids	400
TTO	Total Toxic Organics	5.0
pH	pH (units)	5.5 - 9.5
Cyanide	Cyanide (Total)	NL
TPH	Total Petroleum Hydrocarbons	NL
Heptachlor-Pesticide		NL
Phenolics		NL

Notes:
* = Discharge Limit from Industrial Wastewater Permit No. 17
mg/L = milligrams per liter
DCL = Devens Consolidation Landfill
NL = No limit; for monitoring purposes only
PCB = polychlorinated biphenyl
TTO = Total toxic organics (sum of VOCs, SVOCs, pesticides, and PCBs)
VOC = volatile organic compound
SVOC = semi-volatile organic compound

Table 8
AOC 57 Area 3 Groundwater Analytical Results, May 2020
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
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	Units	Cleanup Goal[1]	Background[2]	57M-95-03X	57M-96-11X	DUP-1 57M-96-11X
				5/13/2020	5/13/2020	5/13/2020
Metals						
Arsenic, Total	µg/L	10	10.5	**42**	**300** J	**430** J
Arsenic, Dissolved	µg/L	NS	NS	34	110	120
Iron, Total	µg/L	NS	9,100	2,200	**42,000**	**48,000**
Iron, Dissolved	µg/L	NS	NS	1,700	30,000	29,000
Manganese, Total	µg/L	NS	291	59	**3,300**	**3,300**
Manganese, Dissolved	µg/L	NS	NS	53	3,300	3,100
Field Parameters						
Temperature	°C	NS	NS	8.91	10.9	--
ORP	mV	NS	NS	-116	63.8	--
pH	SU	NS	NS	6.93	6.14	--
Specific Conductance	µS/cm	NS	NS	170	820	--
Dissolved Oxygen	mg/L	NS	NS	5.45	0.28	--
Turbidity	NTU	NS	NS	0.2	69.7	--

Notes:

42 = Above cleanup goal and/or background/monitoring criteria

-- Not recorded for duplicate sample

[1] Cleanup Goal for arsenic is the MCL standard.

[2] From the RI. (Final Remediation Investigation Report, Area of Contamination (AOC) 57, Devens, Massachusetts, HLA, 2000b)

µg/L = microgram per liter
µS/cm = microSiemens per centimeter
AOC = Area of Contamination
°C = degrees Celsius
mg/L = milligram per liter
mV = millivolt
NS = no standard
NTU = Nephelometric Turbidity Unit
ORP = oxidation-reduction potential
SU = standard unit
J = Estimated result

Table 9
AOC 57 Area 3 Surface Water Analytical Results, May 2020
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

	Units	Surface Water Benchmark[1]	57-SW1	
			5/13/2020	Q
Metals				
Arsenic, Total	µg/L	NS	16	
Arsenic, Dissolved	µg/L	150	5.30	
Iron, Total	µg/L	NS	5,500	
Iron, Dissolved	µg/L	1,000	490	
Manganese, Total	µg/L	NS	210	
Manganese, Dissolved	µg/L	NS	150	
Field Parameters				
ORP	mV	NS	19.50	
pH	SU	NS	5.89	
Specific Conductance	µS/cm	NS	431	
Dissolved Oxygen	mg/L	NS	2.62	
Temperature	°C	NS	8.78	
Turbidity	NTU	NS	110	

Notes:
150 = Above benchmark
-- Not recorded for surface water

[1] USEPA Aquatic Life Water Quality Criterion for Surface Water benchmarks for iron and arsenic (USEPA 2018).

µg/L = microgram per liter
µS/cm = microSiemens per centimeter
AOC = Area of Contamination
°C = degrees Celsius
mg/L = milligram per liter
mV = millivolt
NS = No Standard
NTU = Nephelometric Turbidity Unit
SU = standard unit
USEPA = United States Environmental Protection Agency
Q = Qualifier

Table 10
AOC 69W Groundwater Analytical Results, October 2020
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

	Units	Cleanup Goal[1]	Monitoring Criteria[2]	69W-94-13	69W-94-14	ZWM-95-15X	ZWM-95-18X	69W-DUP1 ZWM-95-18X	ZWM-99-22X	ZWM-99-23X	ZWM-99-24X	ZWM-01-25X	69WP-08-01	69WP-13-01
				10/23/2020 Q	10/23/2020 Q	10/22/2020 Q	10/22/2020 Q	10/22/2020 Q	10/22/2020 Q	10/23/2020 Q	10/23/2020 Q	10/22/2020 Q	10/23/2020 Q	10/23/2020 Q
Metals														
Arsenic, Dissolved	µg/L	10	NS	**32**	3.00 U	7.0	3.00 U	3.00 U	**130**	5.3	3.00 U	2.90 J	3.0 U	3.00 U
Iron, Dissolved	µg/L	NS	9,100	3,300	50.0 U	5,000	50.0 U	50.0 U	**13,000**	470	120	200	5,900	**17,000** J
Manganese, Dissolved	µg/L	NS	375	**970**	19	360	14	13	**910**	110	39	**1,700**	360	240
EPH+PAHs[3]														
C_9-C_{18} Aliphatics	µg/L	NS	700	70.0 UJ	71.0 UJ	76.0 UJ	77.0 UJ	NA	71.0 UJ	74.0 UJ	74.0 UJ	82.0 UJ	NA	NA
C_{19}-C_{36} Aliphatics	µg/L	NS	14,000	70.0 UJ	71.0 U	76.0 UJ	77.0 U	NA	71.0 UJ	74.0 UJ	74.0 UJ	82.0 UJ	NA	NA
C_{11}-C_{22} Aromatics	µg/L	NS	200	50.0 J	71.0 U	76.0 UJ	77.0 U	NA	78.0 J	74.0 UJ	74.0 UJ	82.0 UJ	NA	NA
PAHs (all compounds)	µg/L			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Field Parameters														
Temperature	°Celsius	NS	NS	16.9	16	15.6	15	NA	23.3	16.7	15.1	16.5	14.5	12.4
pH	SU	NS	NS	6.6	5.87	5.89	6.1	NA	6.67	6.24	5.76	5.98	6.18	6.13
Specific Conductance	µS/cm	NS	NS	1060	740	849	845	NA	1020	685	469	818	939	726
ORP	mV	NS	NS	-17.3	286	71.3	190	NA	-33.9	51.8	205	127	-26.9	-64.5
Dissolved Oxygen	mg/L	NS	NS	0.68	3.26	0.79	5.86	NA	0.51	1.62	3.27	3.29	0.84	0.62
Turbidity	NTU	NS	NS	14.2	12.6	18.9	3.8	NA	13.5	2.1	5.11	8.5	91.5	46.7

Notes:

32 = Above cleanup goal and/or monitoring criteria

[1] Cleanup Goal for arsenic is the MCL standard.

[2] Monitoring criteria for iron and manganese are background levels from the RI (Final Remediation Investigation Report, Area of Contamination (AOC) 57, Devens, Massachusetts, HLA, 2000b).

[3] EPH MassDEP concentrations are evaluated against Massachusetts Contingency Plan standards for comparison purposes.

µg/L = microgram per liter
µS/cm = microSiemens per centimeter
AOC = Area of Contamination
MassDEP = Massachusetts Department of Environmental Protection
mg/L = milligram per liter
mV = millivolt
NA = Not analyzed
ND - non-detect
NTU = Nephelometric Turbidity Unit
NS = No Standard
ORP = oxidation-reduction potential
SU = standard unit
Q = Qualifier
J = Estimated result
U = Non-detect
UJ = Estimated non-detect because of QC outliers.

Table 11
AOC 43G Groundwater Analytical Results, October 2020
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

	Units	Cleanup Goal[1]	Monitoring Criteria[2]	AAFES-2	AAFES-7	XGM-93-02X	XGM-94-04X	XGM-94-06X	XGM-DUP1 XGM-94-06X	XGM-94-07X	XGM-94-08X	XGM-97-12X
				10/27/2020 Q	10/27/2020 Q	10/27/2020 Q	10/27/2020 Q	10/27/2020 Q	10/27/2020 Q	10/27/2020 Q	10/27/2020 Q	10/27/2020 Q
Metals												
Arsenic, Total	µg/L	NS	10	**13**	10	5.4	3 U	2.6 J	4.7	6.7	**16**	**21**
Iron, Total	µg/L	9,100	9,100	**17,000**	4,800	6,400	50 U	1,600	2,000	**12,000**	**11,000**	**18,000**
Manganese, Total	µg/L	375	291	**3,200**	**3,400**	**1,200**	13	**1,800**	**2,200**	**4,500**	**7,100**	**1,300**
VPH+BTEX												
C_5-C_8 Aliphatics[3]	µg/L	NS	300	**480**	75 U	150	75 U	75 U	75 U	75 U	75 U	110
C_9-C_{10} Aromatics[3]	µg/L	NS	200	**820**	75 U	66 J	75 U	75 U	75 U	75 U	75 U	**300**
C_9-C_{12} Aliphatics[3]	µg/L	NS	700	450 J	ND U	ND	ND	ND	ND	ND	ND	210 J
Methyl tert-butyl ether	µg/L	NS	NS	6.4	3.80 U	9.0	3.80 U	3.80 U	3.80 U	3.80 U	3.80 U	3.80 U
Benzene	µg/L	5.0	NS	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
Ethylbenzene	µg/L	700	NS	6.6	3.80 U	3.80 U	3.80 U	3.80 U	3.80 U	3.80 U	3.80 U	1.40 J
Naphthalene	µg/L	NS	NS	8.60 J	ND	ND	ND	ND	ND	ND	ND	ND
m,p -Xylene	µg/L	10,000	NS	2.50 J	7.50 U	7.50 U	7.50 U	7.50 U	7.50 U	7.50 U	7.50 U	7.50 U
o -Xylene	µg/L	10,000	NS	5.60	3.80 U	3.80 U	3.80 U	3.80 U	3.80 U	3.80 U	3.80 U	0.68 J
Toluene	µg/L	1,000	NS	2.60 J	3.80 U	3.80 U	3.80 U	3.80 U	0.360 J	3.80 U	3.80 U	3.80 U
General Chemistry												
Alkalinity, Total	mg/L	NS	NS	150	72.0	190	180	130	130	95.0	140	130
Field Parameters												
Temperature	°Celsius	NS	NS	12.6	13.2	12.9	13.2	14.2	--	14.7	13.1	12
pH	Std units	NS	NS	6.61	6.24	6.71	6.88	6.83	--	6.51	6.75	6.28
Specific Conductance	µS/cm	NS	NS	1610	1250	1250	1080	1510	--	1830	1290	1500
ORP	mV	NS	NS	10.4	181	-51.3	102	56.9	--	-0.4	109	-40.3
Dissolved Oxygen	mg/L	NS	NS	0.32	2.37	0.80	3.04	0.56	--	1.82	1.24	1.26
Turbidity	NTU	NS	NS	49.3	31.3	15	6.75	17.5	--	37.7	55.3	6.64

Notes:

13 = Above cleanup goal and/or monitoring criteria

-- = Not analyzed

1 The cleanup goal for iron is the background level. The cleanup goal for manganese is a site-specific goal established as part of the long-term monitoring plan for the site (Long-Term Monitoring Plan Former Fort Devens Army Installation, HGL, 2008). Benzene, ethylbenzene, xylenes, and toluene are not contaminants of concern but the cleanup goals are the Maximum Contaminant Levels (MCLs).

[2] The monitoring criteria for iron and manganese is the background from the RI (Final Remedial Investigation Report Area of Contamination (AOC) 43G, ABB Environmental Services, Inc., 1996). The monitoring criterion for arsenic is the MCL.

[3] The VPH carbon ranges are not contaminants of concern and are evaluated against Massachusetts Contingency Plan GW-1 standards for comparison purposes.

µg/L = microgram per liter
µS/cm = microSiemen per centimeter
AOC = Area of Contamination
BTEX = benzene, toluene, ethylbenzene, and xylenes
mg/L = milligram per liter
mV = millivolt
ND = not detected
NS = no standard
NTU = Nephelometric Turbidity Unit
ORP = oxidation-reduction potential
VPH = volatile petroleum hydrocarbon
Q = Qualifier
J = Estimated result
U = Non-detect

Table 12
AOCs 32 and AOC 43A Groundwater Analytical Results, May 2020
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

	Units	Cleanup Goal[1]	Monitoring Criteria	Spring 2020				
				32M-01-13XBR[2]	32M-01-14XOB[2]	32M-01-17XBR[2]	32M-01-18XBR[2]	32M-DUP01 32M-01-18XBR[2]
				5/14/2020 Q	5/14/2020 Q	5/14/2020 Q	5/14/2020 Q	5/14/2020 Q
Metals								
Arsenic, Total	µg/L	10	NS	3.00 U	**31**	3.00 U	8.80	8.20
Iron, Total	µg/L	NS	NS	55.0	2,700	46.0 J	490	500
Manganese, Total	µg/L	3,500	NS	5.50 J	1,900	4.60 J	**25,000**	**25,000**
VOCs								
1,1,1-Trichloroethane	µg/L	NS	5.0	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
1,1,2-Trichloroethane	µg/L	NS	5.0	0.500 UJ	0.500 UJ	0.500 UJ	0.500 UJ	0.500 UJ
1,2-Dichlorobenzene	µg/L	600	NS	1.20 J	1.00 UJ	1.00 UJ	**1,500 J**	**1,500 J**
1,3-Dichlorobenzene	µg/L	100	NS	1.00 UJ	1.00 UJ	1.00 UJ	**250 J**	**250 J**
1,4-Dichlorobenzene	µg/L	5.0	NS	1.00 UJ	1.00 UJ	1.00 UJ	**170 J**	**180 J**
cis -1,2-Dichloroethene	µg/L	55	NS	1.00 UJ	1.00 UJ	1.00 UJ	1.10 J	1.20 J
trans -1,2-Dichloroethene	µg/L	100	NS	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
Benzene	µg/L	NS	5.0	1.00 UJ	1.00 UJ	1.00 UJ	1.40 J	1.40 J
Chlorobenzene	µg/L	NS	100	0.500 UJ	0.500 UJ	0.500 UJ	**970 J**	**980 J**
Ethylbenzene	µg/L	NS	700	0.500 UJ	0.500 UJ	0.500 UJ	0.740 J	0.770 J
Tetrachloroethene	µg/L	5.0	NS	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
Toluene	µg/L	1,000	NS	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
Trichlorethene	µg/L	5.0	NS	1.00 UJ	1.00 UJ	1.00 UJ	1.10 J	1.20 J
Vinyl Chloride	µg/L	NS	2.0	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
VPH+BTEX[3]								
C_5-C_8 Aliphatics	µg/L	NS	300	75.0 U	75.0 UJ	75.0 UJ	75.0 U	75.0 U
C_9-C_{10} Aromatics	µg/L	NS	200	75.0 U	75.0 UJ	75.0 UJ	**1,000 J**	**1,000 J**
C_9-C_{12} Aliphatics	µg/L	NS	700	75.0 U	75.0 UJ	75.0 UJ	700	700
Benzene	µg/L	NS	5.0	2.00 U	2.00 UJ	2.00 UJ	1.30 J	1.20 J
Ethylbenzene	µg/L	NS	700	3.80 U	3.80 UJ	3.80 UJ	**800 J**	**810 J**
Toluene	µg/L	NS	1,000	3.80 U	3.80 UJ	3.80 UJ	3.80 U	3.80 U
m,p -Xylene[4]	µg/L	NS	NS	7.50 U	7.50 UJ	7.50 UJ	7.50 U	7.50 U
o -Xylene[4]	µg/L	NS	NS	3.80 U	3.80 UJ	3.80 UJ	3.80 U	3.80 U

Table 12
AOCs 32 and AOC 43A Groundwater Analytical Results, May 2020
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

	Units	Cleanup Goal[1]	Monitoring Criteria	Spring 2020				
				32M-01-13XBR[2]	32M-01-14XOB[2]	32M-01-17XBR[2]	32M-01-18XBR[2]	32M-DUP01 32M-01-18XBR[2]
				5/14/2020 Q	5/14/2020 Q	5/14/2020 Q	5/14/2020 Q	5/14/2020 Q
Field Parameters								
Temperature	°Celsius	NS	NS	13.0	12.4	14.4	13.7	--
pH	SU	NS	NS	6.18	6.19	7.30	6.08	--
Specific Conductance	us/cm	NS	NS	2,030	460	902	2,880	--
ORP	mV	NS	NS	139	27.7	177	129	--
Dissolved Oxygen	mg/L	NS	NS	7.74	5.40	5.19	2.54	--
Turbidity	NTU	NS	NS	3.74	13.7	0.200	3.39	--

Notes:

31 = Above cleanup goal and/or monitoring criteria

-- = not sampled

[1] The cleanup goal for arsenic and select VOCs is the MCL; the cleanup goal for manganese is the background level.

[2] The OB and BR designations associated with the well identification denote overburden and bedrock, respectively.

[3] VPH carbon range concentrations are evaluated against MassDEP standards for comparison purposes.

[4] The monitoring criteria for total xylenes is 10,000 µg/L.

µg/L = microgram per liter
µS/cm = microSiemen per centimeter
AOC = Area of Contamination
MassDEP = Massachusetts Department of Environmental Protection
MCL = maximum contaminant level
mg/L = milligram per liter
mV = millivolt
NS = No Standard
NTU = Nephelometric Turbidity Unit
SU = standard unit
VOC = volatile organic compound
VPH = volatile petroleum hydrocarbon
Q = Qualifier
J = Estimated result
U = Non-detect
UJ = Estimated non-detect because of QC outliers.

Table 13
DCL Groundwater Analytical Results, May 2020
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

	Units	Monitoring Criteria	LFM-99-02B	LFM-99-05A	LFM-DUP01 LFM-99-05A	LFM-99-06ARP	LFM-03-07
			5/15/2020	5/14/2020	5/14/2020	5/14/2020	5/14/2020
EPH+PAHs							
C_9-C_{18} Aliphatic Hydrocarbons	µg/L	700	70.0 U	81.0 U	72.0 U	70.0 U	70.0 U
C_{19}-C_{36} Aliphatic Hydrocarbons	µg/L	14,000	70.0 U	81.0 U	72.0 U	70.0 U	70.0 U
C_{11}-C_{22} Aromatic Hydrocarbons	µg/L	200	70.0 U	81.0 U	72.0 U	70.0 U	70.0 U
PAH - All Compounds	µg/L		ND U	ND U	ND U	ND U	ND
VPH+BTEX							
C_5-C_8 Aliphatics	µg/L	300	75.0 U	75.0 U	75.0 UJ	75.0 U	75.0 U
C_9-C_{12} Aliphatics	µg/L	700	75.0 U	75.0 U	75.0 UJ	75.0 U	75.0 U
C_9-C_{10} Aromatics	µg/L	200	75.0 U	75.0 U	75.0 UJ	75.0 U	75.0 U
Methyl tert-butyl ether	µg/L	70	3.80 U	3.80 U	3.80 UJ	3.80 U	3.80 U
Benzene	µg/L	5.0	2.00 U	2.00 U	2.00 UJ	2.00 U	2.00 U
Toluene	µg/L	1,000	3.80 U	3.80 U	3.80 UJ	3.80 U	3.80 U
Ethylbenzene	µg/L	700	3.80 U	3.80 U	3.80 UJ	3.80 U	3.80 U
m,p -Xylenes	µg/L	10,000	7.50 U	7.50 U	7.50 UJ	7.50 U	7.50 U
o -Xylene	µg/L	10,000	3.80 U	3.80 U	3.80 UJ	3.80 U	3.80 U
Naphthalene	µg/L	140	3.80 U	3.80 U	3.80 UJ	3.80 U	3.80 U
Pesticides (SW846 8081B)							
Pesticides - All Compounds	µg/L		ND U	ND U	ND U	ND U	ND
Metals (Select List)							
Arsenic, Dissolved	µg/L	10	3.00 U	3.00 U	3.00 U	3.00 U	3.00 U
Barium, Dissolved	µg/L	2,000	13.0	11.0	11.0	6.00 J	14.0
Cadmium, Dissolved	µg/L	5.0	3.00 U	3.00 U	3.00 U	3.00 U	3.00 U
Chromium, Dissolved	µg/L	100	4.00 U	4.00 U	4.00 U	4.00 U	4.00 U
Copper, Dissolved	µg/L	NS	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Iron, Dissolved	µg/L	NS	50.0 U	50.0 U	50.0 U	50.0 U	50.0 U
Lead, Dissolved	µg/L	15	10.0 U	4.50 J	10.0 U	10.0 U	10.0 U
Manganese, Dissolved	µg/L	NS	3.00 U	1.70 J	3.00 U	3.00 U	1.30 J
Selenium, Dissolved	µg/L	50	20.0 U	20.0 U	20.0 U	20.0 U	20.0 U
Silver, Dissolved	µg/L	100	1.50 U	1.50 U	1.50 U	1.50 U	1.50 U
Mercury	µg/L	2.0	0.200 U	0.0940 J	0.0890 J	0.0890 J	0.0960 J

Table 13
DCL Groundwater Analytical Results, May 2020
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

	Units	Monitoring Criteria	LFM-99-02B	LFM-99-05A	LFM-DUP01 LFM-99-05A	LFM-99-06ARP	LFM-03-07
			5/15/2020	5/14/2020	5/14/2020	5/14/2020	5/14/2020
General Chemistry							
Cyanide, Total	mg/L	0.20	0.00270 J	0.00500 U	0.00670 J	0.00260 J	0.00590 J
Nitrate/Nitrite (as N)	mg/L	NS	0.470	0.440	0.470	1.30	1.70
Chemical Oxygen Demand	mg/L	NS	20.0 U	20.0 U	20.0 U	20.0 U	20.0 U
Chloride	mg/L	NS	260	130	130	310	240
Sulfate	mg/L	NS	16.0	16.0	16.0	27.0	29.0
Alkalinity as CaCO3	mg/L	NS	70	92.0	92.0	91.0	93.0
TDS	mg/L	NS	500	350	320	630	490
Field Parameters							
Temperature	°Celsius	NS	11.4	12.3	--	14.1	12.0
ORP	mV	NS	320	248	--	189	129
pH	SU	NS	5.97	6.26	--	5.74	6.07
Specific Conductance	µS/cm	NS	857	450	--	1,180	969.0
Dissolved Oxygen	mg/L	NS	7.47	8.75	--	7.91	9.95
Turbidity	NTU	NS	0.420	0.200	--	3.83	3.23

Notes:
-- = not analyzed

µg/L = microgram per liter
µS/cm = microsiemens per centimeter
BTEX = benzene, toluene, ethylbenzene, and xylenes
DCL = Devens Consolidation Landfill
J = Estimated Result
MassDEP = Massachusetts Department of Environmental Protection
mg/L = milligram per liter
mV = millivolts
ND = non-detect
NS = No Standard
NTU = Nephelometric Turbidity Unit
ORP = oxidation-reduction potential
PAH = polycyclic aromatic hydrocarbon
Q = Qualifier
SU = Standard Unit
U = The target analyte was not detected at or above the laboratory reporting limit.
UJ = Estimated non-detect because of QC outliers.

Table 14
DCL Groundwater Analytical Results, October 2020
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

	Units	Monitoring Criteria	LFM-99-02B	LFM-99-05A	LFM-DUP01 (LFM-99-05A)	LFM-99-06ARP
			10/23/2020 Q	10/23/2020 Q	10/23/2020 Q	10/23/2020 Q
EPH+PAHs						
C_9-C_{18} Aliphatic Hydrocarbons	µg/L	700	72.0 UJ	83.0 UJ	81.0 UJ	71.0 UJ
C_{19}-C_{36} Aliphatic Hydrocarbons	µg/L	14,000	72.0 U	83.0 U	81.0 U	71.0 UJ
C_{11}-C_{22} Aromatic Hydrocarbons	µg/L	200	72.0 U	83.0 U	81.0 U	71.0 UJ
PAH All Compounds	µg/L		ND U	ND U	ND U	ND U
VPH+BTEX						
C_5-C_8 Aliphatics	µg/L	300	75.0 U	75.0 U	75.0 U	75.0 U
C_9-C_{12} Aliphatics	µg/L	700	75.0 U	75.0 U	75.0 U	75.0 U
C_9-C_{10} Aromatics	µg/L	200	75.0 U	75.0 U	75.0 U	75.0 U
Methyl tert-butyl ether	µg/L	70	2.00 U	2.00 U	2.00 U	2.00 U
Benzene	µg/L	5.0	3.80 U	3.80 U	3.80 U	3.80 U
Toluene	µg/L	1,000	3.80 U	3.80 U	3.80 U	3.80 U
Ethylbenzene	µg/L	700	7.50 U	7.50 U	7.50 U	7.50 U
m,p -Xylenes	µg/L	10,000	3.80 U	3.80 U	3.80 U	3.80 U
o -Xylene	µg/L	10,000	3.80 U	3.80 U	3.80 U	3.80 U
Naphthalene	µg/L	140	3.80 U	3.80 U	3.80 U	3.80 U
Pesticides (SW846 8081B)						
p,p'-DDT	µg/L	0.30	0.00330 U	0.00400 U	0.00380 U	0.00340 U
All other Pesticide compounds	µg/L		ND U	ND U	ND U	ND U
Total Metals (Select List)						
Arsenic, Total	µg/L	10	1.50 * U	1.50 U	1.50 U	1.50 U
Barium, Total	µg/L	2,000	9.30 J	21.0	18.0	4.70 J
Cadmium, Total	µg/L	5.00	1.00 U	1.00 U	1.00	1.00 U
Chromium, Total	µg/L	100	1.60 U	1.60 U	1.60	1.60 U
Copper, Total	µg/L	1,300	1.80 U	1.80 U	1.80	1.80 U
Iron, Total	µg/L	NS	17.0 U	24.0 J	28.0 J	30.0 J
Lead, Total	µg/L	15	3.90 U	3.90 U	3.90	3.90 U
Manganese, Total	µg/L	NS	1.00 U	1.00 U	1.00	1.00 U
Selenium, Total	µg/L	50.0	9.90 U	9.90 U	9.90	9.90 U
Silver, Total	µg/L	100	0.600 U	0.600 U	0.600	0.600 U
Mercury	µg/L	2.00	0.0800 U	0.0800 U	0.0800	0.0800 U

Table 14
DCL Groundwater Analytical Results, October 2020
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

	Units	Monitoring Criteria	LFM-99-02B	LFM-99-05A	LFM-DUP01 (LFM-99-05A)	LFM-99-06ARP
			10/23/2020 Q	10/23/2020 Q	10/23/2020 Q	10/23/2020 Q
General Chemistry						
Cyanide, Total	mg/L	0.20	0.00250	0.00250 U	0.0120	0.00370 J
Nitrate/Nitrite (as N)	mg/L	NS	0.380	0.640	0.650	1.50
Chemical Oxygen Demand	mg/L	NS	17.0 U	17.0 U	17.0 J	17.0 U
Chloride	mg/L	NS	310	290	280	360
Sulfate	mg/L	NS	20.0	16.0	16.0	25.0
Alkalinity as CaCO3	mg/L	NS	100	79.0	81.0	150
TDS	mg/L	NS	690	610	570	810
Water Quality Parameters						
Temperature	°Celsius	NS	14.3	13.1		14.5
ORP	mV	NS	110	174		95.2
pH	Std units	NS	6.68	5.96		6.65
Specific Conductance	µS/cm	NS	1,100	832		1,310
Dissolved Oxygen	mg/L	NS	6.26	5.99		5.38
Turbidity	NTU	NS	2.22	10.8		1.65

Notes:

* Initial concentrations of arsenic in monitoring well LFM-99-0B were anomalously high; the sample was rerun and results were below the laboratory reporting limit.

µg/L = microgram per liter
µS/cm = microsiemens per centimeter
BTEX = benzene, toluene, ethylbenzene, and xylenes
DCL = Devens Consolidation Landfill
MassDEP = Massachusetts Department of Environmental Protection
mg/L = milligram per liter
mV = millivolts
ND = non-detect
NS = no standard
NTU = Nephelometric Turbidity Unit
ORP = oxidation-reduction potential
PAH = polycyclic aromatic hydrocarbon
TDS = total dissolved solids
Q = Qualifier
J = Estimated Result
U = Target analyte was not detected at or above the lab reporting limit.
UJ = Estimated non-detect because of QC outliers.

Table 15
DCL Leachate Analytical Results, October 2020
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

MassDevelopment Industrial Wastewater Discharge Permit No. 017 (Summary)				
Analytical Fraction	Parameter	Limitations (mg/L)	Fall 2020 - Annual Sampling Event	
			Date Sampled:	10/23/2020
			Concentrations (mg/L)	
Metals composite	Arsenic	0.20	0.002	J
	Cadmium	0.045	0.005	U
	Chromium	0.40	0.01	U
	Copper	0.75	0.02	U
	Lead	0.20	0.01	U
	Nickel	0.60	0.0038	J
	Silver	0.30	0.01	U
	Zinc	0.70	0.02	U
	Mercury	0.001	0.0002	U
TTO	Total Toxic Organics	5.00	0.0000083	J
TSS	Total Suspended Solids	400	10.0	
Cyanide	Cyanide (total)	NL	0.00280	J
TPH	TPH (DRO)	NL	2.20	J
Phenols	Phenols (total)	NL	0.0200	U
pH *grab sample*	pH (units)	5.5 – 9.5	7.5	

Notes:

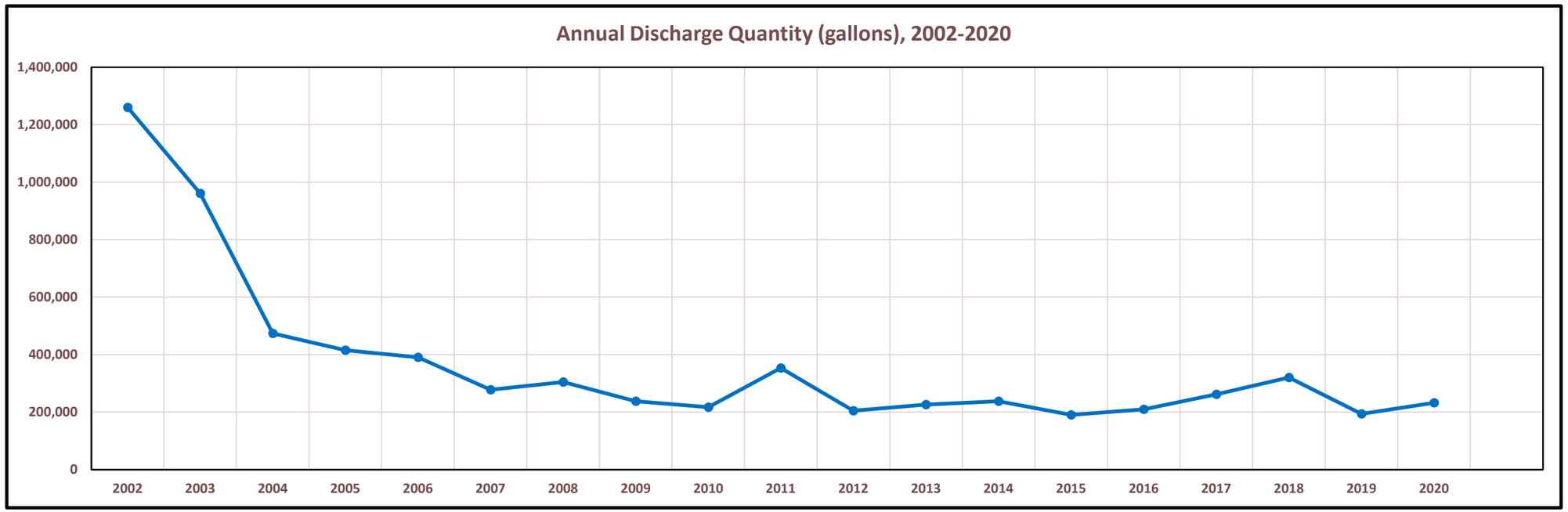
DCL = Devens Consolidation Landfill
DRO = diesel-range organic
mg/L = milligram per liter
ND = non-detect
NL = no limit
PCB = polychlorinated biphenyl
SVOCs = semi volatile organic compounds
TPH = total petroleum hydrocarbon
TSS = total suspended solid
TTO = total toxic organic (sum of VOCs, SVOCs, pesticides, and PCBs)
VOCs = volatile organic compound
U = The target analyte was not detected at or above the laboratory reporting limit.
J = Estimated result

Table 16
DCL Leachate Annual Discharge Quantities
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

Period	Discharge Quantities (Gallons)																		
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Annual Total	1,259,866	960,394	473,802	414,858	390,085	277,626	304,547	237,983	217,155	353,618	204,483	225,768	237,752	190,403	209,849	261,989	320,357	193,649	232,469
																Total Leachate Discharge Quantity (2002-2020) =		**6,966,653**	

Notes:

In 2002, startup was during the April to June period.
During 2003, the April to June period is estimated due to a broken flow meter.



Appendix A

Groundwater Field Forms

Devens

Created	2020-05-15 13:19:30 UTC by Desmond Bedard
Updated	2020-05-15 13:43:57 UTC by Brian Webb
Location	42.5301105855429, -71.6182369832616

NOTE: For general use only. State specific or regulatory requirements for calibration are not included in this form. Please refer to Site project team for specific requirements.

This app is best used to calibrate equipment with auto-cal solutions or turbidity only solutions. Use of this app for three point calibrations is not advised.

Project Details

Project Name	Devens
Project Number	30048392
Client	USACE Civil Works
Model	YSI 556 MPS
Model	YSI 556 MPS
Serial Number(s)	14F100062
Sampler	Desmond Bedard
Date	2020-05-15
Calibration Type?	Auto Calibration
Calibration Type?	Auto Calibration

Auto Calibration

Lot Number	OGD136 - conductivity (apr/21); 0GB276 - pH (feb/22)
Expiration Date	2021-04-30

09:24

Please select all parameters you wish to calibrate together and enter them together at the same time in the form.

Time	09:24
Calibrated Parameters	pH, Conductivity

Calibration Ranges are specific to the model of the water quality meter

pH

Calibration Range for pH - +/- 0.2 S.U	
pH Pre Calibration	7.05
pH Post Calibration	7.01
pH Calibration Within Range	Yes

Conductivity

Calibration Range for Conductivity - +/- 1% of the calibration standard	
Conductivity Pre Calibration	0.89
Conductivity Post Calibration	1.001
Conductivity Calibration Within Range	Yes

ORP

Calibration Range for ORP- +/- 25mV

Dissolved Oxygen

Calibration Range for DO- Atmospheric

Turbidity

Calibration Range for Turbidity - +/- 5% of the calibration standard

Signed



Signed 2020-05-15 13:24:02 UTC

Date	2020-05-15

Devens

Created	2020-05-13 13:00:15 UTC by Diane Champagne
Updated	2020-05-13 13:01:02 UTC by Brian Webb
Location	42.5745744025731, -71.6061765142452

NOTE: For general use only. State specific or regulatory requirements for calibration are not included in this form. Please refer to Site project team for specific requirements.

This app is best used to calibrate equipment with auto-cal solutions or turbidity only solutions. Use of this app for three point calibrations is not advised.

Project Details

Project Name	Devens
Project Number	30048392
Model	Ysi
Model	Ysi
Sampler	Diane champagne
Date	2020-05-13
Calibration Type?	Turbidity Calibration
Calibration Type?	Turbidity Calibration

Turbidity Calibration

09:00, 10.1, 10.1, yes

Pre Calibration	10.1
Post Calibration	10.1
Calibration Within Range	Yes
Time	09:00

Devens

Created	2020-10-22 15:50:27 UTC by Chip Pipala
Updated	2020-10-22 16:26:01 UTC by Chip Pipala
Location	42.5492354, -71.6061336

NOTE: For general use only. State specific or regulatory requirements for calibration are not included in this form. Please refer to Site project team for specific requirements.

This app is best used to calibrate equipment with auto-cal solutions or turbidity only solutions. Use of this app for three point calibrations is not advised.

Project Details

Project Name	Devens
Model	YSI ProDSS
Serial Number(s)	15E102911, 17E101954
Sampler	Eric Fowler
Date	2020-10-22
Calibration Type?	Auto Calibration

Auto Calibration

11:50

Please select all parameters you wish to calibrate together and enter them together at the same time in the form.

Time	11:50

Calibration Ranges are specific to the model of the water quality meter

pH

Calibration Range for pH - +/- 0.2 S.U	
pH Pre Calibration	3.62
pH Post Calibration	4
pH Calibration Within Range	No

Conductivity

Calibration Range for Conductivity - +/- 1% of the calibration standard	
Conductivity Pre Calibration	1.098
Conductivity Post Calibration	1.076
Conductivity Calibration Within Range	Yes

ORP

Calibration Range for ORP- +/- 25mV	
ORP Pre Calibration	235.5
ORP Post Calibration	237
ORP Calibration Within Range	Yes

Dissolved Oxygen

Calibration Range for DO- Atmospheric	
DO Pre Calibration	8.81
DO Post Calibration	8.61
DO Calibration Within Range	Yes

Turbidity

Calibration Range for Turbidity - +/- 5% of the calibration standard	
Turbidity Pre Calibration	0.2
Turbidity Post Calibration	0
Turbidity Calibration Within Range	Yes

Signed



Signed 2020-10-22 16:25:53 UTC

Date	2020-10-22

10/22

Created	2020-10-22 12:30:02 UTC by Nicholas Burch
Updated	2020-10-22 12:54:30 UTC by Nicholas Burch
Location	42.5724277931533, -71.6101860640947

NOTE: For general use only. State specific or regulatory requirements for calibration are not included in this form. Please refer to Site project team for specific requirements.

This app is best used to calibrate equipment with auto-cal solutions or turbidity only solutions. Use of this app for three point calibrations is not advised.

Project Details

Project Name	10/22
Client	US Army Corps Of Engineers - General
Model	YSI ProDSS
Serial Number(s)	160100431 17E101586
Sampler	Nick Burch
Date	2020-10-22
Calibration Type?	Single Point Calibration

Single Point Calibration

Expiration Date	2020-10-23
Calibrated Parameters	pH, Conductivity, ORP, DO, Turbidity

08:41

Calibration Range for pH - +/- 0.2 S.U	
Time	08:41
pH Pre Calibration	4.01
pH Post Calibration	4
pH Calibration Within Range	Yes

08:43

Calibration Range for pH - +/- 0.2 S.U	
Time	08:43
pH Pre Calibration	10.04
pH Post Calibration	10
pH Calibration Within Range	Yes

08:44

Calibration Range for pH - +/- 0.2 S.U	
Time	08:44
pH Pre Calibration	7.2
pH Post Calibration	7
pH Calibration Within Range	Yes

0.86

Calibration Range for Conductivity - +/- 1% of the calibration standard	
Time	08:51
Conductivity Pre Calibration	0.86

Conductivity Post Calibration	0.85
Conductivity Calibration Within Range	Yes

237

Calibration Range for ORP- +/- 25mV	
Time	08:49
ORP Pre Calibration	237
ORP Post Calibration	240
ORP Calibration Within Range	Yes

98.8

Calibration Range for DO- Atmospheric	
Time	08:30
DO Pre Calibration	98.8
DO Post Calibration	100.1
DO Calibration Within Range	Yes

Signed



Signed 2020-10-22 12:30:31 UTC

Date	2020-10-22

Devens

Created	2020-10-23 12:05:05 UTC by Chip Pipala
Updated	2020-10-23 12:35:41 UTC by Chip Pipala
Location	42.5503352, -71.6078618

NOTE: For general use only. State specific or regulatory requirements for calibration are not included in this form. Please refer to Site project team for specific requirements.

This app is best used to calibrate equipment with auto-cal solutions or turbidity only solutions. Use of this app for three point calibrations is not advised.

Project Details

Project Name	Devens
Client	US Army Corps of Engineers - New England District
Model	YSI ProDSS
Serial Number(s)	15E102911, 17E101954
Sampler	Eric Fowler
Date	2020-10-23
Calibration Type?	Auto Calibration

Auto Calibration

08:05

Please select all parameters you wish to calibrate together and enter them together at the same time in the form.

Time	08:05

Calibration Ranges are specific to the model of the water quality meter

pH

Calibration Range for pH - +/- 0.2 S.U	
pH Pre Calibration	4.29
pH Post Calibration	4

Conductivity

Calibration Range for Conductivity - +/- 1% of the calibration standard	
Conductivity Pre Calibration	0.921
Conductivity Post Calibration	0.922

ORP

Calibration Range for ORP- +/- 25mV	
ORP Pre Calibration	245
ORP Post Calibration	243

Dissolved Oxygen

Calibration Range for DO- Atmospheric	
DO Pre Calibration	9.33
DO Post Calibration	9.34

Turbidity

Calibration Range for Turbidity - +/- 5% of the calibration standard	
Turbidity Pre Calibration	0

Turbidity Post Calibration	0

Signed



Signed 2020-10-23 12:35:32 UTC

Date	2020-10-23

10/23

Created	2020-10-23 12:20:51 UTC by Nicholas Burch
Updated	2020-10-23 13:03:38 UTC by Nicholas Burch
Location	42.5494410928681, -71.6065284566536

NOTE: For general use only. State specific or regulatory requirements for calibration are not included in this form. Please refer to Site project team for specific requirements.

This app is best used to calibrate equipment with auto-cal solutions or turbidity only solutions. Use of this app for three point calibrations is not advised.

Project Details

Project Name	10/23
Client	US Army Corps Of Engineers - General
Model	YSI ProDSS
Serial Number(s)	160100431 17E101586
Sampler	Nick Burch
Date	2020-10-23
Calibration Type?	Single Point Calibration

Single Point Calibration

Calibrated Parameters	pH, Conductivity, DO, ORP

08:25

Calibration Range for pH - +/- 0.2 S.U	
Time	08:25
pH Pre Calibration	3.92
pH Post Calibration	4
pH Calibration Within Range	Yes

08:27

Calibration Range for pH - +/- 0.2 S.U	
Time	08:27
pH Pre Calibration	7.12
pH Post Calibration	7.04
pH Calibration Within Range	Yes

08:29

Calibration Range for pH - +/- 0.2 S.U	
Time	08:29
pH Pre Calibration	9.99
pH Post Calibration	10.11
pH Calibration Within Range	Yes

0.763

Calibration Range for Conductivity - +/- 1% of the calibration standard	
Time	08:35
Conductivity Pre Calibration	0.763
Conductivity Post Calibration	0.755

Conductivity Calibration Within Range	Yes

239.1

Calibration Range for ORP- +/- 25mV	
Time	08:31
ORP Pre Calibration	239.1
ORP Post Calibration	243.3
ORP Calibration Within Range	Yes

100.9

Calibration Range for DO- Atmospheric	
Time	08:22
DO Pre Calibration	100.9
DO Post Calibration	100.3
DO Calibration Within Range	Yes
Notes	Turbidity is being recorded by using Lamotte.q

Signed



Signed 2020-10-23 12:22:24 UTC

10/27

Created	2020-10-27 13:55:31 UTC by Nicholas Burch
Updated	2020-10-27 14:13:18 UTC by Nicholas Burch
Location	42.537587805336, -71.6114961797622

NOTE: For general use only. State specific or regulatory requirements for calibration are not included in this form. Please refer to Site project team for specific requirements.

This app is best used to calibrate equipment with auto-cal solutions or turbidity only solutions. Use of this app for three point calibrations is not advised.

Project Details

Project Name	10/27
Client	US Army Corps Of Engineers - General
Model	YSI ProDSS
Serial Number(s)	160100431 17E101586
Sampler	Nick Burch
Date	2020-10-27
Calibration Type?	Single Point Calibration

Single Point Calibration

Expiration Date	2020-10-28
Calibrated Parameters	pH, ORP, Conductivity, DO

10:07

Calibration Range for pH - +/- 0.2 S.U	
Time	10:07
pH Pre Calibration	4.01
pH Post Calibration	4
pH Calibration Within Range	Yes

10:09

Calibration Range for pH - +/- 0.2 S.U	
Time	10:09
pH Pre Calibration	7.1
pH Post Calibration	7
pH Calibration Within Range	Yes

10:11

Calibration Range for pH - +/- 0.2 S.U	
Time	10:11
pH Pre Calibration	9.98
pH Post Calibration	10
pH Calibration Within Range	Yes

0.793

Calibration Range for Conductivity - +/- 1% of the calibration standard	
Time	10:00
Conductivity Pre Calibration	0.793

Conductivity Post Calibration	0.791
Conductivity Calibration Within Range	Yes

249.6

Calibration Range for ORP- +/- 25mV	
Time	10:06
ORP Pre Calibration	249.6
ORP Post Calibration	248
ORP Calibration Within Range	Yes

99.8

Calibration Range for DO- Atmospheric	
Time	09:58
DO Pre Calibration	99.8
DO Post Calibration	99.6
DO Calibration Within Range	Yes
Notes	Turbidity reading coming from LaMotte

Signed



Signed 2020-10-27 13:56:19 UTC

Date	2020-10-27

Devens

Created	2020-10-27 13:43:48 UTC by Chip Pipala
Updated	2020-10-27 14:29:17 UTC by Chip Pipala
Location	42.5376031, -71.6137057

NOTE: For general use only. State specific or regulatory requirements for calibration are not included in this form. Please refer to Site project team for specific requirements.

This app is best used to calibrate equipment with auto-cal solutions or turbidity only solutions. Use of this app for three point calibrations is not advised.

Project Details

Project Name	Devens
Serial Number(s)	15E102911, 17E101954
Sampler	Connor Rosenbaum
Date	2020-10-27
Calibration Type?	Single Point Calibration

Single Point Calibration

Calibrated Parameters	pH, Conductivity, ORP, DO, Turbidity

09:49

Calibration Range for pH - +/- 0.2 S.U	
Time	09:49
pH Pre Calibration	4.7
pH Post Calibration	4
pH Calibration Within Range	Yes

09:53

Calibration Range for pH - +/- 0.2 S.U	
Time	09:53
pH Pre Calibration	7.03
pH Post Calibration	7.06
pH Calibration Within Range	Yes

10:07

Calibration Range for pH - +/- 0.2 S.U	
Time	10:07
pH Pre Calibration	10.05
pH Post Calibration	10.16
pH Calibration Within Range	Yes

0.001

Calibration Range for Conductivity - +/- 1% of the calibration standard	
Time	10:17
Conductivity Pre Calibration	0.001
Conductivity Post Calibration	0.002
Conductivity Calibration Within Range	Yes

248.8

Calibration Range for ORP- +/- 25mV	
Time	10:19
ORP Pre Calibration	248.8
ORP Post Calibration	249.6
ORP Calibration Within Range	Yes

11.28

Calibration Range for DO- Atmospheric	
Time	10:26
DO Pre Calibration	11.28
DO Post Calibration	11.23
DO Calibration Within Range	Yes

-5

Calibration Range for Turbidity - +/- 5% of the calibration standard	
Time	10:28
Turbidity Pre Calibration	-5
Turbidity Post Calibration	0
Turbidity Calibration Within Range	Yes

Signed



Signed 2020-10-27 14:29:07 UTC

Date	2020-10-27

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	32M 01-13XBR	**Date**	5/14/2020
Project Name/Location	Devens, Massachusetts			**Weather(°F)**	Sun 48*

Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	14.99	**Total Depth (ft-bmp)**	23	**Water Column(ft)**	8	**Gallons in Well**	1.3
MP Elevation		**Pump Intake (ft-bmp)**	21.5	**Purge Method**	Low-Flow	**Sample Method**	Low-Flow
Sample Time	11:15	**Volumes Purged**	~1	**Sample ID**	32m-01-13bxr-spr20	**Sampled by**	Diane Champagne
Purge Start	10:40	**Gallons Purged**	0.92	**Replicate/ Code No.**			
Purge End	11:24						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
10:45		140	15.13	0.00	6.16	2.017	0.67	7.56	13.28	145.9	No	No
10:50	5	140	15.13	0.18	6.36	2.025	3.36	8.05	13.33	133	No	No
10:55	5	140	15.9	0.36	6.2	2.029	3.37	7.6	13.3	137.6	No	No
11:00	5	140	16.11	0.54	6.19	2.035	3.33	7.7	13.15	138.1	No	No
11:05	5	140	16.32	0.72	6.19	2.031	3.14	7.72	13.28	138.3	No	No
11:10	5	140	16.73	0.92	6.18	2.033	3.74	7.74	12.98	139.2	No	No

Constituent Sampled	**Container**	**Number**	**Preservative**
VOCs			
Total Metals			
VPH+BTEX			

Comments:

Well Casing Volume Conversion

Well diameter (inches) = 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
gallons per foot 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Bay 34
Condition of Well:
Well Completion: Flush mount

Well Locked at Arrival: no
Well Locked at Departure: no
Key Number To Well: NA

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	32M-01-14XOB	**Date**	5/14/2020
Project Name/Location	Devens, Massachusetts			**Weather(°F)**	66, sun

Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	22.99	**Total Depth (ft-bmp)**	29.97	**Water Column(ft)**	7	**Gallons in Well**	1.13
MP Elevation		**Pump Intake (ft-bmp)**	25	**Purge Method**	Low-Flow	**Sample Method**	Low-Flow
Sample Time	13:40	**Volumes Purged**	1	**Sample ID**	32M-01-XOB-SPR20	**Sampled by**	Gabriel O'Connor
Purge Start	12:31	**Gallons Purged**	1.5	**Replicate/ Code No.**			
Purge End	14:10						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
12:37		100	23.2	0.00	6.58	481	68.4	6.48	11.95	86.9	Light orange	No
12:42	5	100	23.35	0.26	6.24	452	45.4	5.81	11.78	113.9	Light orange	No
12:48	6	100	23.4	0.40	6.21	453	40	5.58	12.06	124.9	Light orange	No
12:53	5	100	23.47	0.53	6.22	456	38.9	5.5	14.71	127.2	Light orange	No
12:58	5	100	23.45	0.66	6.2	458	40	5.82	11.94	123.1	Light orange	No
13:03	5	100	23.57	0.79	6.17	447	32	5.56	12.2	88.3	Light orange	No
13:07	4	100	23.61	0.92	6.19	458	31.9	5.47	12.42	68.7	Light orange	No
13:12	5	100	23.76	1.06	6.2	5.46	23.2	5.44	12.32	58.5	Light orange	No
13:17	5	100	23.85	1.06	6.2	457	22.9	5.44	12.36	55.3	Light orange	No
13:22	5	100	23.91	1.19	6.19	461	20.7	5.4	12.69	49.2	Light orange	No
13:26	4	100	23.91	1.19	6.2	461	14.5	5.39	12.6	35.2	Light orange	No
13:30	4	100	23.95	1.32	6.21	460	15	5.39	12.38	29.3	Light orange	No
13:34	4	100	23.99	0.00	6.19	460	13.7	5.4	12.4	27.7	Light orange	No

Constituent Sampled	**Container**	**Number**	**Preservative**
VOCs			
Total Metals			
VPH+BTEX			

Comments:

Well Casing Volume Conversion

Well diameter (inches) = 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
gallons per foot 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location:
Condition of Well: Good- broken lid, unable to lock
Well Completion: Stick-up
Well Locked at Arrival: no
Well Locked at Departure: no
Key Number To Well: NA

)mp = feet below measuring point
= inches

mS/cm = milliiSiemens per centimeter
NTU = Ne

mV = millivolts

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	32M-01-17XBR			**Date**	5/14/2020
Project Name/Location	Devens, Massachusetts					**Weather(°F)**	55, sun
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	23.23	**Total Depth (ft-bmp)**	53.96	**Water Column(ft)**	31	**Gallons in Well**	4.99
MP Elevation		**Pump Intake (ft-bmp)**	49	**Purge Method**	Low-Flow	**Sample Method**	Low-Flow
Sample Time	11:00	**Volumes Purged**	0.39	**Sample ID**	32M-01-17BRX-SPR20	**Sampled by**	Gabriel O'Connor
Purge Start	09:50	**Gallons Purged**	1.98	**Replicate/ Code No.**			
Purge End	11:13						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
09:55		100	23.32	0.00	8.11	676	0.02	9.26	12.99	108.7	Clear	No
10:00	5	100	23.32	0.26	7.95	520	0.02	9.1	13.32	114.9	Clear	No
10:05	5	100	23.32	0.66	7.93	521	0.02	9.13	13.25	123.1	Clear	No
10:10	5	100	23.32	0.79	7.91	523	0.02	9.03	13.36	133.7	Clear	No
10:15	5	100	23.32	0.92	7.88	527	0.02	8.93	13.42	139.4	Clear	No
10:20	5	100	23.32	1.06	7.85	530	0.02	8.79	13.3	144.2	Clear	No
10:25	5	100	23.32	1.19	7.71	573	0.02	7.91	13.19	153.8	Clear	No
10:30	5	100	23.32	1.32	7.43	711	0.2	6.22	13.34	162.5	Clear	No
10:35	5	100	23.32	1.45	7.38	766	0.2	5.72	13.62	166.1	Clear	No
10:40	5	100	23.32	1.59	7.33	837	0.2	5.36	13.85	170.9	Clear	No
10:45	5	100	23.32	1.72	7.3	880	0.2	5.2	14.18	173	Clear	No
10:50	5	100	23.32	1.85	7.31	901	0.2	5.14	14.45	174.9	Clear	No
10:55	5	100	23.32	1.98	7.3	902	0.2	5.19	14.44	176.9	Clear	No

Constituent Sampled	**Container**	**Number**	**Preservative**
VOCs			
Total Metals			
VPH+BTEX			

Comments: Cond. units uS/cm

Well Casing Volume Conversion

Well diameter (inches) = 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
gallons per foot 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: O'Reilly's parking lot, against fence
Condition of Well: Good
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
mS/cm = milliiSiemens per centimeter
NTU = Ne
mV = millivolts

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	32M-01-18XBR			**Date**	5/14/2020
Project Name/Location	Devens, Massachusetts					**Weather(°F)**	Sun 48*
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	15.2	**Total Depth (ft-bmp)**	24	**Water Column(ft)**	9	**Gallons in Well**	1.43
MP Elevation		**Pump Intake (ft-bmp)**	22.5	**Purge Method**	Low-Flow	**Sample Method**	Low-Flow
Sample Time	10:30	**Volumes Purged**	1.39	**Sample ID**	32M-01-18XBRSPR20	**Sampled by**	Diane Champagne
Purge Start	09:28	**Gallons Purged**	2	**Replicate/ Code No.**	Aoc32-dup01-spr20		
Purge End	10:25						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
09:30		140	15.75	0.00	6.5	2.414	4.48	6.06	13.47	114.8	No	No
09:35	5	140	15.75	0.18	6.45	2.409	6.11	5.87	13.59	116.3	No	No
09:41	6	140	15.98	0.40	6.39	2.414	5.81	6.43	13.76	119.9	No	No
09:45	4	140	16	0.55	6.36	2.414	5.56	5.76	13.82	122.2	No	No
09:50	5	140	16.15	0.74	6.34	2.417	5.75	5.71	13.44	123.4	No	No
09:55	5	140	16.3	0.92	6.3	2.41	4.01	5.79	13.48	125.3	No	No
10:00	5	140	16.41	1.10	6.27	2.45	3.53	4.85	13.61	126.2	No	No
10:05	5	140	16.6	1.29	6.18	2.645	3.33	3.09	13.65	128	No	No
10:10	5	140	16.81	1.47	6.16	2.76	3.55	2.68	13.56	128.4	No	No
10:15	5	140	17.01	1.66	6.12	2.883	3.42	2.61	13.71	128.5	No	No
10:20	5	140	17.04	1.84	6.1	2.881	3.33	2.63	13.67	128.7	No	No
10:25	5	140	17.07	2.02	6.08	2.882	3.39	2.54	13.69	128.8	No	No

Constituent Sampled	**Container**	**Number**	**Preservative**
VOCs			
Total Metals			
VPH+BTEX			

Comments:

Well Casing Volume Conversion

Well diameter (inches) = 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
gallons per foot 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Truck bay 29
Condition of Well: Good
Well Completion: Flush mount
Well Locked at Arrival: no
Well Locked at Departure: no
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
mS/cm = milliiSiemens per centimeter
NTU = Ne
mV = millivolts

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	AAFES-2			**Date**	10/27/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	48.0 degrees F and Cloudy. The wind is blowing N at 12.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**		**Well Casing Material**	PVC
Static Water Level (ft-bmp)	25.1	**Total Depth (ft-bmp)**	33.2	**Water Column(ft)**	8.1	**Gallons in Well**	
MP Elevation		**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Sample Time	11:45	**Volumes Purged**		**Sample ID**	AAFES-2-FAL20	**Sampled by**	Diane Champagne
Purge Start	11:00	**Gallons Purged**	1.32	**Replicate/ Code No.**		**Sample Type**	Grab

Purge End

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:10	0	0	100	25.71	--	6.84	1.604	59.2	1.11	12.7	27.8	--	--
11:16	6	6	100	25.82	0.158	6.72	1.614	54.16	0.57	12.6	18.2	--	--
11:21	5	11	100	25.93	0.29	6.67	1.61	54.14	0.43	12.9	17.4	--	--
11:25	4	15	100	26.02	0.395	6.65	1.612	57.49	0.41	12.8	15.5	--	--
11:30	5	20	100	26.11	0.527	6.63	1.612	47.81	0.33	12.7	13.2	--	--
11:35	5	25	100	26.19	0.659	6.62	1.613	49.5	0.34	12.7	11.6	--	--
11:40	5	30	100	26.19	0.791	6.61	1.614	49.32	0.32	12.6	10.4	Black	Strong

Constituent Sampled	Container	Number	Preservative
VPH+BTEX	40 mL Glass	3	HCL
Total Metals	250 mL Plastic	1	HNO3
Alkalinity	250 mL Plastic	1	None

Comments: Had to clear several saplings, weeds, vines and large loose rocks to gain access to the well. Cover is rusty and hard to open.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: In woods/weeds adjacent to old car wash

Condition of Well: Needs repairs

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 3753

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	AAFES-7			**Date**	10/27/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	50.0 degrees F and Mostly Cloudy. The wind is blowing N at 25.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2.5	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	12.65	**Total Depth (ft-bmp)**	17.3	**Water Column(ft)**	4.65	**Gallons in Well**	1.18
MP Elevation		**Pump Intake (ft-bmp)**	15.3	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Sample Time	12:55	**Volumes Purged**	0.90	**Sample ID**	AAFES-7-FAL20	**Sampled by**	Nick Burch
Purge Start	12:38	**Gallons Purged**	1.06	**Replicate/ Code No.**		**Sample Type**	Grab
Purge End	13:05						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:45	0	0	250	13.2	--	6.33	1.282	36	2.81	13.4	183.6	--	--
12:48	3	3	250	13.6	0.198	6.24	1.259	32.1	2.15	13.2	184.6	--	--
12:51	3	6	250	14.1	0.396	6.24	1.248	32.3	2.29	13.2	183.3	--	--
12:54	3	9	250	14.1	0.594	6.24	1.246	31.3	2.37	13.2	180.8	Clear	None

Constituent Sampled	Container	Number	Preservative
VPH+BTEX	NA	NA	NA
Total Metals	NA	NA	NA
Alkalinity	NA	NA	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: 43G

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	XGM-94-06X			**Date**	10/27/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	51.1 degrees F and Mostly Cloudy. The wind is blowing NW at 37.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	4	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	24.99	**Total Depth (ft-bmp)**	29.9	**Water Column(ft)**	4.91	**Gallons in Well**	3.19
MP Elevation		**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Sample Time	15:00	**Volumes Purged**	1.00	**Sample ID**	XGM-94-06X-FAL20	**Sampled by**	Diane Champagne
Purge Start	13:25	**Gallons Purged**	3.18	**Replicate/ Code No.**	AOC43-DUP1-FAL20	**Sample Type**	
Purge End	15:16						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:55	0	0	130	25.1	--	6.79	1.569	62.97	1.1	14.7	76.5	--	--
14:00	5	5	130	25.2	0.171	6.86	1.557	49.96	0.53	15	74.4	--	--
14:05	5	10	130	25.31	0.342	6.86	1.559	45.63	0.5	15.4	72.9	--	--
14:11	6	16	130	25.39	0.548	6.86	1.554	39.3	0.47	15.2	69.1	--	--
14:16	5	21	130	25.39	0.719	6.85	1.55	34.88	0.46	14.7	66.3	--	--
14:20	4	25	130	25.39	0.856	6.85	1.542	31.66	0.47	15	63.9	--	--
14:25	5	30	130	25.51	1.027	6.85	1.537	27.12	0.5	14.9	62.5	--	--
14:40	15	45	130	25.6	1.542	6.83	1.517	18.09	0.56	14.1	59.6	--	--
14:45	5	50	130	25.6	1.713	6.83	1.511	17.46	0.56	14.2	58.6	--	--
14:50	5	55	130	25.73	1.884	6.83	1.508	17.48	0.56	14.2	56.9	Orange	None

Constituent Sampled	Container	Number	Preservative
VPH+BTEX	40 mL Glass	3	HCL
Total Metals	250 mL Plastic	1	HNO3
Alkalinity	125 mL Plastic	1	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Grassy area between buildings

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 3753

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	XGM-93-02X			**Date**	10/27/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	48.0 degrees F and Cloudy. The wind is blowing NW at 20.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	5	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	30.7	**Total Depth (ft-bmp)**	37.6	**Water Column(ft)**	6.9	**Gallons in Well**	7.01
MP Elevation		**Pump Intake (ft-bmp)**	34.6	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Sample Time	10:55	**Volumes Purged**	0.29	**Sample ID**	XGM-93-02X-FAL20	**Sampled by**	Nicholas Burch
Purge Start	10:21	**Gallons Purged**	2.05	**Replicate/ Code No.**		**Sample Type**	Grab
Purge End	11:00						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:25	0	0	250	30.75	--	6.81	1.243	28.5	2.33	13	14	--	--
10:28	3	3	250	31.5	0.198	6.67	1.247	25.8	1.85	13	-34.1	--	--
10:31	3	6	250	31.25	0.396	6.66	1.246	22.6	1.55	13.1	-39.7	--	--
10:34	3	9	250	31.25	0.594	6.67	1.244	18	1.25	13	-44.1	--	--
10:37	3	12	250	31.35	0.792	6.67	1.244	17.8	1.18	13	-44.8	--	--
10:40	3	15	250	31.35	0.99	6.69	1.242	17.2	1.05	12.9	-47.1	--	--
10:43	3	18	250	31.45	1.188	6.69	1.242	16.6	0.96	12.9	-47.7	--	--
10:46	3	21	250	31.45	1.386	6.7	1.245	15.8	0.88	13	-49.2	--	--
10:49	3	24	250	31.45	1.584	6.7	1.246	15.3	0.84	13	-50	--	--
10:52	3	27	250	31.45	1.782	6.71	1.246	15	0.8	12.9	-51.3	Clear	None

Constituent Sampled	Container	Number	Preservative

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: 43G

Condition of Well: Good condition,Missing bolts

Well Completion: Flush mount

Well Locked at Arrival: no

Well Locked at Departure: no

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	XGM-94-04X			**Date**	10/27/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	48.9 degrees F and Mostly Cloudy. The wind is blowing N at 29.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	5	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	21.7	**Total Depth (ft-bmp)**	31.2	**Water Column(ft)**	9.5	**Gallons in Well**	9.65
MP Elevation		**Pump Intake (ft-bmp)**	28.2	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Sample Time	11:55	**Volumes Purged**	0.10	**Sample ID**	XGM-94-04X-FAL20	**Sampled by**	Nicholas Burch
Purge Start	11:37	**Gallons Purged**	0.92	**Replicate/ Code No.**		**Sample Type**	Grab
Purge End	12:05						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:42	0	0	250	21.8	--	7.06	1.074	11.7	4.2	13	84.5	--	--
11:45	3	3	250	21.8	0.198	6.92	1.077	7.26	3.35	13.1	94.7	--	--
11:48	3	6	250	21.8	0.396	6.89	1.08	7.74	3.2	13.3	98.5	--	--
11:51	3	9	250	21.8	0.594	6.88	1.08	6.75	3.04	13.2	102.2	Clear	None

Constituent Sampled	Container	Number	Preservative
VPH+BTEX	NA	NA	NA
Total Metals	NA	NA	NA
Alkalinity	NA	NA	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: 43G

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	XGM-94-07X			**Date**	10/27/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	51 °F, Overcast, NW winds at 5 mph.			
Measuring Pt. Description	Top of Outer Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	4	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	27.5	**Total Depth (ft-bmp)**	32	**Water Column(ft)**	4.5	**Gallons in Well**	2.92
MP Elevation		**Pump Intake (ft-bmp)**	25	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Sample Time	16:00	**Volumes Purged**	0.13	**Sample ID**	XGM-94-07X-FAL20	**Sampled by**	Connor Rosenbaum
Purge Start		**Gallons Purged**	0.39	**Replicate/ Code No.**		**Sample Type**	Grab
Purge End	15:50						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:46	0	0	250	27.5	--	6.59	1.845	37.4	1.89	15	1.7	--	--
15:50	4	4	250	27.5	0.26	6.53	1.832	36	1.91	14.7	0.8	--	--
15:52	2	6	250	27.5	0.392	6.51	1.833	37.7	1.82	14.7	-0.4	Clear	None

Constituent Sampled	Container	Number	Preservative

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	XGM-94-08X			**Date**	10/27/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	51 °F, Overcast, NW winds at 8 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	4	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	27.44	**Total Depth (ft-bmp)**	35.85	**Water Column(ft)**	8.41	**Gallons in Well**	5.47
MP Elevation		**Pump Intake (ft-bmp)**	32	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Sample Time	14:30	**Volumes Purged**	0.49	**Sample ID**	XGM-94-08X-FAL20	**Sampled by**	Connor Rosenbaum
Purge Start	13:37	**Gallons Purged**	2.7	**Replicate/ Code No.**		**Sample Type**	Grab
Purge End	14:45						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:40	0	0	250	27.5	--	6.88	1.247	24.7	2.92	12.7	84.3	--	--
13:43	3	3	250	27.51	0.198	6.76	1.248	30.5	2.62	12.8	90.5	--	--
13:53	10	13	250	27.52	0.858	6.95	1.266	38.2	0.97	13	86.9	--	--
13:57	4	17	250	27.56	1.118	6.92	1.275	38.3	0.82	13.1	87.2	--	--
14:12	15	32	250	27.52	2.108	6.89	1.287	61.1	1	13	100.4	--	--
14:15	3	35	250	27.52	2.306	6.83	1.282	60.7	1.16	13	104	--	--
14:18	3	38	250	27.52	2.504	6.77	1.285	60.5	1.22	13.1	107	--	--
14:21	3	41	250	27.55	2.702	6.75	1.289	55.3	1.24	13.1	108.5	Clear	None

Constituent Sampled	Container	Number	Preservative
VPH+BTEX	NA	NA	NA
Total Metals	NA	NA	NA
Alkalinity	NA	NA	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: AOC 43G

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	XGM-97-12X			**Date**	10/27/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	42 °F, Overcast, N winds at 5 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	4	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	27.56	**Total Depth (ft-bmp)**	33.65	**Water Column(ft)**	6.09	**Gallons in Well**	3.96
MP Elevation		**Pump Intake (ft-bmp)**	30	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Sample Time	23:55	**Volumes Purged**	0.61	**Sample ID**	XGM-97-12X-FAL20	**Sampled by**	Connor Rosenbaum
Purge Start	10:45	**Gallons Purged**	2.434	**Replicate/ Code No.**		**Sample Type**	Grab
Purge End	12:15						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:00	0	0	250	27.56	--	6.29	1.427	19.8	2.43	11.8	-33.5	--	--
11:05	5	5	250	27.6	0.33	6.22	1.487	16.3	1.72	12.8	-35.1	--	--
11:09	4	9	250	27.62	0.59	6.23	1.494	14.2	1.66	12.6	-36.3	--	--
11:12	3	12	250	27.62	0.788	6.24	1.489	14	1.63	12.4	-36.2	--	--
11:18	6	18	250	27.65	1.184	6.23	1.522	15.1	1.18	13.4	-41.3	--	--
11:22	4	22	250	27.7	1.444	6.27	1.537	11	1.36	13	-40.5	--	--
11:25	3	25	250	27.7	1.642	6.27	1.53	7.72	1.39	12.9	-40	--	--
11:28	3	28	250	27.7	1.84	6.27	1.523	6.34	1.39	12.6	-39.5	--	--
11:31	3	31	250	27.7	2.038	6.27	1.513	6.83	1.36	12.3	-39.4	--	--
11:34	3	34	250	27.7	2.236	6.27	1.506	5.85	1.33	12.2	-39.5	--	--
11:37	3	37	250	27.7	2.434	6.28	1.501	6.64	1.26	12	-40.3	Clear	None

Constituent Sampled	Container	Number	Preservative
VPH+BTEX	NA	NA	NA
Total Metals	NA	NA	NA
Alkalinity	NA	NA	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: AOC 43G

Condition of Well: Good condition,Missing bolts

Well Completion: Flush mount

Well Locked at Arrival:

Well Locked at Departure:

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	57M-95-03X	**Date**	5/13/2020
Project Name/Location	Devens, Massachusetts			**Weather(°F)**	53, sun

Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	4	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	10.29	**Total Depth (ft-bmp)**	19.65	**Water Column(ft)**	9	**Gallons in Well**	6.08
MP Elevation		**Pump Intake (ft-bmp)**	14	**Purge Method**	Low-Flow	**Sample Method**	Low-Flow
Sample Time	13:45	**Volumes Purged**	0.22	**Sample ID**	57M-95-03X	**Sampled by**	Gabriel O'Connor
Purge Start	12:55	**Gallons Purged**	1.32	**Replicate/ Code No.**			
Purge End	13:57						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
12:59		100	10.32	0.13	7.29	171	0.02	11.9	9.13	-114.1	Clear	Slight odor
13:04	5	100	10.32	0.26	7.02	170	0.02	6.44	8.97	-99.7	Clear	Slight odor
13:09	5	100	10.42	0.40	7.01	161	0.02	5.6	8.65	-109.4	Clear	Slight odor
13:14	5	100	10.42	0.53	6.98	163	0.02	5.46	8.8	-114.2	Clear	Slight odor
13:19	5	100	10.42	0.66	6.96	180	0.02	5.44	8.79	-117	Clear	Slight odor
13:24	5	100	10.43	0.79	6.97	169	0.02	5.45	8.75	-119.2	Clear	Slight odor
13:29	5	100	10.42	0.92	6.95	167	0.02	5.45	8.77	-118.4	Clear	Slight odor
13:34	5	100	10.42	1.06	6.93	170	0.2	5.45	8.91	-115.8	Clear	Slight odor

Constituent Sampled	**Container**	**Number**	**Preservative**
Total Metals			
Dissolved Metals			

Comments: Cond units uS/cm

Well Casing Volume Conversion

Well diameter (inches) = 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
gallons per foot 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location:

Condition of Well: Good

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches

mS/cm = milliiSiemens per centimeter
NTU = Ne

mV = millivolts

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	57M-96-11X	**Date**	5/13/2020
Project Name/Location	Devens, Massachusetts			**Weather(°F)**	14C, Sunny, Light Breeze

Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	3.05	**Total Depth (ft-bmp)**	14.5	**Water Column(ft)**	11	**Gallons in Well**	1.86
MP Elevation		**Pump Intake (ft-bmp)**	11	**Purge Method**	Low-Flow	**Sample Method**	Low-Flow
Sample Time	14:40	**Volumes Purged**	1.95	**Sample ID**	57M-96-11X	**Sampled by**	Desmond Bedard
Purge Start	12:50	**Gallons Purged**	3.63	**Replicate/ Code No.**	DB-051320		
Purge End	14:30						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
12:50		180	3.96	0.00	5.32	0.824	1000	0.6	9.85	175.3	Clear (no color)	None
12:55	5	180	4.22	0.23	5.99	0.811	976	0.53	9.39	150.4	Clear (no color)	None
13:00	5	180	4.32	0.46	5.49	0.82	855	0.97	9.57	124.1	Clear (no color)	None
13:05	5	170	4.35	0.68	5.61	0.8	763	0.73	9.26	114.1	Clear (no color)	None
13:10	5	180	4.35	0.91	5.62	0.805	427	1.03	9.41	110.1	Clear (no color)	None
13:15	5	135	4.13	1.08	5.77	0.811	399	0.58	9.83	98.1	Clear (no color)	None
13:20	5	135	4.05	1.25	5.96	0.807	302	0.53	9.5	89.2	Clear (no color)	None
13:25	5	135	4.05	1.42	5.93	0.797	261	0.45	9.41	89.7	Clear (no color)	None
13:30	5	135	4.05	1.59	5.95	0.797	295	0.45	9.51	86.9	Clear (no color)	None
13:35	5	135	4	1.76	6.34	0.784	276	0.54	9.39	82.7	Clear (no color)	None
13:40	5	135	4.05	1.93	6.02	0.799	220	0.42	9.71	8.8	Clear (no color)	None
13:45	5	135	4.05	2.10	6.06	0.802	165	0.42	10.01	78.7	Clear (no color)	None
13:50	5	135	4.05	2.27	6.12	0.81	111	0.41	10.43	74.4	Clear (no color)	None
13:55	5	135	4.05	2.44	6.12	0.814	70.7	0.36	10.99	71.1	Clear (no color)	None
14:00	5	135	4.05	2.61	6.13	0.833	65.8	0.35	11.33	70.7	Clear (no color)	None
14:05	5	135	4.05	2.78	6.16	0.833	65.8	0.34	11.59	63.8	Clear (no color)	None
14:10	5	135	4.05	2.95	6.16	0.82	63.5	0.33	11.04	65.2	Clear (no color)	None
14:15	5	135	4.05	3.12	6.13	0.825	64.9	0.3	11.41	63.9	Clear (no color)	None
14:20	5	135	4.05	3.29	6.17	0.816	65.9	0.29	10.97	62.9	Clear (no color)	None
14:25	5	135	4.05	3.46	6.15	0.813	69.2	0.29	10.89	59.9	Clear (no color)	None
14:30	5	135	4.05	3.63	6.14	0.82	69.7	0.28	10.9	63.8	Clear (no color)	None

Constituent Sampled	**Container**	**Number**	**Preservative**
Total Metals			
Dissolved Metals			

Comments:

Well Casing Volume Conversion

Well diameter (inches) = 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
gallons per foot 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: AOC 57 - Sub Area 3
Condition of Well: Good
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
mS/cm = milliiSiemens per centimeter
NTU = Ne
mV = millivolts

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	69W-94-13			**Date**	10/23/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	55.9 degrees F and Fog/Mist. The wind is blowing undefined at 0.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2.5	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	8.6	**Total Depth (ft-bmp)**	16.1	**Water Column(ft)**	7.5	**Gallons in Well**	1.9
MP Elevation		**Pump Intake (ft-bmp)**	14.1	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Sample Time	09:50	**Volumes Purged**	1.22	**Sample ID**	69W-94-13-FAL20	**Sampled by**	Nicholas Burch
Purge Start	09:10	**Gallons Purged**	2.31	**Replicate/ Code No.**		**Sample Type**	Grab
Purge End	10:00						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:15	0	0	250	8.6	--	6.65	1.065	17	2.27	16.7	190	--	--
09:20	5	5	250	8.6	0.33	6.61	1.072	14.9	1.16	16.8	39	--	--
09:25	5	10	250	8.6	0.66	6.61	1.065	15.3	0.9	16.8	4	--	--
09:30	5	15	250	8.7	0.99	6.61	1.062	14.3	0.81	16.9	-5.9	--	--
09:35	5	20	250	8.7	1.32	6.61	1.059	14.9	0.74	16.8	-13.8	--	--
09:40	5	25	250	8.9	1.65	6.61	1.056	14.4	0.7	16.9	-15.9	--	--
09:45	5	30	250	8.9	1.98	6.6	1.061	14.2	0.68	16.9	-17.3	Clear	None

Constituent Sampled	Container	Number	Preservative
EPH+PAHs	NA	NA	NA
Dissolved Metals	NA	NA	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: 69W

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	69W-94-14			**Date**	10/23/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	57.9 degrees F and Fog/Mist. The wind is blowing SE at 16.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2.5	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	9.7	**Total Depth (ft-bmp)**	15.1	**Water Column(ft)**	5.4	**Gallons in Well**	1.37
MP Elevation		**Pump Intake (ft-bmp)**	13.1	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Sample Time	12:25	**Volumes Purged**	1.21	**Sample ID**	69W-94-14-FAL20	**Sampled by**	Nick Burch
Purge Start	11:55	**Gallons Purged**	1.65	**Replicate/ Code No.**		**Sample Type**	Grab
Purge End	12:35						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:00	0	0	250	9.7	--	5.83	0.825	15.8	3.38	16	293.5	--	--
12:05	5	5	250	9.7	0.33	5.84	0.795	15.7	3.16	16	290.2	--	--
12:10	5	10	250	9.7	0.66	5.86	0.762	13	3.19	16	286.9	--	--
12:15	5	15	250	9.7	0.99	5.86	0.746	12	3.26	16	286.1	--	--
12:20	5	20	250	9.7	1.32	5.87	0.74	12.56	3.26	16	285.6	Clear	None

Constituent Sampled	Container	Number	Preservative
EPH+PAHs	NA	NA	NA
Dissolved Metals	NA	NA	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: 69W

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	69WP-08-01			**Date**	10/23/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	55.9 degrees F and Fog/Mist. The wind is blowing N/NE at 12.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	1	**Well Casing Material**	Stainless Steel
Static Water Level (ft-bmp)	4.6	**Total Depth (ft-bmp)**	12.4	**Water Column(ft)**	7.8	**Gallons in Well**	0.32
MP Elevation		**Pump Intake (ft-bmp)**	9	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Sample Time	09:45	**Volumes Purged**	--	**Sample ID**	69WP-08-01-FAL20	**Sampled by**	Eric Fowler
Purge Start	09:06	**Gallons Purged**	--	**Replicate/ Code No.**		**Sample Type**	
Purge End	09:52						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:10	0	0	--	5.13	--	6.51	0.493	118.6	1.52	14.4	-85.1	--	--
09:15	5	5	--	5.14	--	6.39	0.998	124.3	0.84	14.4	-98.7	--	--
09:20	5	10	--	5.14	--	6.39	0.955	127.2	0.75	14.4	-75.6	--	--
09:25	5	15	--	5.14	--	6.32	0.942	124.4	0.76	14.4	-58.2	--	--
09:30	5	20	--	5.14	--	6.27	0.936	107.6	0.77	14.4	-45.6	--	--
09:35	5	25	--	5.14	--	6.23	0.942	95.1	0.8	14.4	-38.7	--	--
09:40	5	30	--	5.14	--	6.21	0.939	99.3	0.8	14.4	-33.2	--	--
09:45	5	35	--	5.14	--	6.18	0.939	91.5	0.84	14.5	-26.9		

Constituent Sampled	Container	Number	Preservative
Dissolved Metals	NA	NA	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location:

Condition of Well:

Well Completion: NA

Well Locked at Arrival: no

Well Locked at Departure: no

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	69WP-13-01			**Date**	10/23/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	55.9 degrees F and Fog/Mist. The wind is blowing undefined at 0.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	1	**Well Casing Material**	Steel
Static Water Level (ft-bmp)	4.01	**Total Depth (ft-bmp)**	12.08	**Water Column(ft)**	8.07	**Gallons in Well**	0.33
MP Elevation		**Pump Intake (ft-bmp)**	9	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Sample Time	11:00	**Volumes Purged**	--	**Sample ID**	69wp-13-01-fal20	**Sampled by**	Eric Fowler
Purge Start	10:20	**Gallons Purged**	--	**Replicate/ Code No.**		**Sample Type**	Grab
Purge End	11:10						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:25	0	0	--	5.35	--	6.35	0.773	197.8	0.87	12.3	-98.6	--	--
10:30	5	5	--	5.46	--	6.3	0.779	250.4	0.62	12.5	-105.7	--	--
10:35	5	10	--	5.39	--	6.29	0.738	248.2	0.56	12.4	-86.5	--	--
10:40	5	15	--	5.35	--	6.26	0.733	263.4	0.55	12.4	-77.8	--	--
10:45	5	20	--	5.35	--	6.22	0.73	26.9	0.56	12.4	-72.5	--	--
10:50	5	25	--	5.35	--	6.19	0.728	46	0.58	12.4	-67.3	--	--
10:55	5	30	--	5.35	--	6.16	0.726	46.9	0.6	12.4	-64.7	--	--
11:00	5	35	--	5.34	--	6.13	0.726	46.7	0.62	12.4	-64.5		

Constituent Sampled	Container	Number	Preservative
Dissolved Metals	NA	NA	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location:

Condition of Well:

Well Completion: NA

Well Locked at Arrival: no

Well Locked at Departure: no

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	ZWM-01-25X			**Date**	10/22/2020
Project Name/Location	Devens		**Weather(°F)**	75.0 degrees F and Mostly Cloudy. The wind is blowing W/SW at 16.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2.5	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	7.38	**Total Depth (ft-bmp)**	16.12	**Water Column(ft)**	8.74	**Gallons in Well**	2.22
MP Elevation		**Pump Intake (ft-bmp)**	13	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Sample Time	15:00	**Volumes Purged**	--	**Sample ID**	NA	**Sampled by**	Eric Fowler
Purge Start	14:25	**Gallons Purged**	--	**Replicate/ Code No.**		**Sample Type**	
Purge End	15:10						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:30	0	0	--	7.52	--	6.85	0.861	13.1	6.67	17.1	128.8	--	--
14:35	5	5	--	7.56	--	6.08	0.828	6.7	5.35	16.7	158.9	--	--
14:40	5	10	--	7.54	--	6	0.828	7.1	5.13	16.7	167.6	--	--
14:45	5	15	--	7.54	--	5.97	0.828	7.4	4.39	16.6	158.7	--	--
14:50	5	20	--	7.54	--	5.98	0.811	8.5	3.97	16.6	146.1	--	--
14:55	5	25	--	7.54	--	5.98	0.816	8.4	3.64	16.5	137.2	--	--
15:00	5	30	--	7.54	--	5.98	0.818	8.5	3.29	16.5	127.4		

Constituent Sampled	Container	Number	Preservative

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location:

Condition of Well:

Well Completion: NA

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	ZWM-95-15x			**Date**	10/22/2020
Project Name/Location	Devens		**Weather(°F)**	71.1 degrees F and Clear. The wind is blowing S/SE at 12.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	4	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	7.4	**Total Depth (ft-bmp)**	14.85	**Water Column(ft)**	7.45	**Gallons in Well**	4.84
MP Elevation		**Pump Intake (ft-bmp)**	11	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Sample Time	13:25	**Volumes Purged**	--	**Sample ID**	ZWM-95-15X-FAL20	**Sampled by**	Eric Fowlet
Purge Start	12:51	**Gallons Purged**	--	**Replicate/ Code No.**		**Sample Type**	Grab

Purge End

Time	Minutes Elapsed	Total Elapsed Minutes	Rate	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:55	0	0	--	7.45	--	6.62	0.925	46.9	4.31	16.2	20.6	--	--
13:00	5	5	--	7.49	--	6.13	0.903	30.5	1.25	15.5	23.6	--	--
13:05	5	10	--	7.48	--	6.01	0.892	25.6	1	15.4	26.7	--	--
13:10	5	15	--	7.48	--	5.95	0.883	21	0.89	15.5	52.3	--	--
13:15	5	20	--	7.48	--	5.92	0.879	17.6	0.84	15.6	61	--	--
13:20	5	25	--	7.48	--	5.91	0.864	19.4	0.82	15.5	64.8	--	--
13:25	5	30	--	7.48	--	5.89	0.849	18.9	0.79	15.6	71.3		

Constituent Sampled	Container	Number	Preservative

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location:

Condition of Well:

Well Completion: NA

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	ZWM-95-18X			**Date**	10/22/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	75.9 degrees F and Clear. The wind is blowing NW at 25.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	4	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	5.49	**Total Depth (ft-bmp)**	15.39	**Water Column(ft)**	9.9	**Gallons in Well**	6.43
MP Elevation		**Pump Intake (ft-bmp)**	12	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Sample Time	15:50	**Volumes Purged**	--	**Sample ID**	ZWM-95-18X-FAL20	**Sampled by**	Eric Fowler
Purge Start	15:25	**Gallons Purged**	--	**Replicate/ Code No.**	Aoc69w-dup01-fal20	**Sample Type**	Grab

Purge End

Time	Minutes Elapsed	Total Elapsed Minutes	Rate	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:30	0	0	--	5.53	--	6.17	0.844	1.9	5.96	15.1	169.9	--	--
15:35	5	5	--	5.55	--	6.14	0.843	1.8	5.94	15	174.4	--	--
15:40	5	10	--	5.55	--	6.1	0.844	2.4	5.91	15	182.3	--	--
15:45	5	15	--	5.55	--	6.1	0.845	3	5.88	15	186.4	--	--
15:50	5	20	--	5.55	--	6.1	0.845	3.8	5.86	15	189.7		

Constituent Sampled	Container	Number	Preservative
EPH+PAHs	NA	NA	NA
Dissolved Metals	NA	NA	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location:

Condition of Well:

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	ZWM-99-22X			**Date**	10/22/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	57 °F, Sunny, winds at 0 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	7.7	**Total Depth (ft-bmp)**	14	**Water Column(ft)**	6.3	**Gallons in Well**	1.02
MP Elevation		**Pump Intake (ft-bmp)**	12	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Sample Time	16:35	**Volumes Purged**	4.14	**Sample ID**	ZWM-99-22X-FAL20	**Sampled by**	Diane Champagne
Purge Start	15:30	**Gallons Purged**	4.23	**Replicate/ Code No.**		**Sample Type**	Grab
Purge End	17:03						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:35	0	0	250	7.71	--	6.91	1.096	37.63	0.45	22	30.4	--	--
15:40	5	5	250	7.71	0.33	6.89	1.049	32.16	0.28	22.1	13.9	--	--
15:45	5	10	250	7.73	0.66	6.83	1.021	29.74	0.37	22.2	1.9	--	--
15:50	5	15	250	7.73	0.99	6.79	1.029	29.5	0.42	22.6	-3.9	--	--
15:56	6	21	250	7.73	1.32	6.75	1.032	23.39	0.46	23	-11.5	--	--
16:00	4	25	250	7.73	1.65	6.73	1.03	21.71	0.46	23.4	-16.4	--	--
16:05	5	30	250	7.73	1.98	6.71	1.028	20.36	0.48	23.6	-20.4	--	--
16:10	5	35	250	7.73	2.31	6.71	1.029	17.39	0.51	23.7	-23.3	--	--
16:15	5	40	250	7.73	2.64	6.69	1.028	16.05	0.5	23.4	-27.5	--	--
16:20	5	45	250	7.73	2.97	6.68	1.031	14.32	0.5	23.2	-29.5	--	--
16:25	5	50	250	7.73	3.3	6.68	1.032	13.71	0.52	23.4	-32.1	--	--
16:30	5	55	250	7.73	3.63	6.67	1.021	13.48	0.51	23.3	-33.9	Brown	None

Constituent Sampled	Container	Number	Preservative
EPH+PAHs	1L Amber	2	HCL
Dissolved Metals	250 mL Plastic	1	HNO3

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Parking lot Parker school

Condition of Well: Needs repairs

Well Completion: Flush mount

Well Locked at Arrival: no

Well Locked at Departure: no

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	ZWM-99-23X			**Date**	10/23/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	57.0 degrees F and Fog/Mist. The wind is blowing S/SE at 16.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2.5	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	7.28	**Total Depth (ft-bmp)**	15.2	**Water Column(ft)**	7.92	**Gallons in Well**	2.01
MP Elevation		**Pump Intake (ft-bmp)**	12	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Sample Time	12:35	**Volumes Purged**	--	**Sample ID**	ZWM-99-23X-FAL20	**Sampled by**	Eric Fowler
Purge Start	11:56	**Gallons Purged**	--	**Replicate/ Code No.**		**Sample Type**	Grab
Purge End	12:50						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:00	0	0	--	7.4	--	6.22	0.811	32.8	1.49	16.8	53.9	--	--
12:05	5	5	--	7.4	--	6.3	0.724	13.6	1.17	16.9	79.3	--	--
12:10	5	10	--	7.4	--	6.27	0.699	8.6	1.33	16.8	69.7	--	--
12:15	5	15	--	7.4	--	6.26	0.693	6.9	1.42	16.7	65.1	--	--
12:20	5	20	--	7.4	--	6.25	0.691	38	1.45	16.8	60.5	--	--
12:25	5	25	--	7.4	--	6.24	0.688	3.8	1.51	16.8	57.7	--	--
12:30	5	30	--	7.4	--	6.25	0.689	2.9	1.53	16.8	48.8	--	--
12:35	5	35	--	7.4	--	6.24	0.685	2.1	1.62	16.7	51.8		

Constituent Sampled	Container	Number	Preservative

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location:

Condition of Well:

Well Completion: NA

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	ZWM-99-24X			**Date**	10/23/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	55.9 degrees F and Fog. The wind is blowing undefined at 0.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2.5	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	7.75	**Total Depth (ft-bmp)**	17.75	**Water Column(ft)**	10	**Gallons in Well**	2.54
MP Elevation		**Pump Intake (ft-bmp)**	15.75	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Sample Time	11:05	**Volumes Purged**	1.07	**Sample ID**	ZWM-99-24X-FAL20	**Sampled by**	Nicholas Burchv
Purge Start	10:22	**Gallons Purged**	2.71	**Replicate/ Code No.**		**Sample Type**	Grab
Purge End	11:15						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:25	0	0	250	7.75	--	6.02	0.465	17.8	5.79	15.3	128.5	--	--
10:30	5	5	250	7.75	0.33	5.84	0.463	18	5.14	15.1	147.2	--	--
10:35	5	10	250	7.8	0.66	5.78	0.466	15.9	4.64	15	162.9	--	--
10:40	5	15	250	7.75	0.99	5.76	0.47	12	4.26	15.1	174.9	--	--
10:45	5	20	250	7.75	1.32	5.75	0.473	10.72	3.88	15.1	183	--	--
10:50	5	25	250	7.75	1.65	5.75	0.472	7.69	3.67	15.1	190.1	--	--
10:55	5	30	250	7.75	1.98	5.75	0.471	5.74	3.42	15.1	197	--	--
11:00	5	35	250	7.75	2.31	5.76	0.47	5.22	3.33	15.1	201.9	--	--
11:03	3	38	250	7.75	2.508	5.76	0.469	5.11	3.27	15.1	204.8	Clear	None

Constituent Sampled	Container	Number	Preservative
EPH+PAHs	NA	NA	NA
Dissolved Metals	NA	NA	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: 69W

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	LFM-99-02B			**Date**	10/23/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	59 °F, Overcast, NW winds at 2 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	21.58	**Total Depth (ft-bmp)**	26.4	**Water Column(ft)**	4.82	**Gallons in Well**	0.78
MP Elevation		**Pump Intake (ft-bmp)**	24	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Sample Time	14:10	**Volumes Purged**	2.81	**Sample ID**	LFM-99-02A-FAL20	**Sampled by**	Diane Champagne
Purge Start	13:10	**Gallons Purged**	2.19	**Replicate/ Code No.**		**Sample Type**	Grab
Purge End	15:50						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:15	0	0	140	21.58	--	7.03	1.091	2.85	6.64	13.4	84.7	--	--
13:20	5	5	140	21.58	0.184	6.93	1.094	2.64	6.53	13.1	93.6	--	--
13:30	10	15	140	21.58	0.553	6.43	1.097	2.36	6.43	13.7	103.3	--	--
13:35	5	20	140	21.58	0.737	6.78	1.096	2.4	6.41	13.7	103.7	--	--
13:40	5	25	140	21.58	0.921	6.76	1.096	2.33	6.38	13.7	105.7	--	--
13:45	5	30	140	21.58	1.105	6.74	1.087	2.22	6.4	13.9	107.3	--	--
13:51	6	36	140	21.58	1.326	6.72	1.093	2.18	6.35	14.1	108.7	--	--
13:55	4	40	140	21.58	1.547	6.69	1.097	2.2	6.3	14.1	110.3	--	--
14:01	6	46	140	21.58	1.768	6.69	1.098	2.09	6.3	14.1	110.4	--	--
14:05	4	50	140	21.58	1.915	6.68	1.097	2.22	6.26	14.3	110.4	Clear	None

Constituent Sampled	Container	Number	Preservative
VPH+BTEX	NA	NA	NA
EPH+PAHs	NA	NA	NA
Organochlorine Pesticides+PCBs	NA	NA	NA
Total Metals	NA	NA	NA
Total Dissolved Solids	NA	NA	NA
Chloride,Sulfate	NA	NA	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Woods area left of entrance gate

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 3853

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	LFM-99-05A			**Date**	10/23/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	64.0 degrees F and Cloudy. The wind is blowing S/SW at 20.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	26.05	**Total Depth (ft-bmp)**	30.91	**Water Column(ft)**	4.86	**Gallons in Well**	0.79
MP Elevation		**Pump Intake (ft-bmp)**	28	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Sample Time	14:50	**Volumes Purged**	--	**Sample ID**	LFM-99-05A-FAL20	**Sampled by**	Eric Fowler
Purge Start	14:04	**Gallons Purged**	--	**Replicate/ Code No.**		**Sample Type**	Grab
Purge End	16:45						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:20	0	0	--	26.1	--	5.98	0.928	904.6	6.73	15.7	130.8	--	--
14:25	5	5	--	26.09	--	5.89	0.835	27.3	6.15	18.3	151.7	--	--
14:30	5	10	--	26.08	--	5.9	0.833	14.6	6.07	13.3	158.4	--	--
14:35	5	15	--	26.08	--	5.92	0.83	13.8	5.99	13.3	163.5	--	--
14:40	5	20	--	26.08	--	5.93	0.828	11.1	5.97	13	167.5	--	--
14:45	5	25	--	26.08	--	5.95	0.83	10.7	5.92	13.2	170.2	--	--
14:50	5	30	--	26.08	--	5.96	0.832	10.8	5.99	13.1	173.5		

Constituent Sampled	Container	Number	Preservative
VPH+BTEX	NA	NA	NA
EPH+PAHs	NA	NA	NA
Organochlorine Pesticides+PCBs	NA	NA	NA
Total Metals	NA	NA	NA
Total Dissolved Solids	NA	NA	NA
Chloride,Sulfate	NA	NA	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location:

Condition of Well:

Well Completion: NA

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	LFM 99-06ARP			**Date**	10/23/2020
Project Name/Location	Devens, Massachusetts		**Weather(°F)**	59 °F, Overcast, NW winds at 3 mph.			
Measuring Pt. Description	Top of Inner Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	19.11	**Total Depth (ft-bmp)**	34.7	**Water Column(ft)**	15.59	**Gallons in Well**	2.53
MP Elevation		**Pump Intake (ft-bmp)**	30	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Sample Time	11:35	**Volumes Purged**	0.86	**Sample ID**	LFM-99-06ARP-FAL20	**Sampled by**	Diane Champagne
Purge Start	10:30	**Gallons Purged**	2.17	**Replicate/ Code No.**		**Sample Type**	Grab
Purge End	12:42						

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:33	0	0	120	19.14	--	6.87	1.308	37.4	4.87	14.2	132.8	--	--
10:38	5	5	120	19.14	0.158	6.79	1.308	27.16	5.17	14.4	128.6	--	--
10:49	11	16	120	19.14	0.506	6.73	1.306	52.71	5.34	14.4	120	--	--
10:58	9	25	120	19.15	0.791	6.7	1.305	50	5.39	14.8	113.1	--	--
11:06	8	33	120	19.15	1.044	6.68	1.316	51.97	5.39	14.7	106.9	--	--
11:12	6	39	120	19.15	1.234	6.67	1.312	55.01	5.55	14.3	103.5	--	--
11:20	8	47	120	19.15	1.487	6.67	1.308	2.58	5.4	14.7	99.1	--	--
11:25	5	52	120	19.15	1.645	6.67	1.31	2.45	5.33	14.7	97	--	--
11:30	5	57	120	19.15	1.803	6.65	1.309	1.65	5.38	14.5	95.2	Brown	None

Constituent Sampled	Container	Number	Preservative
VPH+BTEX	NA	NA	NA
EPH+PAHs	NA	NA	NA
Organochlorine Pesticides+PCBs	NA	NA	NA
Total Metals	NA	NA	NA
Total Dissolved Solids	NA	NA	NA
Chloride,Sulfate	NA	NA	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Grassy area on the hill across from Tara vista

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 3753

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	LFM-03-07			**Date**	5/14/2020
Project Name/Location	Devens, Massachusetts					**Weather(°F)**	Sun 65*
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	16.88	**Total Depth (ft-bmp)**	23	**Water Column(ft)**	6	**Gallons in Well**	0.99
MP Elevation		**Pump Intake (ft-bmp)**	21	**Purge Method**	Low-Flow	**Sample Method**	Low-Flow
Sample Time	14:00	**Volumes Purged**	2.08	**Sample ID**	LFM-03-07-spr20	**Sampled by**	Diane Champagne
Purge Start	12:48	**Gallons Purged**	2.06	**Replicate/ Code No.**			
Purge End	13:45						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
12:49		140	16.9	0.00	6.37	0.97	57.6	9.4	12.41	114.3	Pale orange	No
12:55	6	140	17.1	0.22	6.24	0.972	12.1	9.53	12.17	115.8	Pale orange	No
13:00	5	140	17.09	0.40	6.17	0.97	5.25	9.48	12.44	117.5	Pale orange	No
13:08	8	140	17.06	0.70	6.04	0.97	4.83	9.48	12.39	122	Pale orange	No
13:14	6	140	17.05	0.92	6.04	9.61	2.24	9.66	12.14	126.8	Pale orange	No
13:19	5	140	17.05	1.10	6.02	0.971	2.41	9.7	11.89	129.8	Pale orange	No
13:32	13	140	17.05	1.58	6.03	0.971	3.73	10.31	11.96	133.7	Pale orange	No
13:35	3	140	17.05	1.69	6.04	0.97	3.45	9.73	11.77	133.7	Pale orange	No
13:40	5	140	17.05	1.88	6.06	0.97	2.78	9.92	11.93	134.4	Pale orange	No
13:45	5	140	17.05	2.06	6.07	0.969	3.23	9.95	11.99	128.9	Pale orange	No

Constituent Sampled	**Container**	**Number**	**Preservative**
VPH+BTEX			
EPH+PAHs			
Organochlorine Pesticides+ PCBs			
Total Metals			
TDS			
Chloride/Sulfate			
Nitrate/Nitrite			
Total Alkalinity			
Total Cyanide			
COD			

Comments:

Well Casing Volume Conversion

Well diameter (inches) = 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
gallons per foot 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Parking lot back
Condition of Well: Fair
Well Completion: Flush mount
Well Locked at Arrival: no
Well Locked at Departure: no
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
mS/cm = milliiSiemens per centimeter
NTU = Ne
mV = millivolts

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	LFM-99-02B	**Date**	5/15/2020
Project Name/Location	Devens, Massachusetts			**Weather(°F)**	13C, Sunny, Light Breeze

Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	16.02	**Total Depth (ft-bmp)**	26.45	**Water Column(ft)**	10	**Gallons in Well**	1.69
MP Elevation		**Pump Intake (ft-bmp)**	20.5	**Purge Method**	Low-Flow	**Sample Method**	Low-Flow
Sample Time	11:10	**Volumes Purged**	0.86	**Sample ID**	LFM-99-02B-SPR20	**Sampled by**	Desmond Bedard
Purge Start	10:25	**Gallons Purged**	1.47	**Replicate/ Code No.**			
Purge End							

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
10:25		150	16.02	0.00	7.22	1.003	20	10.24	12.12	313.7	None; clear	None
10:30	5	140	16.05	0.18	5.2	0.903	0.18	7.72	11.48	380.3	None; clear	None
10:35	5	140	16.06	0.37	5.34	0.868	0.43	7.67	11.23	364.5	None; clear	None
10:40	5	140	16.06	0.55	5.68	0.861	0.29	7.7	11.25	337.6	None; clear	None
10:45	5	140	16.06	0.74	5.73	0.86	0.52	7.61	11.31	334.9	None; clear	None
10:50	5	140	16.05	0.92	5.81	0.856	0.36	7.53	11.27	330	None; clear	None
10:55	5	140	16.05	1.10	5.97	0.856	0.22	7.5	11.32	320.2	None; clear	None
11:00	5	140	16.05	1.29	6.02	0.856	0.57	7.67	11.22	319	None; clear	None
11:05	5	140	16.05	1.47	5.97	0.857	0.42	7.47	11.36	319.9	None; clear	None

Constituent Sampled	**Container**	**Number**	**Preservative**
VPH+BTEX			
EPH+PAHs			
Organochlorine Pesticides+ PCBs			
Total Metals			
TDS			
Chloride/Sulfate			
Nitrate/Nitrite			
Total Alkalinity			
Total Cyanide			
COD			

Comments:

Well Casing Volume Conversion

Well diameter (inches) = 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
gallons per foot 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location:
Condition of Well: Good
Well Completion: Stick-up

Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 3753

ft-bmp = feet below measuring point
in = inches

mS/cm = milliiSiemens per centimeter
NTU = Ne

mV = millivolts

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	LFM-99-05A	**Date**	5/14/2020
Project Name/Location	Devens, Massachusetts			**Weather(°F)**	66, sun

Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	20.7	**Total Depth (ft-bmp)**	30.55	**Water Column(ft)**	10	**Gallons in Well**	1.6
MP Elevation		**Pump Intake (ft-bmp)**	25	**Purge Method**	Low-Flow	**Sample Method**	Low-Flow
Sample Time	16:00	**Volumes Purged**	0.82	**Sample ID**	LFM-99-05A-SPR20	**Sampled by**	Gabriel O'Connor
Purge Start	14:55	**Gallons Purged**	1.32	**Replicate/ Code No.**	DCL-DUP01-SPR20		
Purge End	17:40						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
15:00		100	20.79	0.26	6.41	441	40	8.64	12.72	159.4	Clear	No
15:05	5	100	20.79	0.40	6.28	458	40	8.44	12.53	162	Clear	No
15:10	5	100	20.79	0.40	6.27	455	13.8	8.97	12.36	204.2	Clear	No
15:15	5	100	20.79	0.53	6.07	451	8.27	8.82	12.31	230.7	Clear	No
15:20	5	100	20.79	0.66	6.05	448	4.37	8.88	11.98	245.7	Clear	No
15:25	5	100	20.79	0.79	6.09	449	2.1	8.73	12.18	251.4	Clear	No
15:30	5	100	20.79	0.92	6.1	447	0.02	8.78	11.97	254.6	Clear	No
15:35	5	100	20.79	1.06	6.17	448	0.02	8.78	12.01	257.3	Clear	No
15:40	5	100	20.79	1.19	6.25	449	0.02	8.81	12.09	252.7	Clear	No
15:45	5	100	20.79	1.32	6.26	450	0.2	8.75	12.27	247.6	Clear	No

Constituent Sampled	Container	Number	Preservative
VPH+BTEX			
EPH+PAHs			
Organochlorine Pesticides+ PCBs			
Total Metals			
TDS			
Chloride/Sulfate			
Nitrate/Nitrite			
Total Alkalinity			
Total Cyanide			
COD			

Comments:

Well Casing Volume Conversion

Well diameter (inches) = 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
gallons per foot 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: DCL
Condition of Well: Good
Well Completion: Stick-up

Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches

mS/cm = milliiSiemens per centimeter
NTU = Ne

mV = millivolts

Groundwater Sampling Form

ARCADIS Design & Consultancy for natural and built assets

Project Number	30048392	**Well ID**	LFM 99-06ARP	**Date**	5/14/2020
Project Name/Location	Devens, Massachusetts			**Weather(°F)**	Sun 65*

Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**	--	**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	14.6	**Total Depth (ft-bmp)**	39.8	**Water Column(ft)**	25	**Gallons in Well**	4.09
MP Elevation		**Pump Intake (ft-bmp)**	37	**Purge Method**	Low-Flow	**Sample Method**	Low-Flow
Sample Time	16:00	**Volumes Purged**	0.69	**Sample ID**	LFM-99.06ARP-SPR20	**Sampled by**	Diane Champagne

Purge Start	15:10	**Gallons Purged**	2.85	**Replicate/ Code No.**	
Purge End	16:43				

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
15:15		180	14.7	0.00	6.14	1.191	2.62	8.1	14.12	146.2		
15:20	5	180	14.7	0.24	5.9	1.19	3.74	8.23	13.84	152.4		
15:25	5	180	14.7	0.47	5.81	1.187	3.31	8.12	14.12	161.6		
15:31	6	300	14.7	0.95	5.83	1.17	3.02	8.23	14.1	165.1		
15:35	4	300	14.7	1.27	5.74	1.17	3.59	8.23	13.66	171.4		
15:40	5	300	14.7	1.66	5.71	1.18	3.01	8.12	14.21	175.8		
15:45	5	300	14.7	2.06	5.73	1.178	3.46	8.2	13.9	180.6		
15:50	5	300	14.7	2.45	5.66	1.179	3.78	7.94	13.98	187.2		
15:55	5	300	14.7	2.85	5.74	1.176	3.83	7.91	14.14	189.2		

Constituent Sampled	**Container**	**Number**	**Preservative**
VPH+BTEX			
EPH+PAHs			
Organochlorine Pesticides+ PCBs			
Total Metals			
TDS			
Chloride/Sulfate			
Nitrate/Nitrite			
Total Alkalinity			
Total Cyanide			
COD			

Comments:

Well Casing Volume Conversion

Well diameter (inches) = 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
gallons per foot 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Landfill right side opposite door b2 of medical center next door
Condition of Well: Good
Well Completion: Stick-up

Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 3753

ft-bmp = feet below measuring point
in = inches

mS/cm = milliiSiemens per centimeter
NTU = Ne

mV = millivolts

ARCADIS Design & Consultancy for natural and built assets

SURFACE WATER SAMPLING LOG

Project Number:	30048392	**Sample Location:**	AOC-57	**Date:**	05/13/2020
Site:	Devens	**Location:**	Middlesex MA	**Personnel:**	Desmond Bedard
GPS Latitude:	42.5429258	**Planned Latitude:**		**Weather:**	Sunny,light breezes
GPS Longitude:	-71.58503157	**Planned Longitude:**		**Event:**	Spring 2020

ANALYTICAL SAMPLING

Sampling Method:	Grab	MS/MSD:	no	
Sample ID:	57-AREA3-SW1	Duplicate:	no	If Yes, Sample Time:
Sample Time:	03:50	Duplicate ID:		
Sample Depth(ft):	0.5	Equipment Blank:	no	If Yes, Sample Time:
Water Quality Parameter:	YSI 556 MapS	Ambient Blank ID:		
Serial Number:	14F100062	Description:	Marsh; filled with floating plant matter; some microbial sheens present	

SURFACE WATER FIELD PARAMETERS

Parameter measured:	Ex Situ (container)
Time	04:00
Temperature (°C)	8.78
pH	5.89
ORP (mV)	19.5
Conductivity (mS/cm)	0.431
Dissolved Oxygen (mg/L)	2.62
Turbidity (NTU)	110

SAMPLE INFORMATION

Analyses	Container	No	Preservative*	Filtered**?
Total Metals	250 mL HDPE Plastic		HNO3	no
Dissolved metals	250 mL HDPE Plastic		HNO3	yes

* All bottles shound be cooled as soon as possible to ≤ 6° Celsius

Filtered samples should be field filtered with 0.45 micron in-line filters **no Total Collected

MISCELLANEOUS OBSERVATIONS

Post-Filter Turbidity (NTU): 13.9

Comments:

Completed By: Desmond Bedard	Date: 05/13/2020	Reviewed By:	Date: 05/13/2020

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Synoptic Groundwater Gauging Log

Client:	USACE
Project Name/Location:	Devens, Massachusetts
Date(s):	October 2020
Sampler(s):	Eric Fowler Chip Papala Nicholas Burch Connor Rosenbaum Diane Champagne
Equipment:	water probe

Well	Date	Time	Depth to Water (ft)	Well Depth (ft)	Remarks
AOC 57					
57M-95-06X	5/13/2020	09:07:00	12.25	24.35	
57M-03-01X	5/13/2020	09:14:00	13.88	20.79	
57M-95-05X	5/13/2020	09:17:00	14.16	23	
57M-95-07X	5/13/2020	09:24:00	2.41	14.14	
57WP-06-02	5/13/2020	10:10:00	0.81	23.96	
57M-03-03X	5/13/2020	10:13:00	0.75	11.34	
57WP-05-01	5/13/2020	10:23:00	1.67	4.98	
57M-03-04X	5/13/2020	10:26:00	2.14	12.34	
57M-03-02X	5/13/2020	10:38:00	4.8	13.42	
57M-03-06X	5/13/2020	10:49:00	2.39	13.99	
57M-03-05X	5/13/2020	10:53:00	2.52	11.98	
57M-95-03X	5/13/2020	11:40:00	10.29	19.65	
57P-98-03X	5/13/2020	11:45:00	2.25	6.79	
57WP-06-03	5/13/2020	11:49:00	0.57	19.09	
57P-98-04X	5/13/2020	11:58:00	4.05	6.68	
57M-96-10X	5/13/2020	12:08:00	6.59	7.41	
57M-96-12X	5/13/2020	12:13:00	4.55	14.99	
57M-96-11X	5/13/2020	12:16:00	3.05	14.45	
AOC 32-43A					
32M-92-03X	5/14/2020	08:39:00	26.16	37	Well cap (4")needs replacement; currently uses a rusty screw to open (see photo)
32Z-01-08XOB	5/14/2020	08:53:00	16.58	24.3	
32M-92-01X	5/14/2020	09:03:00	15.85	26.5	
32Z-01-06XBR	5/14/2020	09:24:00	14.39	28.85	
32M-01-14XBR	5/14/2020	09:35:00	20.55	46.5	Metal cap (~.6") and lock need to be replaced - see photos
32M-01-14XOB	5/14/2020	09:42:00	22.89	30.15	Metal cap (~.6") and lock need to be replaced - see photos from 32M-01-14XBR (same issues)
32Z-01-09XOB	5/14/2020	10:02:00	24.82	33.2	
32Z-01-05XOB	5/14/2020	11:49:00	27.82	35.8	Needs an extra bolt for cap flush with pavement; female threading where one full bolt is present is stripped too - see photos
32Z-01-12XBR	5/14/2020	13:44:00	17.97	35.85	
32Z-01-11XBR	5/14/2020	13:52:00	16.19	17.1	Well cover flush with pavement needs a new bolt - see photos
32M 01-13XBR	5/14/2020	14:11:00	15.45	23.1	Well cover flush with pavement needs two bolts - see photo. Dangerous location; in-between active loading docks 33 & 34 - see photos.

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Synoptic Groundwater Gauging Log

Client:	USACE
Project Name/Location:	Devens, Massachusetts
Date(s):	October 2020
Sampler(s):	Eric Fowler Chip Papala Nicholas Burch Connor Rosenbaum Diane Champagne
Equipment:	water probe

Well	Date	Time	Depth to Water (ft)	Well Depth (ft)	Remarks
32M-01-15XBR	5/14/2020	14:20:00	18.89	44.3	Well cover flush with pavement needs two new bolts - see photos. Dangerous location; behind active loading dock 30 - see photos.
32M-01-18XBR	5/14/2020	14:25:00	15.09	23.9	Dangerous location; in-between active loading docks 29 & 30 - see photos
32M-01-17XBR	5/14/2020	14:39:00	23.19	54.6	
32M-01-16XBR	5/14/2020	14:47:00	20.21	25.05	Well cover flush with surface requires two new bolts - see photos.
32Z-01-10XBR	5/14/2020	14:56:00	15.08	22.15	Not labeled with another none labeled well adjacent - see photo. Also needs two new bolts for cover flush with pavement- see photo.
32Z-99-02X (32M-92-02X)	5/14/2020	15:29:00	22.17	29.5	Difficult to see/find (access road as shown on fulcrum app is abandoned) - see photos
32Z-01-07XOB	5/14/2020	15:44:00	13.65	25.15	
43M-01-20XOB	5/14/2020	12:47:00	24.89	33.6	
43M-01-20XBR	5/14/2020	12:54:00	24.7	78.95	Cap flush with pavement needs another bolt - see photo
43M-01-17XBR	5/14/2020	13:17:00	24.94	58.5	
43M-01-17XOB	5/14/2020	13:21:00	24.94	33.15	
43M-01-16XOB	5/14/2020	13:28:00	23.37	34.1	Well cover flush with pavement needs a new bolt - see photos. Female threading for good bolt is stripped.
43M-01-16XBR	5/14/2020	13:35:00	23.17	57.9	
DCL					
LFM 99-06ARP	5/13/2020	15:09:00	14.52	35.13	
LFM-99-05B	5/13/2020	15:22:00	17.69	58.97	
LFM-99-05A	5/13/2020	15:26:00	20.65	30.54	
LFM-99-01B	5/13/2020	15:47:00	24.75	34.2	
LFM-99-02B	5/13/2020	15:53:00	15.88	26.03	
LFM-99-03B	5/13/2020	15:38:00	39.18	51.01	

SERES
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Synoptic Groundwater Gauging Log

Client:	USACE
Project Name/Location:	Devens, Massachusetts
Date(s):	October 2020
Sampler(s):	Eric Fowler Chip Papala Nicholas Burch Connor Rosenbaum Diane Champagne
Equipment:	water probe

Well	Date	Time	Depth to Water (ft)	Well Depth (ft)	Remarks
AOC 69W					
ZWM-99-22X	10/22/2020	08:04:00	7.69	14.40	
69W-94-13	10/22/2020	08:29:00	8.46	16.30	
69W-94-12	10/22/2020	08:37:00	9.48	16.05	No lock
ZWM-95-17X	10/22/2020	08:47:00	15.90	16.00	Dry
ZWM-99-24X	10/22/2020	08:58:00	7.67	15.97	
69W-94-14	10/22/2020	09:04:00	9.39	15.28	
ZWM-99-23X	10/22/2020	09:19:00	7.26	15.30	
ZWM 01-25X	10/22/2020	09:27:00	7.34	16.12	
ZWM-01-26X	10/22/2020	09:33:00	8.79	16.20	
ZWM-95-15X	10/22/2020	09:40:00	7.38	14.87	
ZWP-95-02X	10/22/2020	09:47:00	6.15	14.48	
ZWM-95-18X	10/22/2020	09:52:00	5.50	15.43	
69WP-08-01	10/22/2020	10:00:00	5.55	12.41	
69WP-13-01	10/22/2020	10:09:00	3.96	12.26	
ZWP-95-01X	10/22/2020	10:49:00	7.83	14.38	
ZWM-95-16X	10/22/2020	12:10:00	7.80	15.64	Penta bolt
Willow Brook PZ	10/23/2020	13:13:00	3.09	3.09	Only water at very bottom
DCL					
LFM 99-06ARP	10/23/2020	10:24:00	19.11	34.70	
LFM-99-02B	10/23/2020	13:08:00	21.59	26.40	
LFM-99-01B	10/23/2020	13:36:00	28.56	34.45	
LFM-99-03B	10/23/2020	13:45:00	44.50	50.50	
LFM-03-07	10/23/2020	13:45:00	--	23.10	The well is dry.
LFM-99-05A	10/23/2020	13:58:00	26.05	30.90	
LFM-99-05B	10/30/2020	8:12:00	23.95	58.60	
AOC 43G					
XGM-93-02X	10/27/2020	09:52:00	30.70	37.60	
AAFES-2	10/27/2020	09:54:00	25.10	33.20	
AAFES-5	10/27/2020	11:17:00	23.30	29.95	
AAFES-6R	10/27/2020	11:20:00	21.80	27.10	
XGM-94–04X	10/27/2020	11:40:00	21.70	31.20	
AAFES-7	10/27/2020	12:31:00	12.65	17.30	
XGM-97-12X	10/27/2020	12:31:00	27.90	33.70	
XGM-94-08X	10/27/2020	12:51:00	27.44	35.85	
XGM-94-06X	10/27/2020	13:08:00	24.99	29.90	
XGM-94–07X	10/27/2020	14:20:00	22.45	30.80	
XGM-94–10X	10/27/2020	14:20:00	26.57	33.80	

Appendix B

Laboratory Analytical Reports

eurofins | Environment Testing America



ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-183916-1
Client Project/Site: JV, LTM - AOC 32/43A Spring 2020
Revision: 2

For:
Seres Engineering & Services LLC
669 Marina Drive
Suite B7
Charleston, South Carolina 29492

Attn: Nathan R Mullens

Kathryn Smith

Authorized for release by:
6/24/2020 8:24:29 PM

Kathryn Smith, Client Service Manager
(912)250-0275
kathy.smith@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM - AOC 32/43A Spring 2020

Job ID: 680-183916-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-183916-1	32M-01-13XBR-SPR20	Water	05/14/20 11:15	05/16/20 09:00	
680-183916-2	32M-01-14XOB-SPR20	Water	05/14/20 13:40	05/16/20 09:00	
680-183916-3	32M-01-17XBR-SPR20	Water	05/14/20 11:00	05/16/20 09:00	
680-183916-4	32M-01-18XBR-SPR20	Water	05/14/20 10:30	05/16/20 09:00	
680-183916-5	AOC32-DUP01-SPR20	Water	05/14/20 08:00	05/16/20 09:00	
680-183916-6	AOC3243A-TB01-051420	Water	05/14/20 00:00	05/16/20 09:00	

Job ID: 680-183916-1

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE
Client: Seres Engineering & Services LLC
Project: JV, LTM - AOC 32/43A Spring 2020

Report Number: 680-183916-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT

The samples were received on 05/16/2020; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt time was 3.4°C.

Receipt Exceptions

One or more containers for the following samples were received empty: 32M-01-13XBR-SPR20 (680-183916-1), 32M-01-14XOB-SPR20 (680-183916-2), 32M-01-17XBR-SPR20 (680-183916-3), 32M-01-18XBR-SPR20 (680-183916-4), AOC32-DUP01-SPR20 (680-183916-5) and AOC-3243A-TB01-051420 (680-183916-6).

One vial for 40ml HCL for sample 32M-01-17XBR-SPR20 received empty.

VOLATILE ORGANIC COMPOUNDS (GC/MS)

Samples 32M-01-13XBR-SPR20 (680-183916-1), 32M-01-14XOB-SPR20 (680-183916-2), 32M-01-17XBR-SPR20 (680-183916-3), 32M-01-18XBR-SPR20 (680-183916-4), AOC32-DUP01-SPR20 (680-183916-5) and AOC-3243A-TB01-051420 (680-183916-6) were analyzed for Volatile Organic Compounds (GC/MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 05/28/2020 and 05/29/2020.

Bromomethane was detected in method blank MB 680-620228/9 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

The following samples were analyzed outside of analytical holding time due to lab error: 32M-01-13XBR-SPR20 (680-183916-1), 32M-01-14XOB-SPR20 (680-183916-2), 32M-01-17XBR-SPR20 (680-183916-3), 32M-01-18XBR-SPR20 (680-183916-4) and AOC32-DUP01-SPR20 (680-183916-5).

Reanalysis of the following sample was performed outside of the analytical holding time due to confirm carry over : 32M-01-13XBR-SPR20 (680-183916-1). Both sets of data have been reported.

Reanalysis of the following samples were performed outside of the analytical holding time due to dilution: 32M-01-18XBR-SPR20 (680-183916-4) and AOC32-DUP01-SPR20 (680-183916-5). Both sets of data have been reported.

The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 680-620372 recovered outside control limits for the following analytes: Bromomethane. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 680-620228 recovered outside control limits for the following analytes: Bromomethane. This analyte was biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for analytical batch 680-620330 recovered outside

Job ID: 680-183916-1 (Continued)

Laboratory: Eurofins TestAmerica, Savannah (Continued)

control limits for the following analytes: Bromomethane. These analytes were biased high in the LCS and LCSD and were not detected in the associated samples; therefore, the data have been reported.

Samples 32M-01-18XBR-SPR20 (680-183916-4)[10X] and AOC32-DUP01-SPR20 (680-183916-5)[20X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS (ICP)

Samples 32M-01-13XBR-SPR20 (680-183916-1), 32M-01-14XOB-SPR20 (680-183916-2), 32M-01-17XBR-SPR20 (680-183916-3), 32M-01-18XBR-SPR20 (680-183916-4) and AOC32-DUP01-SPR20 (680-183916-5) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 05/26/2020 and analyzed on 06/20/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS

Samples 32M-01-13XBR-SPR20 (680-183916-1), 32M-01-14XOB-SPR20 (680-183916-2), 32M-01-17XBR-SPR20 (680-183916-3), 32M-01-18XBR-SPR20 (680-183916-4) and AOC32-DUP01-SPR20 (680-183916-5) were analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 05/26/2020 and analyzed on 05/27/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM - AOC 32/43A Spring 2020

Job ID: 680-183916-1

Client Sample ID: 32M-01-13XBR-SPR20
Date Collected: 05/14/20 11:15
Date Received: 05/16/20 09:00

Lab Sample ID: 680-183916-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.37	U H	1.0	0.37	ug/L			05/29/20 02:07	1
1,1,1-Trichloroethane	0.37	U H	1.0	0.37	ug/L			05/29/20 02:07	1
1,1,2,2-Tetrachloroethane	0.62	U H	1.0	0.62	ug/L			05/29/20 02:07	1
1,1,2-Trichloroethane	0.33	U H	1.0	0.33	ug/L			05/29/20 02:07	1
1,1-Dichloroethane	0.38	U H	1.0	0.38	ug/L			05/29/20 02:07	1
1,1-Dichloroethene	0.36	U H	1.0	0.36	ug/L			05/29/20 02:07	1
1,1-Dichloropropene	0.34	U H	1.0	0.34	ug/L			05/29/20 02:07	1
1,2,3-Trichlorobenzene	2.5	U H	5.0	2.5	ug/L			05/29/20 02:07	1
1,2,3-Trichloropropane	0.39	U H	1.0	0.39	ug/L			05/29/20 02:07	1
1,2,4-Trichlorobenzene	2.5	U H	5.0	2.5	ug/L			05/29/20 02:07	1
1,2,4-Trimethylbenzene	0.47	U H	1.0	0.47	ug/L			05/29/20 02:07	1
1,2-Dibromo-3-Chloropropane	1.1	U H	5.0	1.1	ug/L			05/29/20 02:07	1
1,2-Dichlorobenzene	**1.2**	**H**	1.0	0.37	ug/L			05/29/20 02:07	1
1,2-Dichloroethane	0.50	U H M	1.0	0.50	ug/L			05/29/20 02:07	1
1,2-Dichloroethene, Total	0.74	U H	2.0	0.74	ug/L			05/29/20 02:07	1
1,2-Dichloropropane	0.67	U H	1.0	0.67	ug/L			05/29/20 02:07	1
1,3,5-Trimethylbenzene	0.31	U H	1.0	0.31	ug/L			05/29/20 02:07	1
1,3-Dichlorobenzene	0.43	U H	1.0	0.43	ug/L			05/29/20 02:07	1
1,3-Dichloropropane	0.34	U H	1.0	0.34	ug/L			05/29/20 02:07	1
1,4-Dichlorobenzene	0.46	U H	1.0	0.46	ug/L			05/29/20 02:07	1
2,2-Dichloropropane	0.37	U H	1.0	0.37	ug/L			05/29/20 02:07	1
2-Butanone (MEK)	3.4	U H	10	3.4	ug/L			05/29/20 02:07	1
2-Chlorotoluene	0.27	U H	1.0	0.27	ug/L			05/29/20 02:07	1
2-Hexanone	2.0	U H	10	2.0	ug/L			05/29/20 02:07	1
4-Chlorotoluene	0.45	U H	1.0	0.45	ug/L			05/29/20 02:07	1
4-Isopropyltoluene	0.48	U H	1.0	0.48	ug/L			05/29/20 02:07	1
4-Methyl-2-pentanone (MIBK)	2.1	U H	10	2.1	ug/L			05/29/20 02:07	1
Acetone	7.0	U H	10	7.0	ug/L			05/29/20 02:07	1
Benzene	0.43	U H	1.0	0.43	ug/L			05/29/20 02:07	1
Bromobenzene	0.50	U H	1.0	0.50	ug/L			05/29/20 02:07	1
Bromoform	0.43	U H	1.0	0.43	ug/L			05/29/20 02:07	1
Bromomethane	2.5	U Q H	5.0	2.5	ug/L			05/29/20 02:07	1
Carbon disulfide	0.43	U H	2.0	0.43	ug/L			05/29/20 02:07	1
Carbon tetrachloride	0.33	U H	1.0	0.33	ug/L			05/29/20 02:07	1
Chlorobenzene	0.26	U H	1.0	0.26	ug/L			05/29/20 02:07	1
Chlorobromomethane	0.45	U H	1.0	0.45	ug/L			05/29/20 02:07	1
Chlorodibromomethane	0.32	U H	1.0	0.32	ug/L			05/29/20 02:07	1
Chloroethane	2.5	U H	5.0	2.5	ug/L			05/29/20 02:07	1
Chloroform	0.50	U H	1.0	0.50	ug/L			05/29/20 02:07	1
Chloromethane	0.40	U H	1.0	0.40	ug/L			05/29/20 02:07	1
cis-1,2-Dichloroethene	0.41	U H	1.0	0.41	ug/L			05/29/20 02:07	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	ug/L			05/29/20 02:07	1
Dibromomethane	0.35	U H	1.0	0.35	ug/L			05/29/20 02:07	1
Dichlorobromomethane	0.44	U H	1.0	0.44	ug/L			05/29/20 02:07	1
Dichlorodifluoromethane	0.60	U H	1.0	0.60	ug/L			05/29/20 02:07	1
Ethylbenzene	0.33	U H	1.0	0.33	ug/L			05/29/20 02:07	1
Ethylene Dibromide	0.44	U H	1.0	0.44	ug/L			05/29/20 02:07	1
Hexachlorobutadiene	2.5	U H	5.0	2.5	ug/L			05/29/20 02:07	1
Isopropylbenzene	0.35	U H	1.0	0.35	ug/L			05/29/20 02:07	1

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM - AOC 32/43A Spring 2020

Job ID: 680-183916-1

Client Sample ID: 32M-01-13XBR-SPR20
Date Collected: 05/14/20 11:15
Date Received: 05/16/20 09:00

Lab Sample ID: 680-183916-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	0.30	U H	10	0.30	ug/L			05/29/20 02:07	1
Methylene Chloride	2.5	U H	5.0	2.5	ug/L			05/29/20 02:07	1
m-Xylene & p-Xylene	0.35	U H	1.0	0.35	ug/L			05/29/20 02:07	1
Naphthalene	2.5	U H	5.0	2.5	ug/L			05/29/20 02:07	1
n-Butylbenzene	0.47	U H	1.0	0.47	ug/L			05/29/20 02:07	1
N-Propylbenzene	0.38	U H	1.0	0.38	ug/L			05/29/20 02:07	1
o-Xylene	0.23	U H	1.0	0.23	ug/L			05/29/20 02:07	1
sec-Butylbenzene	0.42	U H	1.0	0.42	ug/L			05/29/20 02:07	1
Styrene	0.27	U H	1.0	0.27	ug/L			05/29/20 02:07	1
tert-Butylbenzene	0.45	U H	1.0	0.45	ug/L			05/29/20 02:07	1
Tetrachloroethene	0.74	U H	1.0	0.74	ug/L			05/29/20 02:07	1
Toluene	0.48	U H	1.0	0.48	ug/L			05/29/20 02:07	1
trans-1,2-Dichloroethene	0.37	U H	1.0	0.37	ug/L			05/29/20 02:07	1
trans-1,3-Dichloropropene	0.42	U H	1.0	0.42	ug/L			05/29/20 02:07	1
Trichloroethene	0.48	U H	1.0	0.48	ug/L			05/29/20 02:07	1
Trichlorofluoromethane	0.42	U H	1.0	0.42	ug/L			05/29/20 02:07	1
Vinyl acetate	0.81	U H	2.0	0.81	ug/L			05/29/20 02:07	1
Vinyl chloride	0.50	U H	1.0	0.50	ug/L			05/29/20 02:07	1
Xylenes, Total	0.23	U H	2.0	0.23	ug/L			05/29/20 02:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*85 - 114*		*05/29/20 02:07*	*1*
Dibromofluoromethane (Surr)	*112*		*80 - 119*		*05/29/20 02:07*	*1*
Toluene-d8 (Surr)	*111*		*89 - 112*		*05/29/20 02:07*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*81 - 118*		*05/29/20 02:07*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS) - RA

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichlorobenzene	0.37	U H	1.0	0.37	ug/L			05/29/20 14:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*85 - 114*		*05/29/20 14:08*	*1*
Dibromofluoromethane (Surr)	*114*		*80 - 119*		*05/29/20 14:08*	*1*
Toluene-d8 (Surr)	*111*		*89 - 112*		*05/29/20 14:08*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*81 - 118*		*05/29/20 14:08*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**55**		50	17	ug/L		05/26/20 13:18	06/20/20 00:37	1
Manganese	**5.5**	**J**	10	1.0	ug/L		05/26/20 13:18	06/20/20 00:37	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		05/26/20 13:18	05/27/20 14:20	1

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM - AOC 32/43A Spring 2020

Job ID: 680-183916-1

Client Sample ID: 32M-01-14XOB-SPR20
Date Collected: 05/14/20 13:40
Date Received: 05/16/20 09:00

Lab Sample ID: 680-183916-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.37	U H	1.0	0.37	ug/L			05/29/20 02:30	1
1,1,1-Trichloroethane	0.37	U H	1.0	0.37	ug/L			05/29/20 02:30	1
1,1,2,2-Tetrachloroethane	0.62	U H	1.0	0.62	ug/L			05/29/20 02:30	1
1,1,2-Trichloroethane	0.33	U H	1.0	0.33	ug/L			05/29/20 02:30	1
1,1-Dichloroethane	0.38	U H	1.0	0.38	ug/L			05/29/20 02:30	1
1,1-Dichloroethene	0.36	U H	1.0	0.36	ug/L			05/29/20 02:30	1
1,1-Dichloropropene	0.34	U H	1.0	0.34	ug/L			05/29/20 02:30	1
1,2,3-Trichlorobenzene	2.5	U H	5.0	2.5	ug/L			05/29/20 02:30	1
1,2,3-Trichloropropane	0.39	U H	1.0	0.39	ug/L			05/29/20 02:30	1
1,2,4-Trichlorobenzene	2.5	U H	5.0	2.5	ug/L			05/29/20 02:30	1
1,2,4-Trimethylbenzene	0.47	U H	1.0	0.47	ug/L			05/29/20 02:30	1
1,2-Dibromo-3-Chloropropane	1.1	U H	5.0	1.1	ug/L			05/29/20 02:30	1
1,2-Dichlorobenzene	0.37	U H	1.0	0.37	ug/L			05/29/20 02:30	1
1,2-Dichloroethane	0.50	U H M	1.0	0.50	ug/L			05/29/20 02:30	1
1,2-Dichloroethene, Total	0.74	U H	2.0	0.74	ug/L			05/29/20 02:30	1
1,2-Dichloropropane	0.67	U H	1.0	0.67	ug/L			05/29/20 02:30	1
1,3,5-Trimethylbenzene	0.31	U H	1.0	0.31	ug/L			05/29/20 02:30	1
1,3-Dichlorobenzene	0.43	U H	1.0	0.43	ug/L			05/29/20 02:30	1
1,3-Dichloropropane	0.34	U H	1.0	0.34	ug/L			05/29/20 02:30	1
1,4-Dichlorobenzene	0.46	U H	1.0	0.46	ug/L			05/29/20 02:30	1
2,2-Dichloropropane	0.37	U H	1.0	0.37	ug/L			05/29/20 02:30	1
2-Butanone (MEK)	3.4	U H	10	3.4	ug/L			05/29/20 02:30	1
2-Chlorotoluene	0.27	U H	1.0	0.27	ug/L			05/29/20 02:30	1
2-Hexanone	2.0	U H	10	2.0	ug/L			05/29/20 02:30	1
4-Chlorotoluene	0.45	U H	1.0	0.45	ug/L			05/29/20 02:30	1
4-Isopropyltoluene	0.48	U H	1.0	0.48	ug/L			05/29/20 02:30	1
4-Methyl-2-pentanone (MIBK)	2.1	U H	10	2.1	ug/L			05/29/20 02:30	1
Acetone	7.0	U H	10	7.0	ug/L			05/29/20 02:30	1
Benzene	0.43	U H	1.0	0.43	ug/L			05/29/20 02:30	1
Bromobenzene	0.50	U H	1.0	0.50	ug/L			05/29/20 02:30	1
Bromoform	0.43	U H	1.0	0.43	ug/L			05/29/20 02:30	1
Bromomethane	2.5	U Q H	5.0	2.5	ug/L			05/29/20 02:30	1
Carbon disulfide	0.43	U H	2.0	0.43	ug/L			05/29/20 02:30	1
Carbon tetrachloride	0.33	U H	1.0	0.33	ug/L			05/29/20 02:30	1
Chlorobenzene	0.26	U H	1.0	0.26	ug/L			05/29/20 02:30	1
Chlorobromomethane	0.45	U H	1.0	0.45	ug/L			05/29/20 02:30	1
Chlorodibromomethane	0.32	U H	1.0	0.32	ug/L			05/29/20 02:30	1
Chloroethane	2.5	U H	5.0	2.5	ug/L			05/29/20 02:30	1
Chloroform	0.50	U H	1.0	0.50	ug/L			05/29/20 02:30	1
Chloromethane	0.40	U H	1.0	0.40	ug/L			05/29/20 02:30	1
cis-1,2-Dichloroethene	0.41	U H	1.0	0.41	ug/L			05/29/20 02:30	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	ug/L			05/29/20 02:30	1
Dibromomethane	0.35	U H	1.0	0.35	ug/L			05/29/20 02:30	1
Dichlorobromomethane	0.44	U H	1.0	0.44	ug/L			05/29/20 02:30	1
Dichlorodifluoromethane	0.60	U H	1.0	0.60	ug/L			05/29/20 02:30	1
Ethylbenzene	0.33	U H	1.0	0.33	ug/L			05/29/20 02:30	1
Ethylene Dibromide	0.44	U H	1.0	0.44	ug/L			05/29/20 02:30	1
Hexachlorobutadiene	2.5	U H	5.0	2.5	ug/L			05/29/20 02:30	1
Isopropylbenzene	0.35	U H	1.0	0.35	ug/L			05/29/20 02:30	1

Client Sample ID: 32M-01-14XOB-SPR20

Lab Sample ID: 680-183916-2

Date Collected: 05/14/20 13:40

Matrix: Water

Date Received: 05/16/20 09:00

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	0.30	U H	10	0.30	ug/L			05/29/20 02:30	1
Methylene Chloride	2.5	U H	5.0	2.5	ug/L			05/29/20 02:30	1
m-Xylene & p-Xylene	0.35	U H	1.0	0.35	ug/L			05/29/20 02:30	1
Naphthalene	2.5	U H	5.0	2.5	ug/L			05/29/20 02:30	1
n-Butylbenzene	0.47	U H	1.0	0.47	ug/L			05/29/20 02:30	1
N-Propylbenzene	0.38	U H	1.0	0.38	ug/L			05/29/20 02:30	1
o-Xylene	0.23	U H	1.0	0.23	ug/L			05/29/20 02:30	1
sec-Butylbenzene	0.42	U H	1.0	0.42	ug/L			05/29/20 02:30	1
Styrene	0.27	U H	1.0	0.27	ug/L			05/29/20 02:30	1
tert-Butylbenzene	0.45	U H	1.0	0.45	ug/L			05/29/20 02:30	1
Tetrachloroethene	0.74	U H	1.0	0.74	ug/L			05/29/20 02:30	1
Toluene	0.48	U H	1.0	0.48	ug/L			05/29/20 02:30	1
trans-1,2-Dichloroethene	0.37	U H	1.0	0.37	ug/L			05/29/20 02:30	1
trans-1,3-Dichloropropene	0.42	U H	1.0	0.42	ug/L			05/29/20 02:30	1
Trichloroethene	0.48	U H	1.0	0.48	ug/L			05/29/20 02:30	1
Trichlorofluoromethane	0.42	U H	1.0	0.42	ug/L			05/29/20 02:30	1
Vinyl acetate	0.81	U H	2.0	0.81	ug/L			05/29/20 02:30	1
Vinyl chloride	0.50	U H	1.0	0.50	ug/L			05/29/20 02:30	1
Xylenes, Total	0.23	U H	2.0	0.23	ug/L			05/29/20 02:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*85 - 114*		*05/29/20 02:30*	*1*
Dibromofluoromethane (Surr)	*113*		*80 - 119*		*05/29/20 02:30*	*1*
Toluene-d8 (Surr)	*112*		*89 - 112*		*05/29/20 02:30*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*81 - 118*		*05/29/20 02:30*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**2700**		50	17	ug/L		05/26/20 13:18	06/20/20 00:33	1
Manganese	**1900**		10	1.0	ug/L		05/26/20 13:18	06/20/20 00:33	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**31**		3.0	1.5	ug/L		05/26/20 13:18	05/27/20 14:18	1

Client Sample ID: 32M-01-17XBR-SPR20

Lab Sample ID: 680-183916-3

Date Collected: 05/14/20 11:00

Matrix: Water

Date Received: 05/16/20 09:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.37	U H	1.0	0.37	ug/L			05/29/20 02:54	1
1,1,1-Trichloroethane	0.37	U H	1.0	0.37	ug/L			05/29/20 02:54	1
1,1,2,2-Tetrachloroethane	0.62	U H	1.0	0.62	ug/L			05/29/20 02:54	1
1,1,2-Trichloroethane	0.33	U H	1.0	0.33	ug/L			05/29/20 02:54	1
1,1-Dichloroethane	0.38	U H	1.0	0.38	ug/L			05/29/20 02:54	1
1,1-Dichloroethene	0.36	U H	1.0	0.36	ug/L			05/29/20 02:54	1
1,1-Dichloropropene	0.34	U H	1.0	0.34	ug/L			05/29/20 02:54	1
1,2,3-Trichlorobenzene	2.5	U H	5.0	2.5	ug/L			05/29/20 02:54	1
1,2,3-Trichloropropane	0.39	U H	1.0	0.39	ug/L			05/29/20 02:54	1
1,2,4-Trichlorobenzene	2.5	U H	5.0	2.5	ug/L			05/29/20 02:54	1

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM - AOC 32/43A Spring 2020

Job ID: 680-183916-1

Client Sample ID: 32M-01-17XBR-SPR20
Date Collected: 05/14/20 11:00
Date Received: 05/16/20 09:00

Lab Sample ID: 680-183916-3
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	0.47	U H	1.0	0.47	ug/L			05/29/20 02:54	1
1,2-Dibromo-3-Chloropropane	1.1	U H	5.0	1.1	ug/L			05/29/20 02:54	1
1,2-Dichlorobenzene	0.37	U H	1.0	0.37	ug/L			05/29/20 02:54	1
1,2-Dichloroethane	0.50	U H M	1.0	0.50	ug/L			05/29/20 02:54	1
1,2-Dichloroethene, Total	0.74	U H	2.0	0.74	ug/L			05/29/20 02:54	1
1,2-Dichloropropane	0.67	U H	1.0	0.67	ug/L			05/29/20 02:54	1
1,3,5-Trimethylbenzene	0.31	U H	1.0	0.31	ug/L			05/29/20 02:54	1
1,3-Dichlorobenzene	0.43	U H	1.0	0.43	ug/L			05/29/20 02:54	1
1,3-Dichloropropane	0.34	U H	1.0	0.34	ug/L			05/29/20 02:54	1
1,4-Dichlorobenzene	0.46	U H	1.0	0.46	ug/L			05/29/20 02:54	1
2,2-Dichloropropane	0.37	U H	1.0	0.37	ug/L			05/29/20 02:54	1
2-Butanone (MEK)	3.4	U H	10	3.4	ug/L			05/29/20 02:54	1
2-Chlorotoluene	0.27	U H	1.0	0.27	ug/L			05/29/20 02:54	1
2-Hexanone	2.0	U H	10	2.0	ug/L			05/29/20 02:54	1
4-Chlorotoluene	0.45	U H	1.0	0.45	ug/L			05/29/20 02:54	1
4-Isopropyltoluene	0.48	U H	1.0	0.48	ug/L			05/29/20 02:54	1
4-Methyl-2-pentanone (MIBK)	2.1	U H	10	2.1	ug/L			05/29/20 02:54	1
Acetone	7.0	U H	10	7.0	ug/L			05/29/20 02:54	1
Benzene	0.43	U H	1.0	0.43	ug/L			05/29/20 02:54	1
Bromobenzene	0.50	U H	1.0	0.50	ug/L			05/29/20 02:54	1
Bromoform	0.43	U H	1.0	0.43	ug/L			05/29/20 02:54	1
Bromomethane	2.5	U Q H	5.0	2.5	ug/L			05/29/20 02:54	1
Carbon disulfide	0.43	U H	2.0	0.43	ug/L			05/29/20 02:54	1
Carbon tetrachloride	0.33	U H	1.0	0.33	ug/L			05/29/20 02:54	1
Chlorobenzene	0.26	U H	1.0	0.26	ug/L			05/29/20 02:54	1
Chlorobromomethane	0.45	U H	1.0	0.45	ug/L			05/29/20 02:54	1
Chlorodibromomethane	0.32	U H	1.0	0.32	ug/L			05/29/20 02:54	1
Chloroethane	2.5	U H	5.0	2.5	ug/L			05/29/20 02:54	1
Chloroform	0.50	U H	1.0	0.50	ug/L			05/29/20 02:54	1
Chloromethane	0.40	U H	1.0	0.40	ug/L			05/29/20 02:54	1
cis-1,2-Dichloroethene	0.41	U H	1.0	0.41	ug/L			05/29/20 02:54	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	ug/L			05/29/20 02:54	1
Dibromomethane	0.35	U H	1.0	0.35	ug/L			05/29/20 02:54	1
Dichlorobromomethane	0.44	U H	1.0	0.44	ug/L			05/29/20 02:54	1
Dichlorodifluoromethane	0.60	U H	1.0	0.60	ug/L			05/29/20 02:54	1
Ethylbenzene	0.33	U H	1.0	0.33	ug/L			05/29/20 02:54	1
Ethylene Dibromide	0.44	U H	1.0	0.44	ug/L			05/29/20 02:54	1
Hexachlorobutadiene	2.5	U H	5.0	2.5	ug/L			05/29/20 02:54	1
Isopropylbenzene	0.35	U H	1.0	0.35	ug/L			05/29/20 02:54	1
Methyl tert-butyl ether	0.30	U H	10	0.30	ug/L			05/29/20 02:54	1
Methylene Chloride	2.5	U H	5.0	2.5	ug/L			05/29/20 02:54	1
m-Xylene & p-Xylene	0.35	U H	1.0	0.35	ug/L			05/29/20 02:54	1
Naphthalene	2.5	U H	5.0	2.5	ug/L			05/29/20 02:54	1
n-Butylbenzene	0.47	U H	1.0	0.47	ug/L			05/29/20 02:54	1
N-Propylbenzene	0.38	U H	1.0	0.38	ug/L			05/29/20 02:54	1
o-Xylene	0.23	U H	1.0	0.23	ug/L			05/29/20 02:54	1
sec-Butylbenzene	0.42	U H	1.0	0.42	ug/L			05/29/20 02:54	1
Styrene	0.27	U H	1.0	0.27	ug/L			05/29/20 02:54	1
tert-Butylbenzene	0.45	U H	1.0	0.45	ug/L			05/29/20 02:54	1

Client Sample ID: 32M-01-17XBR-SPR20

Lab Sample ID: 680-183916-3

Date Collected: 05/14/20 11:00
Matrix: Water
Date Received: 05/16/20 09:00

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	0.74	U H	1.0	0.74	ug/L			05/29/20 02:54	1
Toluene	0.48	U H	1.0	0.48	ug/L			05/29/20 02:54	1
trans-1,2-Dichloroethene	0.37	U H	1.0	0.37	ug/L			05/29/20 02:54	1
trans-1,3-Dichloropropene	0.42	U H	1.0	0.42	ug/L			05/29/20 02:54	1
Trichloroethene	0.48	U H	1.0	0.48	ug/L			05/29/20 02:54	1
Trichlorofluoromethane	0.42	U H	1.0	0.42	ug/L			05/29/20 02:54	1
Vinyl acetate	0.81	U H	2.0	0.81	ug/L			05/29/20 02:54	1
Vinyl chloride	0.50	U H	1.0	0.50	ug/L			05/29/20 02:54	1
Xylenes, Total	0.23	U H	2.0	0.23	ug/L			05/29/20 02:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*85 - 114*		*05/29/20 02:54*	*1*
Dibromofluoromethane (Surr)	*113*		*80 - 119*		*05/29/20 02:54*	*1*
Toluene-d8 (Surr)	*112*		*89 - 112*		*05/29/20 02:54*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*81 - 118*		*05/29/20 02:54*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**46**	**J**	50	17	ug/L		05/26/20 13:18	06/20/20 00:09	1
Manganese	**4.6**	**J**	10	1.0	ug/L		05/26/20 13:18	06/20/20 00:09	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		05/26/20 13:18	05/27/20 14:15	1

Client Sample ID: 32M-01-18XBR-SPR20

Lab Sample ID: 680-183916-4

Date Collected: 05/14/20 10:30
Matrix: Water
Date Received: 05/16/20 09:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.37	U H	1.0	0.37	ug/L			05/29/20 03:17	1
1,1,1-Trichloroethane	0.37	U H	1.0	0.37	ug/L			05/29/20 03:17	1
1,1,2,2-Tetrachloroethane	0.62	U H	1.0	0.62	ug/L			05/29/20 03:17	1
1,1,2-Trichloroethane	0.33	U H	1.0	0.33	ug/L			05/29/20 03:17	1
1,1-Dichloroethane	0.38	U H	1.0	0.38	ug/L			05/29/20 03:17	1
1,1-Dichloroethene	0.36	U H	1.0	0.36	ug/L			05/29/20 03:17	1
1,1-Dichloropropene	0.34	U H	1.0	0.34	ug/L			05/29/20 03:17	1
1,2,3-Trichlorobenzene	2.5	U H	5.0	2.5	ug/L			05/29/20 03:17	1
1,2,3-Trichloropropane	0.39	U H	1.0	0.39	ug/L			05/29/20 03:17	1
1,2,4-Trichlorobenzene	2.5	U H	5.0	2.5	ug/L			05/29/20 03:17	1
1,2,4-Trimethylbenzene	0.47	U M H	1.0	0.47	ug/L			05/29/20 03:17	1
1,2-Dibromo-3-Chloropropane	1.1	U H	5.0	1.1	ug/L			05/29/20 03:17	1
1,2-Dichlorobenzene	**1500**	**J H**	1.0	0.37	ug/L			05/29/20 03:17	1
1,2-Dichloroethane	0.50	U M H	1.0	0.50	ug/L			05/29/20 03:17	1
1,2-Dichloroethene, Total	**1.1**	**J H**	2.0	0.74	ug/L			05/29/20 03:17	1
1,2-Dichloropropane	0.67	U H	1.0	0.67	ug/L			05/29/20 03:17	1
1,3,5-Trimethylbenzene	0.31	U H	1.0	0.31	ug/L			05/29/20 03:17	1
1,3-Dichlorobenzene	**250**	**J H**	1.0	0.43	ug/L			05/29/20 03:17	1
1,3-Dichloropropane	0.34	U H	1.0	0.34	ug/L			05/29/20 03:17	1
1,4-Dichlorobenzene	**170**	**H**	1.0	0.46	ug/L			05/29/20 03:17	1

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM - AOC 32/43A Spring 2020

Job ID: 680-183916-1

Client Sample ID: 32M-01-18XBR-SPR20
Date Collected: 05/14/20 10:30
Date Received: 05/16/20 09:00

Lab Sample ID: 680-183916-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2,2-Dichloropropane	0.37	U H	1.0	0.37	ug/L			05/29/20 03:17	1
2-Butanone (MEK)	3.4	U H	10	3.4	ug/L			05/29/20 03:17	1
2-Chlorotoluene	0.27	U H	1.0	0.27	ug/L			05/29/20 03:17	1
2-Hexanone	2.0	U H	10	2.0	ug/L			05/29/20 03:17	1
4-Chlorotoluene	0.45	U H	1.0	0.45	ug/L			05/29/20 03:17	1
4-Isopropyltoluene	0.48	U H	1.0	0.48	ug/L			05/29/20 03:17	1
4-Methyl-2-pentanone (MIBK)	2.1	U H	10	2.1	ug/L			05/29/20 03:17	1
Acetone	7.0	U H	10	7.0	ug/L			05/29/20 03:17	1
Benzene	**1.4**	**H**	1.0	0.43	ug/L			05/29/20 03:17	1
Bromobenzene	0.50	U H	1.0	0.50	ug/L			05/29/20 03:17	1
Bromoform	0.43	U H	1.0	0.43	ug/L			05/29/20 03:17	1
Bromomethane	2.5	U H Q	5.0	2.5	ug/L			05/29/20 03:17	1
Carbon disulfide	0.43	U H	2.0	0.43	ug/L			05/29/20 03:17	1
Carbon tetrachloride	0.33	U H	1.0	0.33	ug/L			05/29/20 03:17	1
Chlorobenzene	**970**	**J H**	1.0	0.26	ug/L			05/29/20 03:17	1
Chlorobromomethane	0.45	U H	1.0	0.45	ug/L			05/29/20 03:17	1
Chlorodibromomethane	0.32	U H	1.0	0.32	ug/L			05/29/20 03:17	1
Chloroethane	2.5	U H	5.0	2.5	ug/L			05/29/20 03:17	1
Chloroform	0.50	U H	1.0	0.50	ug/L			05/29/20 03:17	1
Chloromethane	0.40	U H	1.0	0.40	ug/L			05/29/20 03:17	1
cis-1,2-Dichloroethene	**1.1**	**H**	1.0	0.41	ug/L			05/29/20 03:17	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	ug/L			05/29/20 03:17	1
Dibromomethane	0.35	U H	1.0	0.35	ug/L			05/29/20 03:17	1
Dichlorobromomethane	0.44	U H	1.0	0.44	ug/L			05/29/20 03:17	1
Dichlorodifluoromethane	0.60	U H	1.0	0.60	ug/L			05/29/20 03:17	1
Ethylbenzene	**0.74**	**J H**	1.0	0.33	ug/L			05/29/20 03:17	1
Ethylene Dibromide	0.44	U H	1.0	0.44	ug/L			05/29/20 03:17	1
Hexachlorobutadiene	2.5	U H	5.0	2.5	ug/L			05/29/20 03:17	1
Isopropylbenzene	**1.7**	**H**	1.0	0.35	ug/L			05/29/20 03:17	1
Methyl tert-butyl ether	0.30	U H	10	0.30	ug/L			05/29/20 03:17	1
Methylene Chloride	2.5	U H	5.0	2.5	ug/L			05/29/20 03:17	1
m-Xylene & p-Xylene	0.35	U H	1.0	0.35	ug/L			05/29/20 03:17	1
Naphthalene	2.5	U H	5.0	2.5	ug/L			05/29/20 03:17	1
n-Butylbenzene	0.47	U H	1.0	0.47	ug/L			05/29/20 03:17	1
N-Propylbenzene	**1.6**	**H**	1.0	0.38	ug/L			05/29/20 03:17	1
o-Xylene	**0.39**	**J H**	1.0	0.23	ug/L			05/29/20 03:17	1
sec-Butylbenzene	**0.82**	**J H**	1.0	0.42	ug/L			05/29/20 03:17	1
Styrene	0.27	U H	1.0	0.27	ug/L			05/29/20 03:17	1
tert-Butylbenzene	0.45	U H	1.0	0.45	ug/L			05/29/20 03:17	1
Tetrachloroethene	0.74	U H	1.0	0.74	ug/L			05/29/20 03:17	1
Toluene	0.48	U H	1.0	0.48	ug/L			05/29/20 03:17	1
trans-1,2-Dichloroethene	0.37	U H	1.0	0.37	ug/L			05/29/20 03:17	1
trans-1,3-Dichloropropene	0.42	U H	1.0	0.42	ug/L			05/29/20 03:17	1
Trichloroethene	**1.1**	**H**	1.0	0.48	ug/L			05/29/20 03:17	1
Trichlorofluoromethane	0.42	U H	1.0	0.42	ug/L			05/29/20 03:17	1
Vinyl acetate	0.81	U H	2.0	0.81	ug/L			05/29/20 03:17	1
Vinyl chloride	0.50	U H	1.0	0.50	ug/L			05/29/20 03:17	1
Xylenes, Total	**0.39**	**J H**	2.0	0.23	ug/L			05/29/20 03:17	1

Client Sample ID: 32M-01-18XBR-SPR20

Lab Sample ID: 680-183916-4

Date Collected: 05/14/20 10:30
Matrix: Water
Date Received: 05/16/20 09:00

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*85 - 114*		*05/29/20 03:17*	*1*
Dibromofluoromethane (Surr)	*112*		*80 - 119*		*05/29/20 03:17*	*1*
Toluene-d8 (Surr)	*109*		*89 - 112*		*05/29/20 03:17*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*81 - 118*		*05/29/20 03:17*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichlorobenzene	**1200**	**H**	10	3.7	ug/L			05/29/20 14:54	10
1,3-Dichlorobenzene	**190**	**H**	10	4.3	ug/L			05/29/20 14:54	10
Chlorobenzene	**770**	**H**	10	2.6	ug/L			05/29/20 14:54	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*85 - 114*		*05/29/20 14:54*	*10*
Dibromofluoromethane (Surr)	*113*		*80 - 119*		*05/29/20 14:54*	*10*
Toluene-d8 (Surr)	*112*		*89 - 112*		*05/29/20 14:54*	*10*
1,2-Dichloroethane-d4 (Surr)	*102*		*81 - 118*		*05/29/20 14:54*	*10*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**490**		50	17	ug/L		05/26/20 13:18	06/20/20 00:42	1
Manganese	**25000**		10	1.0	ug/L		05/26/20 13:18	06/20/20 00:42	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**8.8**		3.0	1.5	ug/L		05/26/20 13:18	05/27/20 14:23	1

Client Sample ID: AOC32-DUP01-SPR20

Lab Sample ID: 680-183916-5

Date Collected: 05/14/20 08:00
Matrix: Water
Date Received: 05/16/20 09:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.37	U H	1.0	0.37	ug/L			05/29/20 03:40	1
1,1,1-Trichloroethane	0.37	U H	1.0	0.37	ug/L			05/29/20 03:40	1
1,1,2,2-Tetrachloroethane	0.62	U H	1.0	0.62	ug/L			05/29/20 03:40	1
1,1,2-Trichloroethane	0.33	U H	1.0	0.33	ug/L			05/29/20 03:40	1
1,1-Dichloroethane	0.38	U H	1.0	0.38	ug/L			05/29/20 03:40	1
1,1-Dichloroethene	0.36	U H	1.0	0.36	ug/L			05/29/20 03:40	1
1,1-Dichloropropene	0.34	U H	1.0	0.34	ug/L			05/29/20 03:40	1
1,2,3-Trichlorobenzene	2.5	U H	5.0	2.5	ug/L			05/29/20 03:40	1
1,2,3-Trichloropropane	0.39	U H	1.0	0.39	ug/L			05/29/20 03:40	1
1,2,4-Trichlorobenzene	2.5	U H	5.0	2.5	ug/L			05/29/20 03:40	1
1,2,4-Trimethylbenzene	0.47	U M H	1.0	0.47	ug/L			05/29/20 03:40	1
1,2-Dibromo-3-Chloropropane	1.1	U H	5.0	1.1	ug/L			05/29/20 03:40	1
1,2-Dichlorobenzene	**1500**	**J H**	1.0	0.37	ug/L			05/29/20 03:40	1
1,2-Dichloroethane	0.50	U M H	1.0	0.50	ug/L			05/29/20 03:40	1
1,2-Dichloroethene, Total	**1.2**	**J H**	2.0	0.74	ug/L			05/29/20 03:40	1
1,2-Dichloropropane	0.67	U H	1.0	0.67	ug/L			05/29/20 03:40	1
1,3,5-Trimethylbenzene	0.31	U H	1.0	0.31	ug/L			05/29/20 03:40	1
1,3-Dichlorobenzene	**250**	**J H**	1.0	0.43	ug/L			05/29/20 03:40	1
1,3-Dichloropropane	0.34	U H	1.0	0.34	ug/L			05/29/20 03:40	1

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM - AOC 32/43A Spring 2020

Job ID: 680-183916-1

Client Sample ID: AOC32-DUP01-SPR20
Date Collected: 05/14/20 08:00
Date Received: 05/16/20 09:00

Lab Sample ID: 680-183916-5
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	**180**	**H**	1.0	0.46	ug/L			05/29/20 03:40	1
2,2-Dichloropropane	0.37	U H	1.0	0.37	ug/L			05/29/20 03:40	1
2-Butanone (MEK)	3.4	U H	10	3.4	ug/L			05/29/20 03:40	1
2-Chlorotoluene	0.27	U H	1.0	0.27	ug/L			05/29/20 03:40	1
2-Hexanone	2.0	U H	10	2.0	ug/L			05/29/20 03:40	1
4-Chlorotoluene	0.45	U H	1.0	0.45	ug/L			05/29/20 03:40	1
4-Isopropyltoluene	0.48	U H	1.0	0.48	ug/L			05/29/20 03:40	1
4-Methyl-2-pentanone (MIBK)	2.1	U H	10	2.1	ug/L			05/29/20 03:40	1
Acetone	7.0	U H	10	7.0	ug/L			05/29/20 03:40	1
Benzene	**1.4**	**H**	1.0	0.43	ug/L			05/29/20 03:40	1
Bromobenzene	0.50	U H	1.0	0.50	ug/L			05/29/20 03:40	1
Bromoform	0.43	U H	1.0	0.43	ug/L			05/29/20 03:40	1
Bromomethane	2.5	U H Q	5.0	2.5	ug/L			05/29/20 03:40	1
Carbon disulfide	0.43	U H	2.0	0.43	ug/L			05/29/20 03:40	1
Carbon tetrachloride	0.33	U H	1.0	0.33	ug/L			05/29/20 03:40	1
Chlorobenzene	**980**	**J H**	1.0	0.26	ug/L			05/29/20 03:40	1
Chlorobromomethane	0.45	U H	1.0	0.45	ug/L			05/29/20 03:40	1
Chlorodibromomethane	0.32	U H	1.0	0.32	ug/L			05/29/20 03:40	1
Chloroethane	2.5	U H	5.0	2.5	ug/L			05/29/20 03:40	1
Chloroform	0.50	U H	1.0	0.50	ug/L			05/29/20 03:40	1
Chloromethane	0.40	U H	1.0	0.40	ug/L			05/29/20 03:40	1
cis-1,2-Dichloroethene	**1.2**	**H**	1.0	0.41	ug/L			05/29/20 03:40	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	ug/L			05/29/20 03:40	1
Dibromomethane	0.35	U H	1.0	0.35	ug/L			05/29/20 03:40	1
Dichlorobromomethane	0.44	U H	1.0	0.44	ug/L			05/29/20 03:40	1
Dichlorodifluoromethane	0.60	U H	1.0	0.60	ug/L			05/29/20 03:40	1
Ethylbenzene	**0.77**	**J H**	1.0	0.33	ug/L			05/29/20 03:40	1
Ethylene Dibromide	0.44	U H	1.0	0.44	ug/L			05/29/20 03:40	1
Hexachlorobutadiene	2.5	U H	5.0	2.5	ug/L			05/29/20 03:40	1
Isopropylbenzene	**1.7**	**H**	1.0	0.35	ug/L			05/29/20 03:40	1
Methyl tert-butyl ether	0.30	U H	10	0.30	ug/L			05/29/20 03:40	1
Methylene Chloride	2.5	U H	5.0	2.5	ug/L			05/29/20 03:40	1
m-Xylene & p-Xylene	0.35	U H	1.0	0.35	ug/L			05/29/20 03:40	1
Naphthalene	2.5	U H	5.0	2.5	ug/L			05/29/20 03:40	1
n-Butylbenzene	0.47	U H	1.0	0.47	ug/L			05/29/20 03:40	1
N-Propylbenzene	**1.6**	**H**	1.0	0.38	ug/L			05/29/20 03:40	1
o-Xylene	**0.42**	**J H**	1.0	0.23	ug/L			05/29/20 03:40	1
sec-Butylbenzene	**0.86**	**J H**	1.0	0.42	ug/L			05/29/20 03:40	1
Styrene	0.27	U H	1.0	0.27	ug/L			05/29/20 03:40	1
tert-Butylbenzene	0.45	U H	1.0	0.45	ug/L			05/29/20 03:40	1
Tetrachloroethene	0.74	U H	1.0	0.74	ug/L			05/29/20 03:40	1
Toluene	0.48	U H	1.0	0.48	ug/L			05/29/20 03:40	1
trans-1,2-Dichloroethene	0.37	U H	1.0	0.37	ug/L			05/29/20 03:40	1
trans-1,3-Dichloropropene	0.42	U H	1.0	0.42	ug/L			05/29/20 03:40	1
Trichloroethene	**1.2**	**H**	1.0	0.48	ug/L			05/29/20 03:40	1
Trichlorofluoromethane	0.42	U H	1.0	0.42	ug/L			05/29/20 03:40	1
Vinyl acetate	0.81	U H	2.0	0.81	ug/L			05/29/20 03:40	1
Vinyl chloride	0.50	U H	1.0	0.50	ug/L			05/29/20 03:40	1
Xylenes, Total	**0.42**	**J H**	2.0	0.23	ug/L			05/29/20 03:40	1

Client Sample ID: AOC32-DUP01-SPR20

Lab Sample ID: 680-183916-5

Date Collected: 05/14/20 08:00
Matrix: Water
Date Received: 05/16/20 09:00

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		85 - 114		05/29/20 03:40	1
Dibromofluoromethane (Surr)	111		80 - 119		05/29/20 03:40	1
Toluene-d8 (Surr)	110		89 - 112		05/29/20 03:40	1
1,2-Dichloroethane-d4 (Surr)	100		81 - 118		05/29/20 03:40	1

Method: 8260B - Volatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichlorobenzene	1100	H	20	7.4	ug/L			05/29/20 15:18	20
1,3-Dichlorobenzene	180	H	20	8.6	ug/L			05/29/20 15:18	20
Chlorobenzene	740	H	20	5.2	ug/L			05/29/20 15:18	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		85 - 114		05/29/20 15:18	20
Dibromofluoromethane (Surr)	111		80 - 119		05/29/20 15:18	20
Toluene-d8 (Surr)	111		89 - 112		05/29/20 15:18	20
1,2-Dichloroethane-d4 (Surr)	102		81 - 118		05/29/20 15:18	20

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	500		50	17	ug/L		05/26/20 13:18	06/20/20 00:46	1
Manganese	25000		10	1.0	ug/L		05/26/20 13:18	06/20/20 00:46	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	8.2		3.0	1.5	ug/L		05/26/20 13:18	05/27/20 14:31	1

Client Sample ID: AOC3243A-TB01-051420

Lab Sample ID: 680-183916-6

Date Collected: 05/14/20 00:00
Matrix: Water
Date Received: 05/16/20 09:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.37	U Q	1.0	0.37	ug/L			05/28/20 19:33	1
1,1,1-Trichloroethane	0.37	U	1.0	0.37	ug/L			05/28/20 19:33	1
1,1,2,2-Tetrachloroethane	0.62	U	1.0	0.62	ug/L			05/28/20 19:33	1
1,1,2-Trichloroethane	0.33	U	1.0	0.33	ug/L			05/28/20 19:33	1
1,1-Dichloroethane	0.38	U	1.0	0.38	ug/L			05/28/20 19:33	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			05/28/20 19:33	1
1,1-Dichloropropene	0.34	U	1.0	0.34	ug/L			05/28/20 19:33	1
1,2,3-Trichlorobenzene	2.5	U	5.0	2.5	ug/L			05/28/20 19:33	1
1,2,3-Trichloropropane	0.39	U	1.0	0.39	ug/L			05/28/20 19:33	1
1,2,4-Trichlorobenzene	2.5	U	5.0	2.5	ug/L			05/28/20 19:33	1
1,2,4-Trimethylbenzene	0.47	U	1.0	0.47	ug/L			05/28/20 19:33	1
1,2-Dibromo-3-Chloropropane	1.1	U	5.0	1.1	ug/L			05/28/20 19:33	1
1,2-Dichlorobenzene	0.37	U	1.0	0.37	ug/L			05/28/20 19:33	1
1,2-Dichloroethane	0.50	U M	1.0	0.50	ug/L			05/28/20 19:33	1
1,2-Dichloroethene, Total	0.74	U	2.0	0.74	ug/L			05/28/20 19:33	1
1,2-Dichloropropane	0.67	U	1.0	0.67	ug/L			05/28/20 19:33	1
1,3,5-Trimethylbenzene	0.31	U	1.0	0.31	ug/L			05/28/20 19:33	1
1,3-Dichlorobenzene	0.43	U	1.0	0.43	ug/L			05/28/20 19:33	1
1,3-Dichloropropane	0.34	U	1.0	0.34	ug/L			05/28/20 19:33	1

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM - AOC 32/43A Spring 2020

Job ID: 680-183916-1

Client Sample ID: AOC3243A-TB01-051420
Date Collected: 05/14/20 00:00
Date Received: 05/16/20 09:00

Lab Sample ID: 680-183916-6
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	0.46	U	1.0	0.46	ug/L			05/28/20 19:33	1
2,2-Dichloropropane	0.37	U	1.0	0.37	ug/L			05/28/20 19:33	1
2-Butanone (MEK)	3.4	U	10	3.4	ug/L			05/28/20 19:33	1
2-Chlorotoluene	0.27	U	1.0	0.27	ug/L			05/28/20 19:33	1
2-Hexanone	2.0	U	10	2.0	ug/L			05/28/20 19:33	1
4-Chlorotoluene	0.45	U	1.0	0.45	ug/L			05/28/20 19:33	1
4-Isopropyltoluene	0.48	U	1.0	0.48	ug/L			05/28/20 19:33	1
4-Methyl-2-pentanone (MIBK)	2.1	U	10	2.1	ug/L			05/28/20 19:33	1
Acetone	7.0	U	10	7.0	ug/L			05/28/20 19:33	1
Benzene	0.43	U	1.0	0.43	ug/L			05/28/20 19:33	1
Bromobenzene	0.50	U	1.0	0.50	ug/L			05/28/20 19:33	1
Bromoform	0.43	U	1.0	0.43	ug/L			05/28/20 19:33	1
Bromomethane	2.5	U Q	5.0	2.5	ug/L			05/28/20 19:33	1
Carbon disulfide	0.43	U	2.0	0.43	ug/L			05/28/20 19:33	1
Carbon tetrachloride	0.33	U	1.0	0.33	ug/L			05/28/20 19:33	1
Chlorobenzene	0.26	U	1.0	0.26	ug/L			05/28/20 19:33	1
Chlorobromomethane	0.45	U	1.0	0.45	ug/L			05/28/20 19:33	1
Chlorodibromomethane	0.32	U	1.0	0.32	ug/L			05/28/20 19:33	1
Chloroethane	2.5	U	5.0	2.5	ug/L			05/28/20 19:33	1
Chloroform	0.50	U	1.0	0.50	ug/L			05/28/20 19:33	1
Chloromethane	0.40	U	1.0	0.40	ug/L			05/28/20 19:33	1
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			05/28/20 19:33	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	ug/L			05/28/20 19:33	1
Dibromomethane	0.35	U	1.0	0.35	ug/L			05/28/20 19:33	1
Dichlorobromomethane	0.44	U	1.0	0.44	ug/L			05/28/20 19:33	1
Dichlorodifluoromethane	0.60	U	1.0	0.60	ug/L			05/28/20 19:33	1
Ethylbenzene	0.33	U	1.0	0.33	ug/L			05/28/20 19:33	1
Ethylene Dibromide	0.44	U	1.0	0.44	ug/L			05/28/20 19:33	1
Hexachlorobutadiene	2.5	U	5.0	2.5	ug/L			05/28/20 19:33	1
Isopropylbenzene	0.35	U	1.0	0.35	ug/L			05/28/20 19:33	1
Methyl tert-butyl ether	0.30	U	10	0.30	ug/L			05/28/20 19:33	1
Methylene Chloride	2.5	U	5.0	2.5	ug/L			05/28/20 19:33	1
m-Xylene & p-Xylene	0.35	U	1.0	0.35	ug/L			05/28/20 19:33	1
Naphthalene	2.5	U	5.0	2.5	ug/L			05/28/20 19:33	1
n-Butylbenzene	0.47	U	1.0	0.47	ug/L			05/28/20 19:33	1
N-Propylbenzene	0.38	U	1.0	0.38	ug/L			05/28/20 19:33	1
o-Xylene	0.23	U	1.0	0.23	ug/L			05/28/20 19:33	1
sec-Butylbenzene	0.42	U	1.0	0.42	ug/L			05/28/20 19:33	1
Styrene	0.27	U	1.0	0.27	ug/L			05/28/20 19:33	1
tert-Butylbenzene	0.45	U	1.0	0.45	ug/L			05/28/20 19:33	1
Tetrachloroethene	0.74	U	1.0	0.74	ug/L			05/28/20 19:33	1
Toluene	0.48	U	1.0	0.48	ug/L			05/28/20 19:33	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			05/28/20 19:33	1
trans-1,3-Dichloropropene	0.42	U	1.0	0.42	ug/L			05/28/20 19:33	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			05/28/20 19:33	1
Trichlorofluoromethane	0.42	U	1.0	0.42	ug/L			05/28/20 19:33	1
Vinyl acetate	0.81	U Q	2.0	0.81	ug/L			05/28/20 19:33	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			05/28/20 19:33	1
Xylenes, Total	0.23	U	2.0	0.23	ug/L			05/28/20 19:33	1

Client Sample ID: AOC3243A-TB01-051420
Lab Sample ID: 680-183916-6

Date Collected: 05/14/20 00:00
Matrix: Water
Date Received: 05/16/20 09:00

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		85 - 114		05/28/20 19:33	1
Dibromofluoromethane (Surr)	114		80 - 119		05/28/20 19:33	1
Toluene-d8 (Surr)	110		89 - 112		05/28/20 19:33	1
1,2-Dichloroethane-d4 (Surr)	106		81 - 118		05/28/20 19:33	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 680-620228/9
Matrix: Water
Analysis Batch: 620228

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.37	U	1.0	0.37	ug/L			05/28/20 12:34	1
1,1,1-Trichloroethane	0.37	U	1.0	0.37	ug/L			05/28/20 12:34	1
1,1,2,2-Tetrachloroethane	0.62	U	1.0	0.62	ug/L			05/28/20 12:34	1
1,1,2-Trichloroethane	0.33	U	1.0	0.33	ug/L			05/28/20 12:34	1
1,1-Dichloroethane	0.38	U	1.0	0.38	ug/L			05/28/20 12:34	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			05/28/20 12:34	1
1,1-Dichloropropene	0.34	U	1.0	0.34	ug/L			05/28/20 12:34	1
1,2,3-Trichlorobenzene	2.5	U	5.0	2.5	ug/L			05/28/20 12:34	1
1,2,3-Trichloropropane	0.39	U	1.0	0.39	ug/L			05/28/20 12:34	1
1,2,4-Trichlorobenzene	2.5	U	5.0	2.5	ug/L			05/28/20 12:34	1
1,2,4-Trimethylbenzene	0.47	U	1.0	0.47	ug/L			05/28/20 12:34	1
1,2-Dibromo-3-Chloropropane	1.1	U	5.0	1.1	ug/L			05/28/20 12:34	1
1,2-Dichlorobenzene	0.37	U	1.0	0.37	ug/L			05/28/20 12:34	1
1,2-Dichloroethane	0.50	U M	1.0	0.50	ug/L			05/28/20 12:34	1
1,2-Dichloroethene, Total	0.74	U	2.0	0.74	ug/L			05/28/20 12:34	1
1,2-Dichloropropane	0.67	U	1.0	0.67	ug/L			05/28/20 12:34	1
1,3,5-Trimethylbenzene	0.31	U	1.0	0.31	ug/L			05/28/20 12:34	1
1,3-Dichlorobenzene	0.43	U	1.0	0.43	ug/L			05/28/20 12:34	1
1,3-Dichloropropane	0.34	U	1.0	0.34	ug/L			05/28/20 12:34	1
1,4-Dichlorobenzene	0.46	U	1.0	0.46	ug/L			05/28/20 12:34	1
2,2-Dichloropropane	0.37	U	1.0	0.37	ug/L			05/28/20 12:34	1
2-Butanone (MEK)	3.4	U	10	3.4	ug/L			05/28/20 12:34	1
2-Chlorotoluene	0.27	U	1.0	0.27	ug/L			05/28/20 12:34	1
2-Hexanone	2.0	U	10	2.0	ug/L			05/28/20 12:34	1
4-Chlorotoluene	0.45	U	1.0	0.45	ug/L			05/28/20 12:34	1
4-Isopropyltoluene	0.48	U	1.0	0.48	ug/L			05/28/20 12:34	1
4-Methyl-2-pentanone (MIBK)	2.1	U	10	2.1	ug/L			05/28/20 12:34	1
Acetone	7.0	U	10	7.0	ug/L			05/28/20 12:34	1
Benzene	0.43	U	1.0	0.43	ug/L			05/28/20 12:34	1
Bromobenzene	0.50	U	1.0	0.50	ug/L			05/28/20 12:34	1
Bromoform	0.43	U	1.0	0.43	ug/L			05/28/20 12:34	1
Bromomethane	3.83	J	5.0	2.5	ug/L			05/28/20 12:34	1
Carbon disulfide	0.43	U	2.0	0.43	ug/L			05/28/20 12:34	1
Carbon tetrachloride	0.33	U	1.0	0.33	ug/L			05/28/20 12:34	1
Chlorobenzene	0.26	U	1.0	0.26	ug/L			05/28/20 12:34	1
Chlorobromomethane	0.45	U	1.0	0.45	ug/L			05/28/20 12:34	1
Chlorodibromomethane	0.32	U	1.0	0.32	ug/L			05/28/20 12:34	1
Chloroethane	2.5	U	5.0	2.5	ug/L			05/28/20 12:34	1
Chloroform	0.50	U	1.0	0.50	ug/L			05/28/20 12:34	1
Chloromethane	0.40	U	1.0	0.40	ug/L			05/28/20 12:34	1
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			05/28/20 12:34	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	ug/L			05/28/20 12:34	1
Dibromomethane	0.35	U	1.0	0.35	ug/L			05/28/20 12:34	1
Dichlorobromomethane	0.44	U	1.0	0.44	ug/L			05/28/20 12:34	1
Dichlorodifluoromethane	0.60	U	1.0	0.60	ug/L			05/28/20 12:34	1
Ethylbenzene	0.33	U	1.0	0.33	ug/L			05/28/20 12:34	1
Ethylene Dibromide	0.44	U	1.0	0.44	ug/L			05/28/20 12:34	1
Hexachlorobutadiene	2.5	U	5.0	2.5	ug/L			05/28/20 12:34	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 680-620228/9
Matrix: Water
Analysis Batch: 620228

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	0.35	U	1.0	0.35	ug/L			05/28/20 12:34	1
Methyl tert-butyl ether	0.30	U	10	0.30	ug/L			05/28/20 12:34	1
Methylene Chloride	2.5	U	5.0	2.5	ug/L			05/28/20 12:34	1
m-Xylene & p-Xylene	0.35	U	1.0	0.35	ug/L			05/28/20 12:34	1
Naphthalene	2.5	U	5.0	2.5	ug/L			05/28/20 12:34	1
n-Butylbenzene	0.47	U	1.0	0.47	ug/L			05/28/20 12:34	1
N-Propylbenzene	0.38	U	1.0	0.38	ug/L			05/28/20 12:34	1
o-Xylene	0.23	U	1.0	0.23	ug/L			05/28/20 12:34	1
sec-Butylbenzene	0.42	U	1.0	0.42	ug/L			05/28/20 12:34	1
Styrene	0.27	U	1.0	0.27	ug/L			05/28/20 12:34	1
tert-Butylbenzene	0.45	U	1.0	0.45	ug/L			05/28/20 12:34	1
Tetrachloroethene	0.74	U	1.0	0.74	ug/L			05/28/20 12:34	1
Toluene	0.48	U	1.0	0.48	ug/L			05/28/20 12:34	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			05/28/20 12:34	1
trans-1,3-Dichloropropene	0.42	U	1.0	0.42	ug/L			05/28/20 12:34	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			05/28/20 12:34	1
Trichlorofluoromethane	0.42	U	1.0	0.42	ug/L			05/28/20 12:34	1
Vinyl acetate	0.81	U	2.0	0.81	ug/L			05/28/20 12:34	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			05/28/20 12:34	1
Xylenes, Total	0.23	U	2.0	0.23	ug/L			05/28/20 12:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*85 - 114*		*05/28/20 12:34*	*1*
Dibromofluoromethane (Surr)	*114*		*80 - 119*		*05/28/20 12:34*	*1*
Toluene-d8 (Surr)	*110*		*89 - 112*		*05/28/20 12:34*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*81 - 118*		*05/28/20 12:34*	*1*

Lab Sample ID: LCS 680-620228/3
Matrix: Water
Analysis Batch: 620228

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	50.0	56.4		ug/L		113	78 - 124
1,1,1-Trichloroethane	50.0	50.6		ug/L		101	74 - 131
1,1,2,2-Tetrachloroethane	50.0	48.7		ug/L		97	71 - 121
1,1,2-Trichloroethane	50.0	48.6		ug/L		97	80 - 119
1,1-Dichloroethane	50.0	49.1		ug/L		98	77 - 125
1,1-Dichloroethene	50.0	51.6		ug/L		103	71 - 131
1,1-Dichloropropene	50.0	54.1		ug/L		108	79 - 125
1,2,3-Trichlorobenzene	50.0	48.1		ug/L		96	69 - 129
1,2,3-Trichloropropane	50.0	46.4		ug/L		93	73 - 122
1,2,4-Trichlorobenzene	50.0	49.7		ug/L		99	69 - 130
1,2,4-Trimethylbenzene	50.0	48.8		ug/L		98	76 - 124
1,2-Dibromo-3-Chloropropane	50.0	44.4		ug/L		89	62 - 128
1,2-Dichlorobenzene	50.0	51.2		ug/L		102	80 - 119
1,2-Dichloroethane	50.0	49.4		ug/L		99	73 - 128
1,2-Dichloroethene, Total	100	96.4		ug/L		96	79 - 121
1,2-Dichloropropane	50.0	47.2		ug/L		94	78 - 122

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 680-620228/3
Matrix: Water
Analysis Batch: 620228

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,3,5-Trimethylbenzene	50.0	50.4		ug/L		101	75 - 124
1,3-Dichlorobenzene	50.0	51.3		ug/L		103	80 - 119
1,3-Dichloropropane	50.0	41.6		ug/L		83	80 - 119
1,4-Dichlorobenzene	50.0	49.9		ug/L		100	79 - 118
2,2-Dichloropropane	50.0	51.7		ug/L		103	60 - 139
2-Butanone (MEK)	250	232		ug/L		93	56 - 143
2-Chlorotoluene	50.0	48.8		ug/L		98	79 - 122
2-Hexanone	250	187		ug/L		75	57 - 139
4-Chlorotoluene	50.0	49.7		ug/L		99	78 - 122
4-Isopropyltoluene	50.0	50.6		ug/L		101	77 - 127
4-Methyl-2-pentanone (MIBK)	250	213		ug/L		85	67 - 130
Acetone	250	216		ug/L		87	39 - 160
Benzene	50.0	49.8		ug/L		100	79 - 120
Bromobenzene	50.0	51.8		ug/L		104	80 - 120
Bromoform	50.0	46.8		ug/L		94	66 - 130
Bromomethane	50.0	230	J M Q	ug/L		459	53 - 141
Carbon disulfide	50.0	52.3		ug/L		105	64 - 133
Carbon tetrachloride	50.0	54.5		ug/L		109	72 - 136
Chlorobenzene	50.0	52.6		ug/L		105	82 - 118
Chlorobromomethane	50.0	53.2		ug/L		106	78 - 123
Chlorodibromomethane	50.0	52.1		ug/L		104	74 - 126
Chloroethane	50.0	56.4		ug/L		113	60 - 138
Chloroform	50.0	49.5		ug/L		99	79 - 124
Chloromethane	50.0	48.3	M	ug/L		97	50 - 139
cis-1,2-Dichloroethene	50.0	46.5		ug/L		93	78 - 123
cis-1,3-Dichloropropene	50.0	50.8		ug/L		102	75 - 124
Dibromomethane	50.0	47.3		ug/L		95	79 - 123
Dichlorobromomethane	50.0	48.0		ug/L		96	79 - 125
Dichlorodifluoromethane	50.0	52.7		ug/L		105	32 - 152
Ethylbenzene	50.0	51.6		ug/L		103	79 - 121
Ethylene Dibromide	50.0	48.5		ug/L		97	75 - 127
Hexachlorobutadiene	50.0	51.6		ug/L		103	66 - 134
Isopropylbenzene	50.0	51.1		ug/L		102	72 - 131
Methyl tert-butyl ether	50.0	47.4		ug/L		95	71 - 124
Methylene Chloride	50.0	43.5		ug/L		87	74 - 124
m-Xylene & p-Xylene	50.0	49.7		ug/L		99	80 - 121
Naphthalene	50.0	49.4		ug/L		99	61 - 128
n-Butylbenzene	50.0	51.5		ug/L		103	75 - 128
N-Propylbenzene	50.0	51.0		ug/L		102	76 - 126
o-Xylene	50.0	49.7		ug/L		99	78 - 122
sec-Butylbenzene	50.0	49.8		ug/L		100	77 - 126
Styrene	50.0	50.1		ug/L		100	78 - 123
tert-Butylbenzene	50.0	51.0		ug/L		102	78 - 124
Tetrachloroethene	50.0	55.7		ug/L		111	74 - 129
Toluene	50.0	50.9		ug/L		102	80 - 121
trans-1,2-Dichloroethene	50.0	49.9		ug/L		100	75 - 124
trans-1,3-Dichloropropene	50.0	53.1		ug/L		106	73 - 127
Trichloroethene	50.0	50.3		ug/L		101	79 - 123
Trichlorofluoromethane	50.0	54.3		ug/L		109	65 - 141

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 680-620228/3
Matrix: Water
Analysis Batch: 620228

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Vinyl acetate			100	118		ug/L		118	54 - 146		
Vinyl chloride			50.0	52.2		ug/L		104	58 - 137		
Xylenes, Total			100	99.4		ug/L		99	79 - 121		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*85 - 114*
Dibromofluoromethane (Surr)	*101*		*80 - 119*
Toluene-d8 (Surr)	*103*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*100*		*81 - 118*

Lab Sample ID: LCSD 680-620228/4
Matrix: Water
Analysis Batch: 620228

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane			50.0	56.5		ug/L		113	78 - 124	0	20
1,1,1-Trichloroethane			50.0	50.6		ug/L		101	74 - 131	0	20
1,1,2,2-Tetrachloroethane			50.0	50.9		ug/L		102	71 - 121	4	20
1,1,2-Trichloroethane			50.0	51.9		ug/L		104	80 - 119	6	20
1,1-Dichloroethane			50.0	48.7		ug/L		97	77 - 125	1	20
1,1-Dichloroethene			50.0	50.5		ug/L		101	71 - 131	2	20
1,1-Dichloropropene			50.0	53.2		ug/L		106	79 - 125	2	20
1,2,3-Trichlorobenzene			50.0	50.0		ug/L		100	69 - 129	4	20
1,2,3-Trichloropropane			50.0	48.3		ug/L		97	73 - 122	4	20
1,2,4-Trichlorobenzene			50.0	49.8		ug/L		100	69 - 130	0	20
1,2,4-Trimethylbenzene			50.0	48.9		ug/L		98	76 - 124	0	20
1,2-Dibromo-3-Chloropropane			50.0	47.7		ug/L		95	62 - 128	7	20
1,2-Dichlorobenzene			50.0	51.4		ug/L		103	80 - 119	0	20
1,2-Dichloroethane			50.0	50.8		ug/L		102	73 - 128	3	20
1,2-Dichloroethene, Total			100	95.8		ug/L		96	79 - 121	1	20
1,2-Dichloropropane			50.0	47.9		ug/L		96	78 - 122	1	20
1,3,5-Trimethylbenzene			50.0	49.8		ug/L		100	75 - 124	1	20
1,3-Dichlorobenzene			50.0	51.3		ug/L		103	80 - 119	0	20
1,3-Dichloropropane			50.0	43.3		ug/L		87	80 - 119	4	20
1,4-Dichlorobenzene			50.0	49.8		ug/L		100	79 - 118	0	20
2,2-Dichloropropane			50.0	51.7		ug/L		103	60 - 139	0	20
2-Butanone (MEK)			250	248		ug/L		99	56 - 143	6	20
2-Chlorotoluene			50.0	49.1		ug/L		98	79 - 122	0	20
2-Hexanone			250	203		ug/L		81	57 - 139	8	20
4-Chlorotoluene			50.0	49.5		ug/L		99	78 - 122	0	20
4-Isopropyltoluene			50.0	49.2		ug/L		98	77 - 127	3	20
4-Methyl-2-pentanone (MIBK)			250	229		ug/L		92	67 - 130	7	20
Acetone			250	234		ug/L		94	39 - 160	8	20
Benzene			50.0	50.2		ug/L		100	79 - 120	1	20
Bromobenzene			50.0	52.6		ug/L		105	80 - 120	1	20
Bromoform			50.0	48.7		ug/L		97	66 - 130	4	20
Bromomethane			50.0	238	Q J M	ug/L		475	53 - 141	3	20
Carbon disulfide			50.0	51.3		ug/L		103	64 - 133	2	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 680-620228/4
Matrix: Water
Analysis Batch: 620228

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon tetrachloride	50.0	54.0		ug/L		108	72 - 136	1	20
Chlorobenzene	50.0	52.2		ug/L		104	82 - 118	1	20
Chlorobromomethane	50.0	54.5		ug/L		109	78 - 123	2	20
Chlorodibromomethane	50.0	53.9		ug/L		108	74 - 126	3	20
Chloroethane	50.0	55.1		ug/L		110	60 - 138	2	20
Chloroform	50.0	50.0		ug/L		100	79 - 124	1	20
Chloromethane	50.0	47.4		ug/L		95	50 - 139	2	20
cis-1,2-Dichloroethene	50.0	46.7		ug/L		93	78 - 123	0	20
cis-1,3-Dichloropropene	50.0	51.5		ug/L		103	75 - 124	1	20
Dibromomethane	50.0	48.4		ug/L		97	79 - 123	2	20
Dichlorobromomethane	50.0	49.6		ug/L		99	79 - 125	3	20
Dichlorodifluoromethane	50.0	51.8		ug/L		104	32 - 152	2	20
Ethylbenzene	50.0	51.0		ug/L		102	79 - 121	1	20
Ethylene Dibromide	50.0	50.0		ug/L		100	75 - 127	3	20
Hexachlorobutadiene	50.0	50.1		ug/L		100	66 - 134	3	20
Isopropylbenzene	50.0	50.3		ug/L		101	72 - 131	1	20
Methyl tert-butyl ether	50.0	50.1		ug/L		100	71 - 124	5	20
Methylene Chloride	50.0	44.1		ug/L		88	74 - 124	1	20
m-Xylene & p-Xylene	50.0	49.4		ug/L		99	80 - 121	0	20
Naphthalene	50.0	52.2		ug/L		104	61 - 128	6	20
n-Butylbenzene	50.0	50.1		ug/L		100	75 - 128	3	20
N-Propylbenzene	50.0	50.3		ug/L		101	76 - 126	1	20
o-Xylene	50.0	49.6		ug/L		99	78 - 122	0	20
sec-Butylbenzene	50.0	49.2		ug/L		98	77 - 126	1	20
Styrene	50.0	49.9		ug/L		100	78 - 123	0	20
tert-Butylbenzene	50.0	50.3		ug/L		101	78 - 124	2	20
Tetrachloroethene	50.0	55.5		ug/L		111	74 - 129	0	20
Toluene	50.0	50.5		ug/L		101	80 - 121	1	20
trans-1,2-Dichloroethene	50.0	49.2		ug/L		98	75 - 124	1	20
trans-1,3-Dichloropropene	50.0	54.6		ug/L		109	73 - 127	3	20
Trichloroethene	50.0	49.7		ug/L		99	79 - 123	1	20
Trichlorofluoromethane	50.0	53.1		ug/L		106	65 - 141	2	20
Vinyl acetate	100	122		ug/L		122	54 - 146	3	20
Vinyl chloride	50.0	51.4		ug/L		103	58 - 137	2	20
Xylenes, Total	100	99.0		ug/L		99	79 - 121	0	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*85 - 114*
Dibromofluoromethane (Surr)	*103*		*80 - 119*
Toluene-d8 (Surr)	*102*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*104*		*81 - 118*

Lab Sample ID: MB 680-620330/10
Matrix: Water
Analysis Batch: 620330

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.37	U	1.0	0.37	ug/L			05/29/20 00:34	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 680-620330/10
Matrix: Water
Analysis Batch: 620330

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.37	U	1.0	0.37	ug/L			05/29/20 00:34	1
1,1,2,2-Tetrachloroethane	0.62	U	1.0	0.62	ug/L			05/29/20 00:34	1
1,1,2-Trichloroethane	0.33	U	1.0	0.33	ug/L			05/29/20 00:34	1
1,1-Dichloroethane	0.38	U	1.0	0.38	ug/L			05/29/20 00:34	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			05/29/20 00:34	1
1,1-Dichloropropene	0.34	U	1.0	0.34	ug/L			05/29/20 00:34	1
1,2,3-Trichlorobenzene	2.5	U	5.0	2.5	ug/L			05/29/20 00:34	1
1,2,3-Trichloropropane	0.39	U	1.0	0.39	ug/L			05/29/20 00:34	1
1,2,4-Trichlorobenzene	2.5	U	5.0	2.5	ug/L			05/29/20 00:34	1
1,2,4-Trimethylbenzene	0.47	U	1.0	0.47	ug/L			05/29/20 00:34	1
1,2-Dibromo-3-Chloropropane	1.1	U	5.0	1.1	ug/L			05/29/20 00:34	1
1,2-Dichlorobenzene	0.37	U	1.0	0.37	ug/L			05/29/20 00:34	1
1,2-Dichloroethane	0.50	U M	1.0	0.50	ug/L			05/29/20 00:34	1
1,2-Dichloroethene, Total	0.74	U	2.0	0.74	ug/L			05/29/20 00:34	1
1,2-Dichloropropane	0.67	U	1.0	0.67	ug/L			05/29/20 00:34	1
1,3,5-Trimethylbenzene	0.31	U	1.0	0.31	ug/L			05/29/20 00:34	1
1,3-Dichlorobenzene	0.43	U	1.0	0.43	ug/L			05/29/20 00:34	1
1,3-Dichloropropane	0.34	U	1.0	0.34	ug/L			05/29/20 00:34	1
1,4-Dichlorobenzene	0.46	U	1.0	0.46	ug/L			05/29/20 00:34	1
2,2-Dichloropropane	0.37	U	1.0	0.37	ug/L			05/29/20 00:34	1
2-Butanone (MEK)	3.4	U	10	3.4	ug/L			05/29/20 00:34	1
2-Chlorotoluene	0.27	U	1.0	0.27	ug/L			05/29/20 00:34	1
2-Hexanone	2.0	U	10	2.0	ug/L			05/29/20 00:34	1
4-Chlorotoluene	0.45	U	1.0	0.45	ug/L			05/29/20 00:34	1
4-Isopropyltoluene	0.48	U	1.0	0.48	ug/L			05/29/20 00:34	1
4-Methyl-2-pentanone (MIBK)	2.1	U	10	2.1	ug/L			05/29/20 00:34	1
Acetone	7.0	U	10	7.0	ug/L			05/29/20 00:34	1
Benzene	0.43	U	1.0	0.43	ug/L			05/29/20 00:34	1
Bromobenzene	0.50	U	1.0	0.50	ug/L			05/29/20 00:34	1
Bromoform	0.43	U	1.0	0.43	ug/L			05/29/20 00:34	1
Bromomethane	2.5	U	5.0	2.5	ug/L			05/29/20 00:34	1
Carbon disulfide	0.43	U	2.0	0.43	ug/L			05/29/20 00:34	1
Carbon tetrachloride	0.33	U	1.0	0.33	ug/L			05/29/20 00:34	1
Chlorobenzene	0.26	U	1.0	0.26	ug/L			05/29/20 00:34	1
Chlorobromomethane	0.45	U	1.0	0.45	ug/L			05/29/20 00:34	1
Chlorodibromomethane	0.32	U	1.0	0.32	ug/L			05/29/20 00:34	1
Chloroethane	2.5	U	5.0	2.5	ug/L			05/29/20 00:34	1
Chloroform	0.50	U	1.0	0.50	ug/L			05/29/20 00:34	1
Chloromethane	0.40	U	1.0	0.40	ug/L			05/29/20 00:34	1
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			05/29/20 00:34	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	ug/L			05/29/20 00:34	1
Dibromomethane	0.35	U	1.0	0.35	ug/L			05/29/20 00:34	1
Dichlorobromomethane	0.44	U	1.0	0.44	ug/L			05/29/20 00:34	1
Dichlorodifluoromethane	0.60	U	1.0	0.60	ug/L			05/29/20 00:34	1
Ethylbenzene	0.33	U	1.0	0.33	ug/L			05/29/20 00:34	1
Ethylene Dibromide	0.44	U	1.0	0.44	ug/L			05/29/20 00:34	1
Hexachlorobutadiene	2.5	U	5.0	2.5	ug/L			05/29/20 00:34	1
Isopropylbenzene	0.35	U	1.0	0.35	ug/L			05/29/20 00:34	1
Methyl tert-butyl ether	0.30	U	10	0.30	ug/L			05/29/20 00:34	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 680-620330/10
Matrix: Water
Analysis Batch: 620330

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	2.5	U	5.0	2.5	ug/L			05/29/20 00:34	1
m-Xylene & p-Xylene	0.35	U	1.0	0.35	ug/L			05/29/20 00:34	1
Naphthalene	2.5	U	5.0	2.5	ug/L			05/29/20 00:34	1
n-Butylbenzene	0.47	U	1.0	0.47	ug/L			05/29/20 00:34	1
N-Propylbenzene	0.38	U	1.0	0.38	ug/L			05/29/20 00:34	1
o-Xylene	0.23	U	1.0	0.23	ug/L			05/29/20 00:34	1
sec-Butylbenzene	0.42	U	1.0	0.42	ug/L			05/29/20 00:34	1
Styrene	0.27	U	1.0	0.27	ug/L			05/29/20 00:34	1
tert-Butylbenzene	0.45	U	1.0	0.45	ug/L			05/29/20 00:34	1
Tetrachloroethene	0.74	U	1.0	0.74	ug/L			05/29/20 00:34	1
Toluene	0.48	U	1.0	0.48	ug/L			05/29/20 00:34	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			05/29/20 00:34	1
trans-1,3-Dichloropropene	0.42	U	1.0	0.42	ug/L			05/29/20 00:34	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			05/29/20 00:34	1
Trichlorofluoromethane	0.42	U	1.0	0.42	ug/L			05/29/20 00:34	1
Vinyl acetate	0.81	U	2.0	0.81	ug/L			05/29/20 00:34	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			05/29/20 00:34	1
Xylenes, Total	0.23	U	2.0	0.23	ug/L			05/29/20 00:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*85 - 114*		*05/29/20 00:34*	*1*
Dibromofluoromethane (Surr)	*112*		*80 - 119*		*05/29/20 00:34*	*1*
Toluene-d8 (Surr)	*112*		*89 - 112*		*05/29/20 00:34*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*81 - 118*		*05/29/20 00:34*	*1*

Lab Sample ID: LCS 680-620330/4
Matrix: Water
Analysis Batch: 620330

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	50.0	58.9		ug/L		118	78 - 124
1,1,1-Trichloroethane	50.0	50.7		ug/L		101	74 - 131
1,1,2,2-Tetrachloroethane	50.0	52.6		ug/L		105	71 - 121
1,1,2-Trichloroethane	50.0	56.3		ug/L		113	80 - 119
1,1-Dichloroethane	50.0	51.1		ug/L		102	77 - 125
1,1-Dichloroethene	50.0	48.1		ug/L		96	71 - 131
1,1-Dichloropropene	50.0	51.0		ug/L		102	79 - 125
1,2,3-Trichlorobenzene	50.0	51.6		ug/L		103	69 - 129
1,2,3-Trichloropropane	50.0	53.3		ug/L		107	73 - 122
1,2,4-Trichlorobenzene	50.0	51.8		ug/L		104	69 - 130
1,2,4-Trimethylbenzene	50.0	50.4		ug/L		101	76 - 124
1,2-Dibromo-3-Chloropropane	50.0	50.8		ug/L		102	62 - 128
1,2-Dichlorobenzene	50.0	54.6		ug/L		109	80 - 119
1,2-Dichloroethane	50.0	54.7		ug/L		109	73 - 128
1,2-Dichloroethene, Total	100	97.3		ug/L		97	79 - 121
1,2-Dichloropropane	50.0	50.5		ug/L		101	78 - 122
1,3,5-Trimethylbenzene	50.0	50.5		ug/L		101	75 - 124
1,3-Dichlorobenzene	50.0	52.9		ug/L		106	80 - 119

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 680-620330/4
Matrix: Water
Analysis Batch: 620330

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,3-Dichloropropane	50.0	47.3		ug/L		95	80 - 119
1,4-Dichlorobenzene	50.0	51.8		ug/L		104	79 - 118
2,2-Dichloropropane	50.0	40.5		ug/L		81	60 - 139
2-Butanone (MEK)	250	268		ug/L		107	56 - 143
2-Chlorotoluene	50.0	49.9		ug/L		100	79 - 122
2-Hexanone	250	223		ug/L		89	57 - 139
4-Chlorotoluene	50.0	50.7		ug/L		101	78 - 122
4-Isopropyltoluene	50.0	48.0		ug/L		96	77 - 127
4-Methyl-2-pentanone (MIBK)	250	253		ug/L		101	67 - 130
Acetone	250	255		ug/L		102	39 - 160
Benzene	50.0	52.5		ug/L		105	79 - 120
Bromobenzene	50.0	55.1		ug/L		110	80 - 120
Bromoform	50.0	50.4		ug/L		101	66 - 130
Bromomethane	50.0	224	J M Q	ug/L		447	53 - 141
Carbon disulfide	50.0	48.8		ug/L		98	64 - 133
Carbon tetrachloride	50.0	52.2		ug/L		104	72 - 136
Chlorobenzene	50.0	54.9		ug/L		110	82 - 118
Chlorobromomethane	50.0	58.7		ug/L		117	78 - 123
Chlorodibromomethane	50.0	58.7		ug/L		117	74 - 126
Chloroethane	50.0	54.8		ug/L		110	60 - 138
Chloroform	50.0	53.2		ug/L		106	79 - 124
Chloromethane	50.0	44.5		ug/L		89	50 - 139
cis-1,2-Dichloroethene	50.0	47.2		ug/L		94	78 - 123
cis-1,3-Dichloropropene	50.0	53.3		ug/L		107	75 - 124
Dibromomethane	50.0	52.6		ug/L		105	79 - 123
Dichlorobromomethane	50.0	53.2		ug/L		106	79 - 125
Dichlorodifluoromethane	50.0	44.4		ug/L		89	32 - 152
Ethylbenzene	50.0	51.1		ug/L		102	79 - 121
Ethylene Dibromide	50.0	55.4		ug/L		111	75 - 127
Hexachlorobutadiene	50.0	46.8		ug/L		94	66 - 134
Isopropylbenzene	50.0	50.5		ug/L		101	72 - 131
Methyl tert-butyl ether	50.0	54.3		ug/L		109	71 - 124
Methylene Chloride	50.0	46.1		ug/L		92	74 - 124
m-Xylene & p-Xylene	50.0	50.3		ug/L		101	80 - 121
Naphthalene	50.0	55.1		ug/L		110	61 - 128
n-Butylbenzene	50.0	48.0		ug/L		96	75 - 128
N-Propylbenzene	50.0	49.5		ug/L		99	76 - 126
o-Xylene	50.0	51.4		ug/L		103	78 - 122
sec-Butylbenzene	50.0	48.2		ug/L		96	77 - 126
Styrene	50.0	52.3		ug/L		105	78 - 123
tert-Butylbenzene	50.0	49.6		ug/L		99	78 - 124
Tetrachloroethene	50.0	55.6		ug/L		111	74 - 129
Toluene	50.0	53.9		ug/L		108	80 - 121
trans-1,2-Dichloroethene	50.0	50.2		ug/L		100	75 - 124
trans-1,3-Dichloropropene	50.0	57.0		ug/L		114	73 - 127
Trichloroethene	50.0	52.6		ug/L		105	79 - 123
Trichlorofluoromethane	50.0	49.3		ug/L		99	65 - 141
Vinyl acetate	100	107		ug/L		107	54 - 146
Vinyl chloride	50.0	47.0		ug/L		94	58 - 137

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 680-620330/4
Matrix: Water
Analysis Batch: 620330

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Xylenes, Total			100	102		ug/L		102	79 - 121		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*85 - 114*
Dibromofluoromethane (Surr)	*111*		*80 - 119*
Toluene-d8 (Surr)	*103*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*114*		*81 - 118*

Lab Sample ID: LCSD 680-620330/5
Matrix: Water
Analysis Batch: 620330

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane			50.0	59.0		ug/L		118	78 - 124	0	20
1,1,1-Trichloroethane			50.0	52.6		ug/L		105	74 - 131	4	20
1,1,2,2-Tetrachloroethane			50.0	52.9		ug/L		106	71 - 121	1	20
1,1,2-Trichloroethane			50.0	57.0		ug/L		114	80 - 119	1	20
1,1-Dichloroethane			50.0	52.0		ug/L		104	77 - 125	2	20
1,1-Dichloroethene			50.0	51.0		ug/L		102	71 - 131	6	20
1,1-Dichloropropene			50.0	52.7		ug/L		105	79 - 125	3	20
1,2,3-Trichlorobenzene			50.0	52.4		ug/L		105	69 - 129	2	20
1,2,3-Trichloropropane			50.0	53.4		ug/L		107	73 - 122	0	20
1,2,4-Trichlorobenzene			50.0	52.8		ug/L		106	69 - 130	2	20
1,2,4-Trimethylbenzene			50.0	51.3		ug/L		103	76 - 124	2	20
1,2-Dibromo-3-Chloropropane			50.0	49.9		ug/L		100	62 - 128	2	20
1,2-Dichlorobenzene			50.0	54.0		ug/L		108	80 - 119	1	20
1,2-Dichloroethane			50.0	55.7		ug/L		111	73 - 128	2	20
1,2-Dichloroethene, Total			100	99.0		ug/L		99	79 - 121	2	20
1,2-Dichloropropane			50.0	51.7		ug/L		103	78 - 122	2	20
1,3,5-Trimethylbenzene			50.0	51.9		ug/L		104	75 - 124	3	20
1,3-Dichlorobenzene			50.0	52.8		ug/L		106	80 - 119	0	20
1,3-Dichloropropane			50.0	48.5		ug/L		97	80 - 119	3	20
1,4-Dichlorobenzene			50.0	52.1		ug/L		104	79 - 118	1	20
2,2-Dichloropropane			50.0	40.8		ug/L		82	60 - 139	1	20
2-Butanone (MEK)			250	278		ug/L		111	56 - 143	4	20
2-Chlorotoluene			50.0	51.3		ug/L		103	79 - 122	3	20
2-Hexanone			250	225		ug/L		90	57 - 139	1	20
4-Chlorotoluene			50.0	51.5		ug/L		103	78 - 122	2	20
4-Isopropyltoluene			50.0	47.9		ug/L		96	77 - 127	0	20
4-Methyl-2-pentanone (MIBK)			250	258		ug/L		103	67 - 130	2	20
Acetone			250	262		ug/L		105	39 - 160	3	20
Benzene			50.0	53.6		ug/L		107	79 - 120	2	20
Bromobenzene			50.0	56.4		ug/L		113	80 - 120	2	20
Bromoform			50.0	51.1		ug/L		102	66 - 130	1	20
Bromomethane			50.0	234	Q J M	ug/L		469	53 - 141	5	20
Carbon disulfide			50.0	50.0		ug/L		100	64 - 133	2	20
Carbon tetrachloride			50.0	53.7		ug/L		107	72 - 136	3	20
Chlorobenzene			50.0	55.3		ug/L		111	82 - 118	1	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 680-620330/5
Matrix: Water
Analysis Batch: 620330

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chlorobromomethane			50.0	61.0		ug/L		122	78 - 123	4	20
Chlorodibromomethane			50.0	60.3		ug/L		121	74 - 126	3	20
Chloroethane			50.0	56.2		ug/L		112	60 - 138	3	20
Chloroform			50.0	53.7		ug/L		107	79 - 124	1	20
Chloromethane			50.0	46.2		ug/L		92	50 - 139	4	20
cis-1,2-Dichloroethene			50.0	47.9		ug/L		96	78 - 123	2	20
cis-1,3-Dichloropropene			50.0	53.7		ug/L		107	75 - 124	1	20
Dibromomethane			50.0	54.0		ug/L		108	79 - 123	3	20
Dichlorobromomethane			50.0	53.8		ug/L		108	79 - 125	1	20
Dichlorodifluoromethane			50.0	46.8		ug/L		94	32 - 152	5	20
Ethylbenzene			50.0	51.7		ug/L		103	79 - 121	1	20
Ethylene Dibromide			50.0	56.4		ug/L		113	75 - 127	2	20
Hexachlorobutadiene			50.0	46.8		ug/L		94	66 - 134	0	20
Isopropylbenzene			50.0	51.5		ug/L		103	72 - 131	2	20
Methyl tert-butyl ether			50.0	54.5		ug/L		109	71 - 124	0	20
Methylene Chloride			50.0	46.9		ug/L		94	74 - 124	2	20
m-Xylene & p-Xylene			50.0	50.8		ug/L		102	80 - 121	1	20
Naphthalene			50.0	55.7		ug/L		111	61 - 128	1	20
n-Butylbenzene			50.0	48.3		ug/L		97	75 - 128	1	20
N-Propylbenzene			50.0	50.6		ug/L		101	76 - 126	2	20
o-Xylene			50.0	52.1		ug/L		104	78 - 122	1	20
sec-Butylbenzene			50.0	49.5		ug/L		99	77 - 126	3	20
Styrene			50.0	53.5		ug/L		107	78 - 123	2	20
tert-Butylbenzene			50.0	51.7		ug/L		103	78 - 124	4	20
Tetrachloroethene			50.0	57.0		ug/L		114	74 - 129	2	20
Toluene			50.0	55.1		ug/L		110	80 - 121	2	20
trans-1,2-Dichloroethene			50.0	51.1		ug/L		102	75 - 124	2	20
trans-1,3-Dichloropropene			50.0	57.5		ug/L		115	73 - 127	1	20
Trichloroethene			50.0	54.5		ug/L		109	79 - 123	4	20
Trichlorofluoromethane			50.0	51.9		ug/L		104	65 - 141	5	20
Vinyl acetate			100	105		ug/L		105	54 - 146	2	20
Vinyl chloride			50.0	48.4		ug/L		97	58 - 137	3	20
Xylenes, Total			100	103		ug/L		103	79 - 121	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*95*		*85 - 114*
Dibromofluoromethane (Surr)	*111*		*80 - 119*
Toluene-d8 (Surr)	*105*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*116*		*81 - 118*

Lab Sample ID: MB 680-620372/9
Matrix: Water
Analysis Batch: 620372

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.37	U	1.0	0.37	ug/L			05/29/20 12:58	1
1,1,1-Trichloroethane	0.37	U	1.0	0.37	ug/L			05/29/20 12:58	1
1,1,2,2-Tetrachloroethane	0.62	U	1.0	0.62	ug/L			05/29/20 12:58	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 680-620372/9
Matrix: Water
Analysis Batch: 620372

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	0.33	U	1.0	0.33	ug/L			05/29/20 12:58	1
1,1-Dichloroethane	0.38	U	1.0	0.38	ug/L			05/29/20 12:58	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			05/29/20 12:58	1
1,1-Dichloropropene	0.34	U	1.0	0.34	ug/L			05/29/20 12:58	1
1,2,3-Trichlorobenzene	2.5	U	5.0	2.5	ug/L			05/29/20 12:58	1
1,2,3-Trichloropropane	0.39	U	1.0	0.39	ug/L			05/29/20 12:58	1
1,2,4-Trichlorobenzene	2.5	U	5.0	2.5	ug/L			05/29/20 12:58	1
1,2,4-Trimethylbenzene	0.47	U	1.0	0.47	ug/L			05/29/20 12:58	1
1,2-Dibromo-3-Chloropropane	1.1	U	5.0	1.1	ug/L			05/29/20 12:58	1
1,2-Dichlorobenzene	0.37	U	1.0	0.37	ug/L			05/29/20 12:58	1
1,2-Dichloroethane	0.50	U M	1.0	0.50	ug/L			05/29/20 12:58	1
1,2-Dichloroethene, Total	0.74	U	2.0	0.74	ug/L			05/29/20 12:58	1
1,2-Dichloropropane	0.67	U	1.0	0.67	ug/L			05/29/20 12:58	1
1,3,5-Trimethylbenzene	0.31	U	1.0	0.31	ug/L			05/29/20 12:58	1
1,3-Dichlorobenzene	0.43	U	1.0	0.43	ug/L			05/29/20 12:58	1
1,3-Dichloropropane	0.34	U	1.0	0.34	ug/L			05/29/20 12:58	1
1,4-Dichlorobenzene	0.46	U	1.0	0.46	ug/L			05/29/20 12:58	1
2,2-Dichloropropane	0.37	U	1.0	0.37	ug/L			05/29/20 12:58	1
2-Butanone (MEK)	3.4	U	10	3.4	ug/L			05/29/20 12:58	1
2-Chlorotoluene	0.27	U	1.0	0.27	ug/L			05/29/20 12:58	1
2-Hexanone	2.0	U	10	2.0	ug/L			05/29/20 12:58	1
4-Chlorotoluene	0.45	U	1.0	0.45	ug/L			05/29/20 12:58	1
4-Isopropyltoluene	0.48	U	1.0	0.48	ug/L			05/29/20 12:58	1
4-Methyl-2-pentanone (MIBK)	2.1	U	10	2.1	ug/L			05/29/20 12:58	1
Acetone	7.0	U	10	7.0	ug/L			05/29/20 12:58	1
Benzene	0.43	U	1.0	0.43	ug/L			05/29/20 12:58	1
Bromobenzene	0.50	U	1.0	0.50	ug/L			05/29/20 12:58	1
Bromoform	0.43	U	1.0	0.43	ug/L			05/29/20 12:58	1
Bromomethane	2.5	U	5.0	2.5	ug/L			05/29/20 12:58	1
Carbon disulfide	0.43	U	2.0	0.43	ug/L			05/29/20 12:58	1
Carbon tetrachloride	0.33	U	1.0	0.33	ug/L			05/29/20 12:58	1
Chlorobenzene	0.26	U	1.0	0.26	ug/L			05/29/20 12:58	1
Chlorobromomethane	0.45	U	1.0	0.45	ug/L			05/29/20 12:58	1
Chlorodibromomethane	0.32	U	1.0	0.32	ug/L			05/29/20 12:58	1
Chloroethane	2.5	U	5.0	2.5	ug/L			05/29/20 12:58	1
Chloroform	0.50	U	1.0	0.50	ug/L			05/29/20 12:58	1
Chloromethane	0.40	U	1.0	0.40	ug/L			05/29/20 12:58	1
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			05/29/20 12:58	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	ug/L			05/29/20 12:58	1
Dibromomethane	0.35	U	1.0	0.35	ug/L			05/29/20 12:58	1
Dichlorobromomethane	0.44	U	1.0	0.44	ug/L			05/29/20 12:58	1
Dichlorodifluoromethane	0.60	U	1.0	0.60	ug/L			05/29/20 12:58	1
Ethylbenzene	0.33	U	1.0	0.33	ug/L			05/29/20 12:58	1
Ethylene Dibromide	0.44	U	1.0	0.44	ug/L			05/29/20 12:58	1
Hexachlorobutadiene	2.5	U	5.0	2.5	ug/L			05/29/20 12:58	1
Isopropylbenzene	0.35	U	1.0	0.35	ug/L			05/29/20 12:58	1
Methyl tert-butyl ether	0.30	U	10	0.30	ug/L			05/29/20 12:58	1
Methylene Chloride	2.5	U	5.0	2.5	ug/L			05/29/20 12:58	1
m-Xylene & p-Xylene	0.35	U	1.0	0.35	ug/L			05/29/20 12:58	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 680-620372/9
Matrix: Water
Analysis Batch: 620372

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	2.5	U	5.0	2.5	ug/L			05/29/20 12:58	1
n-Butylbenzene	0.47	U	1.0	0.47	ug/L			05/29/20 12:58	1
N-Propylbenzene	0.38	U	1.0	0.38	ug/L			05/29/20 12:58	1
o-Xylene	0.23	U	1.0	0.23	ug/L			05/29/20 12:58	1
sec-Butylbenzene	0.42	U	1.0	0.42	ug/L			05/29/20 12:58	1
Styrene	0.27	U	1.0	0.27	ug/L			05/29/20 12:58	1
tert-Butylbenzene	0.45	U	1.0	0.45	ug/L			05/29/20 12:58	1
Tetrachloroethene	0.74	U	1.0	0.74	ug/L			05/29/20 12:58	1
Toluene	0.48	U	1.0	0.48	ug/L			05/29/20 12:58	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			05/29/20 12:58	1
trans-1,3-Dichloropropene	0.42	U	1.0	0.42	ug/L			05/29/20 12:58	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			05/29/20 12:58	1
Trichlorofluoromethane	0.42	U	1.0	0.42	ug/L			05/29/20 12:58	1
Vinyl acetate	0.81	U	2.0	0.81	ug/L			05/29/20 12:58	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			05/29/20 12:58	1
Xylenes, Total	0.23	U	2.0	0.23	ug/L			05/29/20 12:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*85 - 114*		*05/29/20 12:58*	*1*
Dibromofluoromethane (Surr)	*112*		*80 - 119*		*05/29/20 12:58*	*1*
Toluene-d8 (Surr)	*111*		*89 - 112*		*05/29/20 12:58*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*81 - 118*		*05/29/20 12:58*	*1*

Lab Sample ID: LCS 680-620372/3
Matrix: Water
Analysis Batch: 620372

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	50.0	58.1		ug/L		116	78 - 124
1,1,1-Trichloroethane	50.0	52.2		ug/L		104	74 - 131
1,1,2,2-Tetrachloroethane	50.0	51.8		ug/L		104	71 - 121
1,1,2-Trichloroethane	50.0	52.1		ug/L		104	80 - 119
1,1-Dichloroethane	50.0	49.4		ug/L		99	77 - 125
1,1-Dichloroethene	50.0	52.2		ug/L		104	71 - 131
1,1-Dichloropropene	50.0	53.5		ug/L		107	79 - 125
1,2,3-Trichlorobenzene	50.0	51.7		ug/L		103	69 - 129
1,2,3-Trichloropropane	50.0	50.7		ug/L		101	73 - 122
1,2,4-Trichlorobenzene	50.0	52.3		ug/L		105	69 - 130
1,2,4-Trimethylbenzene	50.0	51.1		ug/L		102	76 - 124
1,2-Dibromo-3-Chloropropane	50.0	47.1		ug/L		94	62 - 128
1,2-Dichlorobenzene	50.0	53.5		ug/L		107	80 - 119
1,2-Dichloroethane	50.0	51.8		ug/L		104	73 - 128
1,2-Dichloroethene, Total	100	98.6		ug/L		99	79 - 121
1,2-Dichloropropane	50.0	48.3		ug/L		97	78 - 122
1,3,5-Trimethylbenzene	50.0	52.7		ug/L		105	75 - 124
1,3-Dichlorobenzene	50.0	52.7		ug/L		105	80 - 119
1,3-Dichloropropane	50.0	44.5		ug/L		89	80 - 119
1,4-Dichlorobenzene	50.0	51.2		ug/L		102	79 - 118

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 680-620372/3
Matrix: Water
Analysis Batch: 620372

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,2-Dichloropropane	50.0	53.0		ug/L		106	60 - 139
2-Butanone (MEK)	250	248		ug/L		99	56 - 143
2-Chlorotoluene	50.0	50.9		ug/L		102	79 - 122
2-Hexanone	250	203		ug/L		81	57 - 139
4-Chlorotoluene	50.0	51.7		ug/L		103	78 - 122
4-Isopropyltoluene	50.0	51.3		ug/L		103	77 - 127
4-Methyl-2-pentanone (MIBK)	250	230		ug/L		92	67 - 130
Acetone	250	219		ug/L		88	39 - 160
Benzene	50.0	51.4		ug/L		103	79 - 120
Bromobenzene	50.0	54.5		ug/L		109	80 - 120
Bromoform	50.0	47.2		ug/L		94	66 - 130
Bromomethane	50.0	278	J Q	ug/L		555	53 - 141
Carbon disulfide	50.0	52.0		ug/L		104	64 - 133
Carbon tetrachloride	50.0	54.9		ug/L		110	72 - 136
Chlorobenzene	50.0	54.4		ug/L		109	82 - 118
Chlorobromomethane	50.0	56.5		ug/L		113	78 - 123
Chlorodibromomethane	50.0	54.3		ug/L		109	74 - 126
Chloroethane	50.0	56.2		ug/L		112	60 - 138
Chloroform	50.0	51.3		ug/L		103	79 - 124
Chloromethane	50.0	47.8	M	ug/L		96	50 - 139
cis-1,2-Dichloroethene	50.0	47.7		ug/L		95	78 - 123
cis-1,3-Dichloropropene	50.0	51.9		ug/L		104	75 - 124
Dibromomethane	50.0	49.6		ug/L		99	79 - 123
Dichlorobromomethane	50.0	49.9		ug/L		100	79 - 125
Dichlorodifluoromethane	50.0	51.7		ug/L		103	32 - 152
Ethylbenzene	50.0	52.8		ug/L		106	79 - 121
Ethylene Dibromide	50.0	51.5		ug/L		103	75 - 127
Hexachlorobutadiene	50.0	53.0		ug/L		106	66 - 134
Isopropylbenzene	50.0	53.2		ug/L		106	72 - 131
Methyl tert-butyl ether	50.0	49.6		ug/L		99	71 - 124
Methylene Chloride	50.0	44.3		ug/L		89	74 - 124
m-Xylene & p-Xylene	50.0	51.6		ug/L		103	80 - 121
Naphthalene	50.0	52.4		ug/L		105	61 - 128
n-Butylbenzene	50.0	51.4		ug/L		103	75 - 128
N-Propylbenzene	50.0	52.3		ug/L		105	76 - 126
o-Xylene	50.0	51.7		ug/L		103	78 - 122
sec-Butylbenzene	50.0	52.2		ug/L		104	77 - 126
Styrene	50.0	52.3		ug/L		105	78 - 123
tert-Butylbenzene	50.0	53.2		ug/L		106	78 - 124
Tetrachloroethene	50.0	58.7		ug/L		117	74 - 129
Toluene	50.0	52.9		ug/L		106	80 - 121
trans-1,2-Dichloroethene	50.0	51.0		ug/L		102	75 - 124
trans-1,3-Dichloropropene	50.0	55.2		ug/L		110	73 - 127
Trichloroethene	50.0	51.8		ug/L		104	79 - 123
Trichlorofluoromethane	50.0	55.3		ug/L		111	65 - 141
Vinyl acetate	100	121		ug/L		121	54 - 146
Vinyl chloride	50.0	51.3		ug/L		103	58 - 137
Xylenes, Total	100	103		ug/L		103	79 - 121

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 680-620372/3
Matrix: Water
Analysis Batch: 620372

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	*93*		*85 - 114*
Dibromofluoromethane (Surr)	*106*		*80 - 119*
Toluene-d8 (Surr)	*106*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*105*		*81 - 118*

Lab Sample ID: LCSD 680-620372/4
Matrix: Water
Analysis Batch: 620372

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane			50.0	60.1		ug/L		120	78 - 124	3	20
1,1,1-Trichloroethane			50.0	53.6		ug/L		107	74 - 131	3	20
1,1,2,2-Tetrachloroethane			50.0	54.5		ug/L		109	71 - 121	5	20
1,1,2-Trichloroethane			50.0	53.1		ug/L		106	80 - 119	2	20
1,1-Dichloroethane			50.0	50.9		ug/L		102	77 - 125	3	20
1,1-Dichloroethene			50.0	53.9		ug/L		108	71 - 131	3	20
1,1-Dichloropropene			50.0	55.7		ug/L		111	79 - 125	4	20
1,2,3-Trichlorobenzene			50.0	52.5		ug/L		105	69 - 129	2	20
1,2,3-Trichloropropane			50.0	53.2		ug/L		106	73 - 122	5	20
1,2,4-Trichlorobenzene			50.0	53.7		ug/L		107	69 - 130	3	20
1,2,4-Trimethylbenzene			50.0	52.5		ug/L		105	76 - 124	3	20
1,2-Dibromo-3-Chloropropane			50.0	50.2		ug/L		100	62 - 128	6	20
1,2-Dichlorobenzene			50.0	54.2		ug/L		108	80 - 119	1	20
1,2-Dichloroethane			50.0	52.5		ug/L		105	73 - 128	1	20
1,2-Dichloroethene, Total			100	101		ug/L		101	79 - 121	2	20
1,2-Dichloropropane			50.0	49.1		ug/L		98	78 - 122	2	20
1,3,5-Trimethylbenzene			50.0	54.4		ug/L		109	75 - 124	3	20
1,3-Dichlorobenzene			50.0	54.2		ug/L		108	80 - 119	3	20
1,3-Dichloropropane			50.0	45.6		ug/L		91	80 - 119	2	20
1,4-Dichlorobenzene			50.0	53.0		ug/L		106	79 - 118	4	20
2,2-Dichloropropane			50.0	52.7		ug/L		105	60 - 139	1	20
2-Butanone (MEK)			250	257		ug/L		103	56 - 143	3	20
2-Chlorotoluene			50.0	52.8		ug/L		106	79 - 122	4	20
2-Hexanone			250	215		ug/L		86	57 - 139	6	20
4-Chlorotoluene			50.0	52.8		ug/L		106	78 - 122	2	20
4-Isopropyltoluene			50.0	52.6		ug/L		105	77 - 127	3	20
4-Methyl-2-pentanone (MIBK)			250	241		ug/L		96	67 - 130	5	20
Acetone			250	245		ug/L		98	39 - 160	11	20
Benzene			50.0	52.9		ug/L		106	79 - 120	3	20
Bromobenzene			50.0	56.7		ug/L		113	80 - 120	4	20
Bromoform			50.0	49.9		ug/L		100	66 - 130	6	20
Bromomethane			50.0	292	J Q	ug/L		584	53 - 141	5	20
Carbon disulfide			50.0	53.2		ug/L		106	64 - 133	2	20
Carbon tetrachloride			50.0	56.8		ug/L		114	72 - 136	3	20
Chlorobenzene			50.0	56.0		ug/L		112	82 - 118	3	20
Chlorobromomethane			50.0	57.0		ug/L		114	78 - 123	1	20
Chlorodibromomethane			50.0	55.9		ug/L		112	74 - 126	3	20
Chloroethane			50.0	57.3		ug/L		115	60 - 138	2	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 680-620372/4
Matrix: Water
Analysis Batch: 620372

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloroform	50.0	52.4		ug/L		105	79 - 124	2	20
Chloromethane	50.0	48.4		ug/L		97	50 - 139	1	20
cis-1,2-Dichloroethene	50.0	48.1		ug/L		96	78 - 123	1	20
cis-1,3-Dichloropropene	50.0	52.1		ug/L		104	75 - 124	0	20
Dibromomethane	50.0	50.1		ug/L		100	79 - 123	1	20
Dichlorobromomethane	50.0	51.3		ug/L		103	79 - 125	3	20
Dichlorodifluoromethane	50.0	53.6		ug/L		107	32 - 152	3	20
Ethylbenzene	50.0	54.2		ug/L		108	79 - 121	3	20
Ethylene Dibromide	50.0	53.3		ug/L		107	75 - 127	3	20
Hexachlorobutadiene	50.0	53.7		ug/L		107	66 - 134	1	20
Isopropylbenzene	50.0	55.3		ug/L		111	72 - 131	4	20
Methyl tert-butyl ether	50.0	51.0		ug/L		102	71 - 124	3	20
Methylene Chloride	50.0	45.4		ug/L		91	74 - 124	2	20
m-Xylene & p-Xylene	50.0	52.8		ug/L		106	80 - 121	2	20
Naphthalene	50.0	55.0		ug/L		110	61 - 128	5	20
n-Butylbenzene	50.0	53.9		ug/L		108	75 - 128	5	20
N-Propylbenzene	50.0	54.8		ug/L		110	76 - 126	5	20
o-Xylene	50.0	53.4		ug/L		107	78 - 122	3	20
sec-Butylbenzene	50.0	54.7		ug/L		109	77 - 126	5	20
Styrene	50.0	53.7		ug/L		107	78 - 123	3	20
tert-Butylbenzene	50.0	55.9		ug/L		112	78 - 124	5	20
Tetrachloroethene	50.0	60.1		ug/L		120	74 - 129	2	20
Toluene	50.0	54.4		ug/L		109	80 - 121	3	20
trans-1,2-Dichloroethene	50.0	52.7		ug/L		105	75 - 124	3	20
trans-1,3-Dichloropropene	50.0	56.2		ug/L		112	73 - 127	2	20
Trichloroethene	50.0	53.2		ug/L		106	79 - 123	3	20
Trichlorofluoromethane	50.0	57.1		ug/L		114	65 - 141	3	20
Vinyl acetate	100	124		ug/L		124	54 - 146	2	20
Vinyl chloride	50.0	52.6		ug/L		105	58 - 137	2	20
Xylenes, Total	100	106		ug/L		106	79 - 121	3	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*85 - 114*
Dibromofluoromethane (Surr)	*108*		*80 - 119*
Toluene-d8 (Surr)	*109*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*108*		*81 - 118*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-623215/1-A
Matrix: Water
Analysis Batch: 623267

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 623215

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	17	U	50	17	ug/L		05/26/20 13:18	06/19/20 23:46	1
Manganese	1.0	U	10	1.0	ug/L		05/26/20 13:18	06/19/20 23:46	1

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 680-623215/2-A
Matrix: Water
Analysis Batch: 623267

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 623215

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5010	5100		ug/L		102	87 - 115
Manganese	400	405		ug/L		101	90 - 114

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-619931/1-A
Matrix: Water
Analysis Batch: 620235

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 619931

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		05/26/20 13:18	05/27/20 13:24	1

Lab Sample ID: LCS 680-619931/2-A
Matrix: Water
Analysis Batch: 620235

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 619931

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	102		ug/L		102	84 - 116

GC/MS VOA

Analysis Batch: 620228

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183916-6	AOC3243A-TB01-051420	Total/NA	Water	8260B	
MB 680-620228/9	Method Blank	Total/NA	Water	8260B	
LCS 680-620228/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-620228/4	Lab Control Sample Dup	Total/NA	Water	8260B	

Analysis Batch: 620330

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183916-1	32M-01-13XBR-SPR20	Total/NA	Water	8260B	
680-183916-2	32M-01-14XOB-SPR20	Total/NA	Water	8260B	
680-183916-3	32M-01-17XBR-SPR20	Total/NA	Water	8260B	
680-183916-4	32M-01-18XBR-SPR20	Total/NA	Water	8260B	
680-183916-5	AOC32-DUP01-SPR20	Total/NA	Water	8260B	
MB 680-620330/10	Method Blank	Total/NA	Water	8260B	
LCS 680-620330/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-620330/5	Lab Control Sample Dup	Total/NA	Water	8260B	

Analysis Batch: 620372

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183916-1 - RA	32M-01-13XBR-SPR20	Total/NA	Water	8260B	
680-183916-4 - DL	32M-01-18XBR-SPR20	Total/NA	Water	8260B	
680-183916-5 - DL	AOC32-DUP01-SPR20	Total/NA	Water	8260B	
MB 680-620372/9	Method Blank	Total/NA	Water	8260B	
LCS 680-620372/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-620372/4	Lab Control Sample Dup	Total/NA	Water	8260B	

Metals

Prep Batch: 619931

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183916-1	32M-01-13XBR-SPR20	Total/NA	Water	3010A	
680-183916-2	32M-01-14XOB-SPR20	Total/NA	Water	3010A	
680-183916-3	32M-01-17XBR-SPR20	Total/NA	Water	3010A	
680-183916-4	32M-01-18XBR-SPR20	Total/NA	Water	3010A	
680-183916-5	AOC32-DUP01-SPR20	Total/NA	Water	3010A	
MB 680-619931/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-619931/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 620235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183916-1	32M-01-13XBR-SPR20	Total/NA	Water	6020A	619931
680-183916-2	32M-01-14XOB-SPR20	Total/NA	Water	6020A	619931
680-183916-3	32M-01-17XBR-SPR20	Total/NA	Water	6020A	619931
680-183916-4	32M-01-18XBR-SPR20	Total/NA	Water	6020A	619931
680-183916-5	AOC32-DUP01-SPR20	Total/NA	Water	6020A	619931
MB 680-619931/1-A	Method Blank	Total/NA	Water	6020A	619931
LCS 680-619931/2-A	Lab Control Sample	Total/NA	Water	6020A	619931

Prep Batch: 623215

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183916-1	32M-01-13XBR-SPR20	Total/NA	Water	3010A	
680-183916-2	32M-01-14XOB-SPR20	Total/NA	Water	3010A	

Metals (Continued)

Prep Batch: 623215 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183916-3	32M-01-17XBR-SPR20	Total/NA	Water	3010A	
680-183916-4	32M-01-18XBR-SPR20	Total/NA	Water	3010A	
680-183916-5	AOC32-DUP01-SPR20	Total/NA	Water	3010A	
MB 680-623215/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-623215/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 623267

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183916-1	32M-01-13XBR-SPR20	Total/NA	Water	6010C	623215
680-183916-2	32M-01-14XOB-SPR20	Total/NA	Water	6010C	623215
680-183916-3	32M-01-17XBR-SPR20	Total/NA	Water	6010C	623215
680-183916-4	32M-01-18XBR-SPR20	Total/NA	Water	6010C	623215
680-183916-5	AOC32-DUP01-SPR20	Total/NA	Water	6010C	623215
MB 680-623215/1-A	Method Blank	Total/NA	Water	6010C	623215
LCS 680-623215/2-A	Lab Control Sample	Total/NA	Water	6010C	623215

Lab Chronicle

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM - AOC 32/43A Spring 2020

Job ID: 680-183916-1

Client Sample ID: 32M-01-13XBR-SPR20

Lab Sample ID: 680-183916-1

Date Collected: 05/14/20 11:15

Matrix: Water

Date Received: 05/16/20 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	620330	05/29/20 02:07	EMA	TAL SAV
	Instrument ID: CMSP2									
Total/NA	Analysis	8260B	RA	1	5 mL	5 mL	620372	05/29/20 14:08	SMP	TAL SAV
	Instrument ID: CMSP2									
Total/NA	Prep	3010A			50 mL	50 mL	623215	05/26/20 13:18	AJR	TAL SAV
Total/NA	Analysis	6010C		1			623267	06/20/20 00:37	BWR	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	619931	05/26/20 13:18	AJR	TAL SAV
Total/NA	Analysis	6020A		1			620235	05/27/20 14:20	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: 32M-01-14XOB-SPR20

Lab Sample ID: 680-183916-2

Date Collected: 05/14/20 13:40

Matrix: Water

Date Received: 05/16/20 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	620330	05/29/20 02:30	EMA	TAL SAV
	Instrument ID: CMSP2									
Total/NA	Prep	3010A			50 mL	50 mL	623215	05/26/20 13:18	AJR	TAL SAV
Total/NA	Analysis	6010C		1			623267	06/20/20 00:33	BWR	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	619931	05/26/20 13:18	AJR	TAL SAV
Total/NA	Analysis	6020A		1			620235	05/27/20 14:18	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: 32M-01-17XBR-SPR20

Lab Sample ID: 680-183916-3

Date Collected: 05/14/20 11:00

Matrix: Water

Date Received: 05/16/20 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	620330	05/29/20 02:54	EMA	TAL SAV
	Instrument ID: CMSP2									
Total/NA	Prep	3010A			50 mL	50 mL	623215	05/26/20 13:18	AJR	TAL SAV
Total/NA	Analysis	6010C		1			623267	06/20/20 00:09	BWR	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	619931	05/26/20 13:18	AJR	TAL SAV
Total/NA	Analysis	6020A		1			620235	05/27/20 14:15	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: 32M-01-18XBR-SPR20

Lab Sample ID: 680-183916-4

Date Collected: 05/14/20 10:30

Matrix: Water

Date Received: 05/16/20 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	620330	05/29/20 03:17	EMA	TAL SAV
	Instrument ID: CMSP2									

Lab Chronicle

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM - AOC 32/43A Spring 2020

Job ID: 680-183916-1

Client Sample ID: 32M-01-18XBR-SPR20

Lab Sample ID: 680-183916-4
Date Collected: 05/14/20 10:30
Matrix: Water
Date Received: 05/16/20 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B	DL	10	5 mL	5 mL	620372	05/29/20 14:54	SMP	TAL SAV
Total/NA	Prep	3010A			50 mL	50 mL	623215	05/26/20 13:18	AJR	TAL SAV
Total/NA	Analysis	6010C		1			623267	06/20/20 00:42	BWR	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	619931	05/26/20 13:18	AJR	TAL SAV
Total/NA	Analysis	6020A		1			620235	05/27/20 14:23	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: AOC32-DUP01-SPR20

Lab Sample ID: 680-183916-5
Date Collected: 05/14/20 08:00
Matrix: Water
Date Received: 05/16/20 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	620330	05/29/20 03:40	EMA	TAL SAV
	Instrument ID: CMSP2									
Total/NA	Analysis	8260B	DL	20	5 mL	5 mL	620372	05/29/20 15:18	SMP	TAL SAV
	Instrument ID: CMSP2									
Total/NA	Prep	3010A			50 mL	50 mL	623215	05/26/20 13:18	AJR	TAL SAV
Total/NA	Analysis	6010C		1			623267	06/20/20 00:46	BWR	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	619931	05/26/20 13:18	AJR	TAL SAV
Total/NA	Analysis	6020A		1			620235	05/27/20 14:31	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: AOC3243A-TB01-051420

Lab Sample ID: 680-183916-6
Date Collected: 05/14/20 00:00
Matrix: Water
Date Received: 05/16/20 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	620228	05/28/20 19:33	P1C	TAL SAV
	Instrument ID: CMSP2									

Laboratory References:

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Accreditation/Certification Summary

Client: Seres Engineering & Services LLC
Job ID: 680-183916-1
Project/Site: JV, LTM - AOC 32/43A Spring 2020

Laboratory: Eurofins TestAmerica, Savannah

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2463	09-22-22

Method Summary

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM - AOC 32/43A Spring 2020

Job ID: 680-183916-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL SAV
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
3010A	Preparation, Total Metals	SW846	TAL SAV
5030B	Purge and Trap	SW846	TAL SAV

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

CHAIN-OF-CUSTODY RECORD

Seres-Arcadis JV
Corey Caulkins
Arcadis U.S., Inc. 410 North 44th Street, Suite 1000 Phoenix, AZ 85008
United States

Boston

COC # AOC32/43A_5.

ARCADIS

Project Name: Long Term Monitoring	Laboratory: Eurofins Environment Testing TestAmerica, Savannah, GA	Event: JV, Long Term Monitoring, AOC 32/43A, Spring 2020
Project Number: DEVNS-LTM	POC: Jon Lawhon; 912-250-0283; jon.lawhon@testamericainc.com	
WBS Code:	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:
MADEPVP (A) = VPH with targets
SW6010C/FLDFLT (B) = Fe Mn
SW6020A/FLDFLT (B) = As

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
4	3x 40mL glass VOA Vials, HCl, pH < 2; Cool < 6degC
9	1x 250mL, plastic, HNO3, pH < 2; Cool < 6degC
29	3x 40mL glass VOA Vials, HCl, pH < 2; Cool < 6degC

Solson #215

Event: JV, Long Term Monitoring, AOC 32/43A, Spring 2020

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: MADEPVP (A)	SW6010C - Fe Mn	SW6010C/FLDFLT (B)	SW6020A/FLDFLT (B)	SW8260B - VOCs	SW-6020A - As					Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Cooler	Comments
						4	9	9	9	29											
1	32M-01-13XBR-SPR20	WG	5-14-20	1115	DC	X	X	[redacted]		X	X					32M-01-13XBR	N1	13.70	23.70		
2	32M-01-14XOB-SPR20	WG	5-14-20	1340	GO	X	X		[redacted]	X	X					32M-01-14XOB	N1	17.30	27.30		
3	32M-01-17XBR-SPR20	WG	5-14-20	1100	GO	X	X	[redacted]		X	X					32M-01-17XBR	N1	41.40	51.40		
4	32M-01-18XBR-SPR20	WG	5-14-20	1030	DC	X	X		[redacted]	X	X					32M-01-18XBR	N1	14.00	24.00		
5	AOC32-DUP01-SPR20	WG	5-14-20	800	DC	X	X		[redacted]	X	X					32M-01-18XBR	FD1	14.00	24.00		
6	AOC-3243A-TB01-051420		—	—	LAB					X											
7																					
8																					
9																					
10																					

Turnaround Time: NA

680-183916 Chain of Custody

Relinquished by: *(Signature)* Samad Kedard 5-15-20 1800
Date 05/14/20
Time 18:10
Received by: *(Signature)* 5-14-20 1815

Date
Time
Shipping Date:
Received by Laboratory: *(Signature, Date, Time)* & conditio 5-16-20 900

3.0/3.4

Devens eCOCs Spring 2020

6/24/2020 (Rev. 2)

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lawhon, Jon K	Carrier Tracking No(s):	COC No: 680-611445.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jon.lawhon@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Katahdin Analytical Services		Accreditations Required (See note): Dept. of Defense ELAP - A2LA; DoD - ANAB		Job #: 680-183916-2
Address: 600 Technology Way, .	Due Date Requested: 6/1/2020			
City: Scarborough	TAT Requested (days):			
State, Zip: ME, 04074				
Phone:	PO #:			
Email:	WO #:			
Project Name: JV, LTM - AOC 32/43A Spring 2020	Project #: 68023801			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (MA VPH + BTEX)/ MA VPH	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
32M-01-13XBR-SPR20 (680-183916-1)	5/14/20	11:15 Eastern		Water			X	2	
32M-01-14XOB-SPR20 (680-183916-2)	5/14/20	13:40 Eastern		Water			X	2	
32M-01-17XBR-SPR20 (680-183916-3)	5/14/20	11:00 Eastern		Water			X	2	
32M-01-18XBR-SPR20 (680-183916-4)	5/14/20	10:30 Eastern		Water			X	2	
AOC32-DUP01-SPR20 (680-183916-5)	5/14/20	08:00 Eastern		Water			X	2	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	5/18/2020 1359				

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Seres Engineering & Services LLC

Job Number: 680-183916-1

Login Number: 183916
List Number: 1
Creator: Sims, Robert D

List Source: Eurofins TestAmerica, Savannah

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	False	Refer to Job Narrative for details.
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Former Fort Devens

Seres-Arcadis JV, Long Term Monitoring, AOC 32/43A, Spring 2020

AOC 32, Former Defense Reuse and Marketing Office

Locations:	32M-01-13XBR	32M-01-14XOB	32M-01-17XBR	32M-01-18XBR	32M-01-18XBR (FD)
Field Sample ID:	32M-01-13XBR-SPR20	32M-01-14XOB-SPR20	32M-01-17XBR-SPR20	32M-01-18XBR-SPR20	AOC32-DUP01-SPR20
Sample Begin Depth:	13.7	17.3	41.4	14	14
Sample End Depth:	23.7	27.3	51.4	24	24
Sample Date:	05/14/2020	05/14/2020	05/14/2020	05/14/2020	05/14/2020
Metals (UG/L)					
Arsenic	3.00 U	**31.0**	3.00 U	**8.80**	**8.20**
Iron	**55.0**	**2,700**	**46.0 J**	**490**	**500**
Manganese	**5.50 J**	**1,900**	**4.60 J**	**25,000**	**25,000**
VOC (UG/L)					
1,1,1,2-Tetrachloroethane	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
1,1,1-Trichloroethane	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
1,1,2,2-Tetrachloroethane	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
1,1,2-Trichloroethane	0.500 UJ	0.500 UJ	0.500 UJ	0.500 UJ	0.500 UJ
1,1-Dichloroethane	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
1,1-Dichloroethene	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
1,1-Dichloropropene	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
1,2,3-Trichlorobenzene	5.00 UJ	5.00 UJ	5.00 UJ	5.00 UJ	5.00 UJ
1,2,3-Trichloropropane	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
1,2,4-Trichlorobenzene	5.00 UJ	5.00 UJ	5.00 UJ	5.00 UJ	5.00 UJ
1,2,4-Trimethylbenzene	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
1,2-Dibromo-3-chloropropane	2.00 UJ	2.00 UJ	2.00 UJ	2.00 UJ	2.00 UJ
1,2-Dibromoethane (EDB)	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
1,2-Dichlorobenzene	**1.20 J**	1.00 UJ	1.00 UJ	**1,500 J**	**1,500 J**
1,2-Dichloroethane	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
1,2-Dichloroethene	1.00 UJ	1.00 UJ	1.00 UJ	**1.10 J**	**1.20 J**
1,2-Dichloropropane	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
1,3,5-Trimethylbenzene	0.500 UJ	0.500 UJ	0.500 UJ	0.500 UJ	0.500 UJ
1,3-Dichlorobenzene	1.00 UJ	1.00 UJ	1.00 UJ	**250 J**	**250 J**
1,3-Dichloropropane	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
1,4-Dichlorobenzene	1.00 UJ	1.00 UJ	1.00 UJ	**170 J**	**180 J**
2,2-Dichloropropane	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
2-Butanone (MEK)	10.0 UJ	10.0 UJ	10.0 UJ	10.0 UJ	10.0 UJ
2-Chlorotoluene	0.500 UJ	0.500 UJ	0.500 UJ	0.500 UJ	0.500 UJ
2-Hexanone	5.00 UJ	5.00 UJ	5.00 UJ	5.00 UJ	5.00 UJ
4-Chlorotoluene	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
4-Methyl-2-pentanone (MIBK)	5.00 UJ	5.00 UJ	5.00 UJ	5.00 UJ	5.00 UJ
Acetone	10.0 UJ	10.0 UJ	10.0 UJ	10.0 UJ	10.0 UJ
Benzene	1.00 UJ	1.00 UJ	1.00 UJ	**1.40 J**	**1.40 J**
Bromobenzene	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
Bromochloromethane	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
Bromodichloromethane	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
Bromoform	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
Bromomethane	5.00 UJ	5.00 UJ	5.00 UJ	5.00 UJ	5.00 UJ
Carbon disulfide	2.00 UJ	2.00 UJ	2.00 UJ	2.00 UJ	2.00 UJ
Carbon tetrachloride	0.500 UJ	0.500 UJ	0.500 UJ	0.500 UJ	0.500 UJ
Chlorobenzene	0.500 UJ	0.500 UJ	0.500 UJ	**970 J**	**980 J**

Former Fort Devens

Seres-Arcadis JV, Long Term Monitoring, AOC 32/43A, Spring 2020

AOC 32, Former Defense Reuse and Marketing Office

Locations:	32M-01-13XBR	32M-01-14XOB	32M-01-17XBR	32M-01-18XBR	32M-01-18XBR (FD)
Field Sample ID:	32M-01-13XBR-SPR20	32M-01-14XOB-SPR20	32M-01-17XBR-SPR20	32M-01-18XBR-SPR20	AOC32-DUP01-SPR20
Sample Begin Depth:	13.7	17.3	41.4	14	14
Sample End Depth:	23.7	27.3	51.4	24	24
Sample Date:	05/14/2020	05/14/2020	05/14/2020	05/14/2020	05/14/2020
Chloroethane	5.00 UJ	5.00 UJ	5.00 UJ	5.00 UJ	5.00 UJ
Chloroform	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
Chloromethane	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
cis-1,2-Dichloroethene	1.00 UJ	1.00 UJ	1.00 UJ	**1.10 J**	**1.20 J**
cis-1,3-Dichloropropene	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
Dibromochloromethane	0.500 UJ	0.500 UJ	0.500 UJ	0.500 UJ	0.500 UJ
Dibromomethane	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
Dichlorodifluoromethane	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
Ethylbenzene	0.500 UJ	0.500 UJ	0.500 UJ	**0.740 J**	**0.770 J**
Hexachlorobutadiene	5.00 UJ	5.00 UJ	5.00 UJ	5.00 UJ	5.00 UJ
Isopropylbenzene (Cumene)	1.00 UJ	1.00 UJ	1.00 UJ	**1.70 J**	**1.70 J**
m,p-Xylene	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
Methyl tert-butyl ether (MTBE)	0.500 UJ	0.500 UJ	0.500 UJ	0.500 UJ	0.500 UJ
Methylene chloride	5.00 UJ	5.00 UJ	5.00 UJ	5.00 UJ	5.00 UJ
Naphthalene	5.00 UJ	5.00 UJ	5.00 UJ	5.00 UJ	5.00 UJ
n-Butylbenzene	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
n-Propylbenzene	1.00 UJ	1.00 UJ	1.00 UJ	**1.60 J**	**1.60 J**
o-Xylene	0.500 UJ	0.500 UJ	0.500 UJ	**0.390 J**	**0.420 J**
p-Cymene (p-Isopropyltoluene)	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
sec-Butylbenzene	1.00 UJ	1.00 UJ	1.00 UJ	**0.820 J**	**0.860 J**
Styrene	0.500 UJ	0.500 UJ	0.500 UJ	0.500 UJ	0.500 UJ
tert-Butylbenzene	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
Tetrachloroethene (PCE)	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
Toluene	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
trans-1,2-Dichloroethene	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
trans-1,3-Dichloropropene	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
Trichloroethene (TCE)	1.00 UJ	1.00 UJ	1.00 UJ	**1.10 J**	**1.20 J**
Trichlorofluoromethane	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
Vinyl acetate	2.00 UJ	2.00 UJ	2.00 UJ	2.00 UJ	2.00 UJ
Vinyl chloride	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ	1.00 UJ
Xylenes, Total	0.500 UJ	0.500 UJ	0.500 UJ	**0.390 J**	**0.420 J**
VPH (UG/L)					
Benzene	2.00 U	2.00 UJ	2.00 UJ	**1.30 J**	**1.20 J**
C5-C8 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	75.0 U	75.0 UJ	75.0 UJ	75.0 U	75.0 U
C9-C10 Volatile Petroleum Hydrocarbons, Aromatic	75.0 U	75.0 UJ	75.0 UJ	**1,000 J**	**1,000 J**
C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	75.0 U	75.0 UJ	75.0 UJ	**700**	**700**
Ethylbenzene	3.80 U	3.80 UJ	3.80 UJ	**800 J**	**810 J**
m,p-Xylene	7.50 U	7.50 UJ	7.50 UJ	7.50 U	7.50 U
Methyl tert-butyl ether (MTBE)	3.80 U	3.80 UJ	3.80 UJ	3.80 U	3.80 U
Naphthalene	3.80 U	3.80 UJ	3.80 UJ	3.80 U	3.80 U
o-Xylene	3.80 U	3.80 UJ	3.80 UJ	3.80 U	3.80 U
Toluene	3.80 U	3.80 UJ	3.80 UJ	3.80 U	3.80 U

Detects are displayed in bold font

Data Qualifier Definitions

J: The analyte was positively identified, but the associated numerical value is estimated and represents the approximate concentration of the analyte in the sample.
U: The analyte was not detected above the reported sample quantitation limit.
UJ: The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate.
R: The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Units

MG/KG = milligrams per kilogram
MG/L = milligram per liter
UG/KG = microgram per kilogram
UG/L = microgram per liter

ANALYTICAL REPORT

Job Number: 680-183916-2

Job Description: JV, LTM - AOC 32/43A Spring 2020

For:
Seres Engineering & Services LLC
669 Marina Drive
Suite B7
Charleston, SC 29492

Attention: Nathan R Mullens



Approved for release.
Kathryn E Smith
Client Service Manager
6/5/2020 5:37 PM

Kathryn E Smith, Client Service Manager
5102 LaRoche Avenue, Savannah, GA, 31404
(912)250-0275
kathy.smith@testamericainc.com
06/05/2020

The test results in this report meet NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted. Results pertain only to samples listed in this report. This report may not be reproduced, except in full, without the written approval of the laboratory. Questions should be directed to the person who signed this report.

Savannah Certifications and ID #s: A2LA: 0399.01; AL: 41450; ARDEQ: 88-0692; ARDOH; AZ: AZ0741; CA: 03217CA; CO; CT: PH0161; DE; FL: E87052; GA: 803; Guam; HI; IL: 200022; IN: C-GA-02; IA: 353; KS: E-10322; KY EPPC: 90084; KY UST; LA DEQ: 30690; LA DHH: LA080008; ME: 2008022; MD: 250; MA: M-GA006; MI: 9925; MS; NFESC: 249; NV: GA00006; NJ: GA769; NM; NY: 10842; NC DWQ: 269; NC DHHS: 13701; PA: 68-00474; PR: GA00006; RI: LAO00244; SC: 98001001; TN: TN0296; TX: T104704185; USEPA: GA00006; VT: VT-87052; VA: 00302; WA; WV DEP: 094; WV DHHR: 9950 C; WI DNR: 999819810; WY/EPAR8: 8TMS-Q

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue, Savannah, GA 31404
Tel (912) 354-7858 Fax (912) 352-0165 www.testamericainc.com

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Method Summary

Client: Seres Engineering & Services LLC
Job ID: 680-183916-2
Project/Site: JV, LTM - AOC 32/43A Spring 2020

Method	Method Description	Protocol	Laboratory
MA-VPH	MADEP VPH Volatile Petroleum Hydrocarbon	MA DEP	

Protocol References:

MA DEP = Massachusetts Department Of Environmental Protection

Laboratory References:

= Katahdin Analytical Services Inc, 600 Technology Way, Scarborough, ME 04074

Sample Summary

Client: Seres Engineering & Services LLC
Job ID: 680-183916-2
Project/Site: JV, LTM - AOC 32/43A Spring 2020

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-183916-1	32M-01-13XBR-SPR20	Water	05/14/20 11:15	05/16/20 09:00	
680-183916-2	32M-01-14XOB-SPR20	Water	05/14/20 13:40	05/16/20 09:00	
680-183916-3	32M-01-17XBR-SPR20	Water	05/14/20 11:00	05/16/20 09:00	
680-183916-4	32M-01-18XBR-SPR20	Water	05/14/20 10:30	05/16/20 09:00	
680-183916-5	AOC32-DUP01-SPR20	Water	05/14/20 08:00	05/16/20 09:00	

Subcontract Data

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
SN3818-1, 2, 3, 4

Matrices: x Groundwater/Surface Water Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A x	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (No[1])
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1]*All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 06/03/2020 ~~06/05/2020~~

TEST AMERICA SAVANNAH
JV, LTM - AOM 32/43A SPRING 2020
SN3818

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
JV, LTM – AOC 32/43A SPRING 2020
SN3818

Sample Receipt

The following samples were received on May 19, 2020 and were logged in under Katahdin Analytical Services work order number SN3818 for a hardcopy due date of June 05, 2020.

KATAHDIN Sample No.	TEST AMERICA SAVANNAH Sample Identification
SN3818-1	32M-01-13XBR-SPR20
SN3818-2	32M-01-14XOB-SPR20
SN3818-3	32M-01-17XBR-SPR20
SN3818-4	32M-01-18XBR-SPR20
SN3818-5	AOC32-DUP01-SPR20

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

We certify that the test results provided in this report meet all the requirements of the NELAP standards unless otherwise noted in this narrative or in the Report of Analysis.

We certify that the test results provided in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation L2223.

Analytes which are reported but not listed on our ANAB scope of accreditation will be "^" flagged and the following language will be included in the case narrative for all DoD compliant work: "^" Indicates this analyte is not included on Katahdin Analytical Services DoD-ELAP Scope of Accreditation.

Sample analyses have been performed by the methods as noted herein.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact your Katahdin Analytical Services Project Manager, **Ms. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Laboratory:

The sample of Work Order # SN3818 was analyzed in accordance with the Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis

MA-VPH Analysis

Sample SN3818-2RA had a low recovery for the surrogate 2,5-DBT on the PID, which was outside of the method acceptance limits. The sample was reanalyzed with similar surrogate deviations confirming a matrix effect. The results for both analyses are reported.

Sample SN3818-3 had low recoveries for the surrogate 2,5-DBT on the PID and FID, which were outside of the method acceptance limits. Since there was no additional vial, no further action was taken.

Samples SN3818-4DL and 5DL had low recoveries for the surrogate 2,5-DBT on the PID and FID, which were outside of the method acceptance limits. Since the undiluted analyses of these samples were acceptable, no further action was taken.

The closing calibration standard (CV) (file 2NE10139) had low responses for the surrogate 2,5-DBT on the PID and FID. The CV also had low responses for six aliphatic hydrocarbons and both the C5-C8 aliphatic and C9-C12 aliphatic ranges. These responses resulted in %D's that were outside the method acceptance limits of ± 25%.

There were no other protocol deviations or observations noted by the organics laboratory staff.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond
06.03.20

Leslie Dimond
Quality Assurance Officer

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: T.A. Savannah	KAS PM: HMM	Sampled By: Client
Project:	KIMS Entry By: JCB	Delivered By:
KAS Work Order#: 320-38818-3820	KIMS Review By: HMM	Received By: JCB
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 5.19.20 1020

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 4.1 Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?				✓	
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	
11. Bottleware Prepped on: n/a					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

SN3818

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lawhon, Jon K	Carrier Tracking No(s):	COC No: 680-611445.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jon.lawhon@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Katahdin Analytical Services		Accreditations Required (See note): Dept. of Defense ELAP - A2LA; DoD - ANAB		Job #: 680-183916-2
Address: 600 Technology Way, ,	Due Date Requested: 6/1/2020			
City: Scarborough	TAT Requested (days):			
State, Zip: ME, 04074				
Phone:	PO #:			
Email:	WO #:			
Project Name: JV, LTM - AOC 32/43A Spring 2020	Project #: 68023801			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (MA VPH + BTEX)/ MA VPH	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
32M-01-13XBR-SPR20 (680-183916-1)	5/14/20	11:15 Eastern		Water			X	2	
32M-01-14XOB-SPR20 (680-183916-2)	5/14/20	13:40 Eastern		Water			X	2	
32M-01-17XBR-SPR20 (680-183916-3)	5/14/20	11:00 Eastern		Water			X	2	
32M-01-18XBR-SPR20 (680-183916-4)	5/14/20	10:30 Eastern		Water			X	2	
AOC32-DUP01-SPR20 (680-183916-5)	5/14/20	08:00 Eastern		Water			X	2	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	5/18/2020 1359		[signature]	5.19.20 1020	KAS
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

06/05/2020

000006

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

May. 21, 2020
10:13 AM

Quote/Incoming:

Login Number: SN3818

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Primary Report Address:
Jon Lawhon
TestAmerica Savannah
5102 LaRoche Avenue

Savannah,GA 31404
jon.lawhon@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 5.1 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Include LOD on form. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative.
CHECK NO.	:	
CLIENT PO#	:	
CLIENT PROJECT MANAGE	:	Jon Lawhon
CONTRACT	:	680-183916, Project 68023901
COOLER TEMPERATURE	:	4.1
DELIVERY SERVICES	:	FedEx
EDD FORMAT	:	ECC-091317-TXT
LOGIN INITIALS	:	JCB
PM	:	HHM
PROJECT NAME	:	JV, LTM - AOC 32/43A Spring 2020
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	SDS needs all forms. Include Level 4 narrative and MCP forms (from Leslie). Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS. Upload EDD to Ft. Devens Database. Email PDF, EDD, and invoice to Beth.Daughtry@testamericainc.com & Jon.Lawhon@testamericainc.com. No HC.
SDG ID	:	
SDG STATUS	:	
VERBAL TAT	:	

10:17 am, May 21, 2020

Login Number: SN3818

Quote/Incoming:

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SN3818-1	32M-01-13XBR-SPR20	14-MAY-20 11:15	19-MAY-20			05-JUN-20	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	28-MAY-20	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SN3818-2	32M-01-14XOB-SPR20	14-MAY-20 13:40	19-MAY-20			05-JUN-20	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	28-MAY-20	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SN3818-3	32M-01-17XBR-SPR20	14-MAY-20 11:00	19-MAY-20			05-JUN-20	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	28-MAY-20	40mL Vial+HCl		**Limited volume - Only one vial received.**

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SN3818-4	32M-01-18XBR-SPR20	14-MAY-20 10:30	19-MAY-20			05-JUN-20	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	28-MAY-20	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SN3818-5	AOC32-DUP01-SPR20	14-MAY-20 08:00	19-MAY-20			05-JUN-20	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	28-MAY-20	40mL Vial+HCl		

Total Samples: 5 ***Total Analyses: 5***

10:17 am, May 21, 2020

SAMPLE DATA SUMMARY PACKAGE

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N Presumptive evidence of a compound based on a mass spectral library search.

A Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

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ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3818-1
Client ID: 32M-01-13XBR-SPR20
Project: JV, LTM - AOC 32/43A Spring 2020
SDG: SN3818
Lab File ID: 2NE10123.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		86.1	%				
2,5-Dibromotoluene (PID)		85.1	%				

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ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3818-2
Client ID: 32M-01-14XOB-SPR20
Project: JV, LTM - AOC 32/43A Spring 2020
SDG: SN3818
Lab File ID: 2NE10124.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 02-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)	*	52.6	%				
2,5-Dibromotoluene (PID)	*	52.2	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3818-2RA
Client ID: 32M-01-14XOB-SPR20
Project: JV, LTM - AOC 32/43A Spring 2020
SDG: SN3818
Lab File ID: 2NE10169.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 26-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391

Analysis Date: 26-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		71.3	%				
2,5-Dibromotoluene (PID)	*	67.8	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3818-3
Client ID: 32M-01-17XBR-SPR20
Project: JV, LTM - AOC 32/43A Spring 2020
SDG: SN3818
Lab File ID: 2NE10125.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)	*	53.4	%				
2,5-Dibromotoluene (PID)	*	54.6	%				

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3818-4
Client ID: 32M-01-18XBR-SPR20
Project: JV, LTM - AOC 32/43A Spring 2020
SDG: SN3818
Lab File ID: 2NE10126.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics		700	ug/L	1	100	100	50.
C9-C10 Aromatics	E	730	ug/L	1	100	100	50.
Benzene	J	1.3	ug/L	1	3	3.0	0.31
Ethylbenzene	E	580	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		93.9	%				
2,5-Dibromotoluene (PID)		93.7	%				

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ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3818-4DL
Client ID: 32M-01-18XBR-SPR20
Project: JV, LTM - AOC 32/43A Spring 2020
SDG: SN3818
Lab File ID: 2NE10170.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 27-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391

Analysis Date: 27-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	400	ug/L	4	100	400	200
C9-C12 Aliphatics	U	400	ug/L	4	100	400	200
C9-C10 Aromatics		1000	ug/L	4	100	400	200
Benzene	U	12	ug/L	4	3	12.	1.2
Ethylbenzene		800	ug/L	4	5	20.	1.7
Methyl tert-butylether	U	20	ug/L	4	5	20.	1.2
Naphthalene	U	20	ug/L	4	5	20.	6.4
Toluene	U	20	ug/L	4	5	20.	1.4
m+p-Xylenes	U	40	ug/L	4	10	40.	3.7
o-Xylene	U	20	ug/L	4	5	20.	1.9
2,5-Dibromotoluene (FID)	*	56.6	%				
2,5-Dibromotoluene (PID)	*	55.2	%				

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ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3818-5
Client ID: AOC32-DUP01-SPR20
Project: JV, LTM - AOC 32/43A Spring 2020
SDG: SN3818
Lab File ID: 2NE10127.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics		700	ug/L	1	100	100	50.
C9-C10 Aromatics	E	730	ug/L	1	100	100	50.
Benzene	J	1.2	ug/L	1	3	3.0	0.31
Ethylbenzene	E	580	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		96.7	%				
2,5-Dibromotoluene (PID)		83.8	%				

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Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3818-5DL
Client ID: AOC32-DUP01-SPR20
Project: JV, LTM - AOC 32/43A Spring 2020
SDG: SN3818
Lab File ID: 2NE10171.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 27-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391

Analysis Date: 27-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	400	ug/L	4	100	400	200
C9-C12 Aliphatics	U	400	ug/L	4	100	400	200
C9-C10 Aromatics		1000	ug/L	4	100	400	200
Benzene	U	12	ug/L	4	3	12.	1.2
Ethylbenzene		810	ug/L	4	5	20.	1.7
Methyl tert-butylether	U	20	ug/L	4	5	20.	1.2
Naphthalene	U	20	ug/L	4	5	20.	6.4
Toluene	U	20	ug/L	4	5	20.	1.4
m+p-Xylenes	U	40	ug/L	4	10	40.	3.7
o-Xylene	U	20	ug/L	4	5	20.	1.9
2,5-Dibromotoluene (FID)	*	64.6	%				
2,5-Dibromotoluene (PID)	*	62.9	%				

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Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG278133-1
Client ID: Method Blank Sample
Project:
SDG: SN3818
Lab File ID: 2NE10120.D

Sample Date:
Received Date:
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		71.4	%				
2,5-Dibromotoluene (PID)		72.0	%				

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Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG278391-1
Client ID: Method Blank Sample
Project:
SDG: SN3818
Lab File ID: 2NE10155.D

Sample Date:
Received Date:
Extract Date: 26-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391

Analysis Date: 26-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		102.	%				
2,5-Dibromotoluene (PID)		96.7	%				

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** JV, LTM - AOC 32/43A Spring 2020 **Matrix:** AQ
Lab Code: KAS **SDG:** SN3818

Client Sample ID	Lab Sample ID	Col. ID	DBT-FID	#	DBT-PID	#
32M-01-13XBR-SPR20	SN3818-1	B	86.1		85.1	
32M-01-14XOB-SPR20	SN3818-2	B	52.6	*	52.2	*
32M-01-14XOB-SPR20	SN3818-2RA	B	71.3		67.8	*
32M-01-17XBR-SPR20	SN3818-3	B	53.4	*	54.6	*
32M-01-18XBR-SPR20	SN3818-4	B	93.9		93.7	
32M-01-18XBR-SPR20	SN3818-4DL	B	56.6	*	55.2	*
AOC32-DUP01-SPR20	SN3818-5	B	96.7		83.8	
AOC32-DUP01-SPR20	SN3818-5DL	B	64.6	*	62.9	*
Method Blank Sample	WG278133-1	B	71.4		72.0	
Laboratory Control S	WG278133-2	B	87.1		89.4	
Laboratory Control S	WG278133-3	B	91.9		96.1	
Method Blank Sample	WG278391-1	B	102.		96.7	
Laboratory Control S	WG278391-2	B	93.2		92.6	
Laboratory Control S	WG278391-3RA	B	95.6		95.9	

		QC Limits
DBT-FID	2,5-DIBROMOTOLUENE (FID)	70-130
DBT-PID	2,5-DIBROMOTOLUENE (PID)	70-130

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG278133-2
LCSD ID: WG278133-3
Project:
SDG: SN3818
Report Date: 01-JUN-20
LCS File ID: 2NE10121.D

Received Date:
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133
LCSD File ID: 2NE10122.D

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	269.	89.7	275.	91.7	ug/L	2	25	70-130
C9-C12 Aliphatics	200.	190.	95.0	187.	93.5	ug/L	2	25	70-130
C9-C10 Aromatics	100.	94.3	94.3	95.4	95.4	ug/L	1	25	70-130
Benzene	100.	87.9	87.9	91.1	91.1	ug/L	4	25	70-130
Ethylbenzene	100.	92.2	92.2	94.8	94.8	ug/L	3	25	70-130
Methyl tert-butylether	100.	90.4	90.4	90.4	90.4	ug/L	0	25	70-130
Naphthalene	100.	91.0	91.0	94.0	94.0	ug/L	3	25	70-130
Toluene	100.	89.2	89.2	92.6	92.6	ug/L	4	25	70-130
m+p-Xylenes	200.	183.	91.5	187.	93.5	ug/L	2	25	70-130
o-Xylene	100.	91.6	91.6	93.1	93.1	ug/L	2	25	70-130
2,5-Dibromotoluene (FID)			87.1		91.9				70-130
2,5-Dibromotoluene (PID)			89.4		96.1				70-130

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ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG278391-2
LCSD ID: WG278391-3RA
Project:
SDG: SN3818
Report Date: 01-JUN-20
LCS File ID: 2NE10156.D

Received Date:
Extract Date: 26-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391
LCSD File ID: 2NE10158.D

Analysis Date: 26-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	286.	95.3	268.	89.3	ug/L	6	25	70-130
C9-C12 Aliphatics	200.	191.	95.5	190.	95.0	ug/L	0	25	70-130
C9-C10 Aromatics	100.	87.3	87.3	88.2	88.2	ug/L	1	25	70-130
Benzene	100.	80.6	80.6	83.0	83.0	ug/L	3	25	70-130
Ethylbenzene	100.	84.4	84.4	86.4	86.4	ug/L	2	25	70-130
Methyl tert-butylether	100.	80.0	80.0	81.3	81.3	ug/L	2	25	70-130
Naphthalene	100.	82.9	82.9	86.8	86.8	ug/L	4	25	70-130
Toluene	100.	81.5	81.5	84.0	84.0	ug/L	3	25	70-130
m+p-Xylenes	200.	169.	84.5	172.	86.0	ug/L	2	25	70-130
o-Xylene	100.	84.5	84.5	85.8	85.8	ug/L	2	25	70-130
2,5-Dibromotoluene (FID)			93.2		95.6				70-130
2,5-Dibromotoluene (PID)			92.6		95.9				70-130

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring 2020
Lab File ID : 2NE10120.D
Instrument ID : GC02

SDG : SN3818
Lab Sample ID : WG278133-1
Date Analyzed : 21-MAY-20
Time Analyzed : 10:59
Date Extracted : 21-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278133-2	2NE10121.	05/21/20	11:39
Laboratory Control S	WG278133-3	2NE10122.	05/21/20	12:20
32M-01-13XBR-SPR20	SN3818-1	2NE10123.	05/21/20	14:19
32M-01-14XOB-SPR20	SN3818-2	2NE10124.	05/21/20	14:59
32M-01-17XBR-SPR20	SN3818-3	2NE10125.	05/21/20	15:40
32M-01-18XBR-SPR20	SN3818-4	2NE10126.	05/21/20	16:21
AOC32-DUP01-SPR20	SN3818-5	2NE10127.	05/21/20	17:01

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring 2020
Lab File ID : 2NE10155.D
Instrument ID : GC02

SDG : SN3818
Lab Sample ID : WG278391-1
Date Analyzed : 26-MAY-20
Time Analyzed : 10:43
Date Extracted : 26-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278391-2	2NE10156.	05/26/20	12:14
Laboratory Control S	WG278391-3RA	2NE10158.	05/26/20	14:10
32M-01-14XOB-SPR20	SN3818-2RA	2NE10169.	05/26/20	23:32
32M-01-18XBR-SPR20	SN3818-4DL	2NE10170.	05/27/20	00:15
AOC32-DUP01-SPR20	SN3818-5DL	2NE10171.	05/27/20	00:58

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN3818
Project : JV, LTM - AOC 32/43A Spring 2020 **Instrument ID:** GC02
Lab File IDs : 2NE10031.D 2NE10032.D 2NE10037.D 2NE10036.D 2NE10034.D 2NE10035.D **Calibration Date(s):** 07-MAY-20 09:25 07-MAY-20 14:39

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C10 Aromatic	2653	2703	2836	3021	3138	2603	AVG		2826		7.59424	25.00000	M C
Methyl tert-butylether	1484	1674	1686	1569	1771	1669	AVG		1642		6.12724	25.00000	O
Benzene	3397	3518	3561	3387	3616	3470	AVG		3492		2.60540	25.00000	O
Toluene	2922	3194	3266	3149	3325	2968	AVG		3137		5.14062	25.00000	O
Ethylbenzene	2501	2621	2740	2770	2917	2587	AVG		2689		5.55429	25.00000	O
m+p-Xylene	3076	3247	3376	3362	3350	2410	AVG		3137		11.9094	25.00000	O
o-Xylene	2559	2771	2889	2911	2964	2591	AVG		2781		6.18361	25.00000	O
1,2,4-trimethylbenzene	2653	2703	2836	3021	3138	2603	AVG		2826		7.59424	25.00000	O
Naphthalene	2949	2410	2270	3103	3272	2611	AVG		2769		14.4410	25.00000	O
2,5-Dibromotoluene (PID)	2274	1715	+++++	2433	2566	1786	AVG		2155		17.8318	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN3818
Project : JV, LTM - AOC 32/43A Spring 2020 **Instrument ID:** GC02
Lab File IDs : 2NE10031.D 2NE10032.D 2NE10037.D 2NE10036.D 2NE10034.D 2NE10035.D **Calibration Date(s):** 07-MAY-20 08:43 07-MAY-20 14:39

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C5-C8 Aliphatic	5517	5727	5486	5639	5562	4787	AVG		5453		6.18987	25.00000	M C
C9-C12 Aliphatic	5393	5202	5196	5540	5789	6344	AVG		5577		7.83095	25.00000	M C
n-Pentane	4893	5095	4918	5071	5225	4097	AVG		4883		8.27021	25.00000	O
2-Methylpentane	5817	5819	5507	5664	5478	4763	AVG		5508		7.13290	25.00000	O
Methyl tert-butylether	4827	4506	4586	4238	4472	4253	AVG		4480		4.91417	25.00000	O
2,2,4-Trimethylpentane	5842	6268	6033	6181	5982	5502	AVG		5968		4.57751	25.00000	O
Benzene	7981	7809	8006	7554	7827	7749	AVG		7821		2.10939	25.00000	O
Toluene	7488	7650	7896	7530	7796	7762	AVG		7687		2.06964	25.00000	O
n-Nonane	5316	5073	5175	5605	5634	6100	AVG		5484		6.86907	25.00000	O
n-Decane	5241	4292	4329	5009	5679	6382	AVG		5155		15.60283	25.00000	O
Ethylbenzene	6766	6908	7348	7291	7575	7574	AVG		7244		4.67308	25.00000	O
m+p-Xylene	7128	7378	7979	7582	7801	7701	AVG		7595		4.02538	25.00000	O
o-Xylene	7109	7430	8156	7657	7929	7777	AVG		7677		4.82948	25.00000	O
1,2,4-trimethylbenzene	6680	6801	7123	7405	7774	7638	AVG		7237		6.15087	25.00000	O
n-Butylcyclohexane	5544	6112	6062	6070	5900	6305	AVG		5999		4.29738	25.00000	O
Naphthalene	5671	4589	4268	5559	5921	5635	AVG		5274		12.77292	25.00000	O
2,5-Dibromotoluene (FID)	2187	1573	+++++	2080	2220	1934	AVG		1999		13.15424	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring 2
SDG: SN3818
Lab ID : WG278133-4
Analytical Date: 05/21/20 09:36
Lab File ID : 2NE10119.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	2826	2887	0.100	2.19056	25.00000	Averaged
20	Benzene	3492	3242	0.100	-7.14169	25.00000	Averaged
30	Ethylbenzene	2689	2636	0.100	-1.97132	25.00000	Averaged
40	Methyl tert-butylether	1642	1625	0.100	-1.05975	25.00000	Averaged
50	Naphthalene	2769	2756	0.100	-0.48620	25.00000	Averaged
60	Toluene	3137	2986	0.100	-4.82557	25.00000	Averaged
70	m+p-Xylene	3137	3121	0.100	-0.49227	25.00000	Averaged
80	o-Xylene	2781	2730	0.100	-1.83890	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	2155	1902	0.100	-11.72196	25.00000	Averaged
180	1,2,4-trimethylbenzene	2826	2887	0.100	2.19004	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring
SDG: SN3818
Lab ID : WG278133-4
Analytical Date: 05/21/20 09:36
Lab File ID : 2NE10119.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
30	C5-C8 Aliphatic	5453	4905	0.100	-10.05248	25.00000	Averaged
40	C9-C12 Aliphatic	5577	4908	0.100	-11.99198	25.00000	Averaged
60	Benzene	7821	7227	0.100	-7.59466	25.00000	Averaged
70	Ethylbenzene	7244	7025	0.100	-3.01402	25.00000	Averaged
80	Methyl tert-butylether	4480	4293	0.100	-4.18959	25.00000	Averaged
90	Naphthalene	5274	5156	0.100	-2.23869	25.00000	Averaged
100	Toluene	7687	7193	0.100	-6.43213	25.00000	Averaged
110	m+p-Xylene	7595	7346	0.100	-3.27982	25.00000	Averaged
120	o-Xylene	7677	7474	0.100	-2.64310	25.00000	Averaged
200	n-Pentane	4883	4030	0.100	-17.46315	25.00000	Averaged
210	2-Methylpentane	5508	5054	0.100	-8.24928	25.00000	Averaged
220	2,2,4-Trimethylpentane	5968	5631	0.100	-5.65263	25.00000	Averaged
230	n-Nonane	5484	4949	0.100	-9.75406	30.00000	Averaged
240	n-Decane	5155	4325	0.100	-16.10969	25.00000	Averaged
250	n-Butylcyclohexane	5999	5492	0.100	-8.45268	25.00000	Averaged
260	1,2,4-trimethylbenzene	7237	7300	0.100	0.87477	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	1999	1687	0.100	-15.59610	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring 2
SDG: SN3818
Lab ID : WG278133-5
Analytical Date: 05/22/20 01:36
Lab File ID : 2NE10139.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
10	C9-C10 Aromatic	2826	2849	0.100	0.84239	25.00000	Averaged	
20	Benzene	3492	3367	0.100	-3.57134	25.00000	Averaged	
30	Ethylbenzene	2689	2688	0.100	-0.05853	25.00000	Averaged	
40	Methyl tert-butylether	1642	1536	0.100	-6.48308	25.00000	Averaged	
50	Naphthalene	2769	2736	0.100	-1.21277	25.00000	Averaged	
60	Toluene	3137	3123	0.100	-0.43823	25.00000	Averaged	
70	m+p-Xylene	3137	3229	0.100	2.92852	25.00000	Averaged	
80	o-Xylene	2781	2807	0.100	0.95667	25.00000	Averaged	
90	2,5-Dibromotoluene (PID)	2155	1425	0.100	-33.86224	25.00000	Averaged	<-
180	1,2,4-trimethylbenzene	2826	2849	0.100	0.84236	25.00000	Averaged	

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring 2
Lab ID : WG278133-5
Lab File ID : 2NE10139.D
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39

SDG: SN3818
Analytical Date: 05/22/20 01:36
Instrument ID: GC02
Column ID: B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
30	C5-C8 Aliphatic	5453	3455	0.100	-36.63294	25.00000	Averaged	<-
40	C9-C12 Aliphatic	5577	3216	0.100	-42.34226	25.00000	Averaged	<-
60	Benzene	7821	7861	0.100	0.51579	25.00000	Averaged	
70	Ethylbenzene	7244	7454	0.100	2.90583	25.00000	Averaged	
80	Methyl tert-butylether	4480	4312	0.100	-3.75302	25.00000	Averaged	
90	Naphthalene	5274	5262	0.100	-0.23332	25.00000	Averaged	
100	Toluene	7687	7845	0.100	2.05387	25.00000	Averaged	
110	m+p-Xylene	7595	7811	0.100	2.84219	25.00000	Averaged	
120	o-Xylene	7677	7877	0.100	2.61472	25.00000	Averaged	
200	n-Pentane	4883	3078	0.100	-36.97545	25.00000	Averaged	<-
210	2-Methylpentane	5508	3477	0.100	-36.88080	25.00000	Averaged	<-
220	2,2,4-Trimethylpentane	5968	3812	0.100	-36.12453	25.00000	Averaged	<-
230	n-Nonane	5484	3100	0.100	-43.47694	30.00000	Averaged	<-
240	n-Decane	5155	2639	0.100	-48.80963	25.00000	Averaged	<-
250	n-Butylcyclohexane	5999	3792	0.100	-36.78404	25.00000	Averaged	<-
260	1,2,4-trimethylbenzene	7237	7440	0.100	2.80489	25.00000	Averaged	
21	2,5-Dibromotoluene (FID)	1999	1269	0.100	-36.49971	25.00000	Averaged	<-

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring 2
SDG: SN3818
Lab ID : WG278391-4
Analytical Date: 05/26/20 09:42
Lab File ID : 2NE10154.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	2826	2661	0.100	-5.82224	25.00000	Averaged
20	Benzene	3492	3122	0.100	-10.59576	25.00000	Averaged
30	Ethylbenzene	2689	2494	0.100	-7.24788	25.00000	Averaged
40	Methyl tert-butylether	1642	1483	0.100	-9.69592	25.00000	Averaged
50	Naphthalene	2769	2639	0.100	-4.69033	25.00000	Averaged
60	Toluene	3137	2870	0.100	-8.51675	25.00000	Averaged
70	m+p-Xylene	3137	2967	0.100	-5.39647	25.00000	Averaged
80	o-Xylene	2781	2558	0.100	-8.00395	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	2155	1913	0.100	-11.22261	25.00000	Averaged
180	1,2,4-trimethylbenzene	2826	2661	0.100	-5.82242	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring
SDG: SN3818
Lab ID : WG278391-4
Analytical Date: 05/26/20 09:42
Lab File ID : 2NE10154.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
30	C5-C8 Aliphatic	5453	5095	0.100	-6.57112	25.00000	Averaged
40	C9-C12 Aliphatic	5577	4828	0.100	-13.43519	25.00000	Averaged
60	Benzene	7821	7589	0.100	-2.96381	25.00000	Averaged
70	Ethylbenzene	7244	7248	0.100	0.06339	25.00000	Averaged
80	Methyl tert-butylether	4480	4252	0.100	-5.09398	25.00000	Averaged
90	Naphthalene	5274	5340	0.100	1.25971	25.00000	Averaged
100	Toluene	7687	7548	0.100	-1.80563	25.00000	Averaged
110	m+p-Xylene	7595	7550	0.100	-0.59367	25.00000	Averaged
120	o-Xylene	7677	7624	0.100	-0.68650	25.00000	Averaged
200	n-Pentane	4883	4661	0.100	-4.55393	25.00000	Averaged
210	2-Methylpentane	5508	5107	0.100	-7.27580	25.00000	Averaged
220	2,2,4-Trimethylpentane	5968	5516	0.100	-7.57122	25.00000	Averaged
230	n-Nonane	5484	4944	0.100	-9.83831	30.00000	Averaged
240	n-Decane	5155	4275	0.100	-17.07450	25.00000	Averaged
250	n-Butylcyclohexane	5999	5381	0.100	-10.30737	25.00000	Averaged
260	1,2,4-trimethylbenzene	7237	7323	0.100	1.19010	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	1999	1848	0.100	-7.52524	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring
SDG: SN3818
Lab ID : WG278391-5
Analytical Date: 05/27/20 01:41
Lab File ID : 2NE10172.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	2826	2738	0.100	-3.11247	25.00000	Averaged
20	Benzene	3492	3264	0.100	-6.50930	25.00000	Averaged
30	Ethylbenzene	2689	2608	0.100	-3.00730	25.00000	Averaged
40	Methyl tert-butylether	1642	1543	0.100	-6.01054	25.00000	Averaged
50	Naphthalene	2769	2749	0.100	-0.71443	25.00000	Averaged
60	Toluene	3137	2999	0.100	-4.40036	25.00000	Averaged
70	m+p-Xylene	3137	3068	0.100	-2.20044	25.00000	Averaged
80	o-Xylene	2781	2673	0.100	-3.88864	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	2155	1881	0.100	-12.72065	25.00000	Averaged
180	1,2,4-trimethylbenzene	2826	2738	0.100	-3.11291	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring 2
Lab ID : WG278391-5
Lab File ID : 2NE10172.D
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39

SDG: SN3818
Analytical Date: 05/27/20 01:41
Instrument ID: GC02
Column ID: B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
30	C5-C8 Aliphatic	5453	5738	0.100	5.21757	25.00000	Averaged
40	C9-C12 Aliphatic	5577	5083	0.100	-8.85765	25.00000	Averaged
60	Benzene	7821	7737	0.100	-1.07480	25.00000	Averaged
70	Ethylbenzene	7244	7386	0.100	1.96571	25.00000	Averaged
80	Methyl tert-butylether	4480	4315	0.100	-3.70258	25.00000	Averaged
90	Naphthalene	5274	5452	0.100	3.37391	25.00000	Averaged
100	Toluene	7687	7687	0.100	0.00053	25.00000	Averaged
110	m+p-Xylene	7595	7666	0.100	0.94210	25.00000	Averaged
120	o-Xylene	7677	7734	0.100	0.75451	25.00000	Averaged
200	n-Pentane	4883	5351	0.100	9.57580	25.00000	Averaged
210	2-Methylpentane	5508	5741	0.100	4.22336	25.00000	Averaged
220	2,2,4-Trimethylpentane	5968	6121	0.100	2.56899	25.00000	Averaged
230	n-Nonane	5484	5153	0.100	-6.03220	30.00000	Averaged
240	n-Decane	5155	4508	0.100	-12.55809	25.00000	Averaged
250	n-Butylcyclohexane	5999	5658	0.100	-5.67716	25.00000	Averaged
260	1,2,4-trimethylbenzene	7237	7382	0.100	2.00344	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	1999	1762	0.100	-11.82283	25.00000	Averaged

*** = Compound out of QC criteria**

Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services **SDG :** SN3818
Project : JV, LTM - AOC 32/43A Spring 2020
Instrument ID : GC02

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG277230-1	05/07/20	09:25		31.31
Initial Calibration	WG277230-1	05/07/20	09:25	31.299	
Initial Calibration	WG277230-2	05/07/20	10:07		31.308
Initial Calibration	WG277230-2	05/07/20	10:07	31.298	
Initial Calibration	WG277230-5	05/07/20	11:31		31.309
Initial Calibration	WG277230-5	05/07/20	11:31	31.299	
Initial Calibration	WG277230-6	05/07/20	12:12		31.313
Initial Calibration	WG277230-6	05/07/20	12:12	31.303	
Initial Calibration	WG277230-4	05/07/20	13:58		31.31
Initial Calibration	WG277230-4	05/07/20	13:58	31.3	
Initial Calibration	WG277230-3	05/07/20	14:39		31.308
Initial Calibration	WG277230-3	05/07/20	14:39	31.298	
Independent Source	WG277230-7	05/07/20	16:32	31.3	31.31
Continuing Calibrati	WG278133-4	05/21/20	09:36	31.27	31.28
Method Blank Sample	WG278133-1	05/21/20	10:59	31.269	31.279
Laboratory Control S	WG278133-2	05/21/20	11:39	31.273	31.283
Laboratory Control S	WG278133-3	05/21/20	12:20	31.269	31.279
32M-01-13XBR-SPR20	SN3818-1	05/21/20	14:19	31.272	31.283
32M-01-14XOB-SPR20	SN3818-2	05/21/20	14:59	31.272	31.283
32M-01-17XBR-SPR20	SN3818-3	05/21/20	15:40	31.274	31.284
32M-01-18XBR-SPR20	SN3818-4	05/21/20	16:21	31.274	31.285
AOC32-DUP01-SPR20	SN3818-5	05/21/20	17:01	31.274	31.285
Continuing Calibrati	WG278133-5	05/22/20	01:36	31.288	31.299
Continuing Calibrati	WG278391-4	05/26/20	09:42	31.275	31.285
Method Blank Sample	WG278391-1	05/26/20	10:43	31.275	31.285
Laboratory Control S	WG278391-2	05/26/20	12:14	31.276	31.286
Laboratory Control S	WG278391-3RA	05/26/20	14:10	31.274	31.284
32M-01-14XOB-SPR20	SN3818-2RA	05/26/20	23:32	31.287	31.297
32M-01-18XBR-SPR20	SN3818-4DL	05/27/20	00:15	31.287	31.297
AOC32-DUP01-SPR20	SN3818-5DL	05/27/20	00:58	31.287	31.297
Continuing Calibrati	WG278391-5	05/27/20	01:41	31.287	31.297

VOLATILE PETROLEUM HYDROCARBON DATA

QC Summary Section

Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** JV, LTM - AOC 32/43A Spring 2020 **Matrix:** AQ
Lab Code: KAS **SDG:** SN3818

Client Sample ID	Lab Sample ID	Col. ID	DBT-FID	#	DBT-PID	#
32M-01-13XBR-SPR20	SN3818-1	B	86.1		85.1	
32M-01-14XOB-SPR20	SN3818-2	B	52.6	*	52.2	*
32M-01-14XOB-SPR20	SN3818-2RA	B	71.3		67.8	*
32M-01-17XBR-SPR20	SN3818-3	B	53.4	*	54.6	*
32M-01-18XBR-SPR20	SN3818-4	B	93.9		93.7	
32M-01-18XBR-SPR20	SN3818-4DL	B	56.6	*	55.2	*
AOC32-DUP01-SPR20	SN3818-5	B	96.7		83.8	
AOC32-DUP01-SPR20	SN3818-5DL	B	64.6	*	62.9	*
Method Blank Sample	WG278133-1	B	71.4		72.0	
Laboratory Control S	WG278133-2	B	87.1		89.4	
Laboratory Control S	WG278133-3	B	91.9		96.1	
Method Blank Sample	WG278391-1	B	102.		96.7	
Laboratory Control S	WG278391-2	B	93.2		92.6	
Laboratory Control S	WG278391-3RA	B	95.6		95.9	

		QC Limits
DBT-FID	2,5-DIBROMOTOLUENE (FID)	70-130
DBT-PID	2,5-DIBROMOTOLUENE (PID)	70-130

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

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sales@katahdinlab.com

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring 2020
Lab File ID : 2NE10120.D
Instrument ID : GC02

SDG : SN3818
Lab Sample ID : WG278133-1
Date Analyzed : 21-MAY-20
Time Analyzed : 10:59
Date Extracted : 21-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278133-2	2NE10121.	05/21/20	11:39
Laboratory Control S	WG278133-3	2NE10122.	05/21/20	12:20
32M-01-13XBR-SPR20	SN3818-1	2NE10123.	05/21/20	14:19
32M-01-14XOB-SPR20	SN3818-2	2NE10124.	05/21/20	14:59
32M-01-17XBR-SPR20	SN3818-3	2NE10125.	05/21/20	15:40
32M-01-18XBR-SPR20	SN3818-4	2NE10126.	05/21/20	16:21
AOC32-DUP01-SPR20	SN3818-5	2NE10127.	05/21/20	17:01

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring 2020
Lab File ID : 2NE10155.D
Instrument ID : GC02

SDG : SN3818
Lab Sample ID : WG278391-1
Date Analyzed : 26-MAY-20
Time Analyzed : 10:43
Date Extracted : 26-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278391-2	2NE10156.	05/26/20	12:14
Laboratory Control S	WG278391-3RA	2NE10158.	05/26/20	14:10
32M-01-14XOB-SPR20	SN3818-2RA	2NE10169.	05/26/20	23:32
32M-01-18XBR-SPR20	SN3818-4DL	2NE10170.	05/27/20	00:15
AOC32-DUP01-SPR20	SN3818-5DL	2NE10171.	05/27/20	00:58

Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services **SDG :** SN3818
Project : JV, LTM - AOC 32/43A Spring 2020
Instrument ID : GC02

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG277230-1	05/07/20	09:25		31.31
Initial Calibration	WG277230-1	05/07/20	09:25	31.299	
Initial Calibration	WG277230-2	05/07/20	10:07		31.308
Initial Calibration	WG277230-2	05/07/20	10:07	31.298	
Initial Calibration	WG277230-5	05/07/20	11:31		31.309
Initial Calibration	WG277230-5	05/07/20	11:31	31.299	
Initial Calibration	WG277230-6	05/07/20	12:12		31.313
Initial Calibration	WG277230-6	05/07/20	12:12	31.303	
Initial Calibration	WG277230-4	05/07/20	13:58		31.31
Initial Calibration	WG277230-4	05/07/20	13:58	31.3	
Initial Calibration	WG277230-3	05/07/20	14:39		31.308
Initial Calibration	WG277230-3	05/07/20	14:39	31.298	
Independent Source	WG277230-7	05/07/20	16:32	31.3	31.31
Continuing Calibrati	WG278133-4	05/21/20	09:36	31.27	31.28
Method Blank Sample	WG278133-1	05/21/20	10:59	31.269	31.279
Laboratory Control S	WG278133-2	05/21/20	11:39	31.273	31.283
Laboratory Control S	WG278133-3	05/21/20	12:20	31.269	31.279
32M-01-13XBR-SPR20	SN3818-1	05/21/20	14:19	31.272	31.283
32M-01-14XOB-SPR20	SN3818-2	05/21/20	14:59	31.272	31.283
32M-01-17XBR-SPR20	SN3818-3	05/21/20	15:40	31.274	31.284
32M-01-18XBR-SPR20	SN3818-4	05/21/20	16:21	31.274	31.285
AOC32-DUP01-SPR20	SN3818-5	05/21/20	17:01	31.274	31.285
Continuing Calibrati	WG278133-5	05/22/20	01:36	31.288	31.299
Continuing Calibrati	WG278391-4	05/26/20	09:42	31.275	31.285
Method Blank Sample	WG278391-1	05/26/20	10:43	31.275	31.285
Laboratory Control S	WG278391-2	05/26/20	12:14	31.276	31.286
Laboratory Control S	WG278391-3RA	05/26/20	14:10	31.274	31.284
32M-01-14XOB-SPR20	SN3818-2RA	05/26/20	23:32	31.287	31.297
32M-01-18XBR-SPR20	SN3818-4DL	05/27/20	00:15	31.287	31.297
AOC32-DUP01-SPR20	SN3818-5DL	05/27/20	00:58	31.287	31.297
Continuing Calibrati	WG278391-5	05/27/20	01:41	31.287	31.297

Sample Data Section

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N Presumptive evidence of a compound based on a mass spectral library search.

A Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3818-1
Client ID: 32M-01-13XBR-SPR20
Project: JV, LTM - AOC 32/43A Spring 2020
SDG: SN3818
Lab File ID: 2NE10123.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		86.1	%				
2,5-Dibromotoluene (PID)		85.1	%				

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029
http://www.katahdinlab.com

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10123.D
Report Date: 01-Jun-2020 08:40

Katahdin Analytical Services

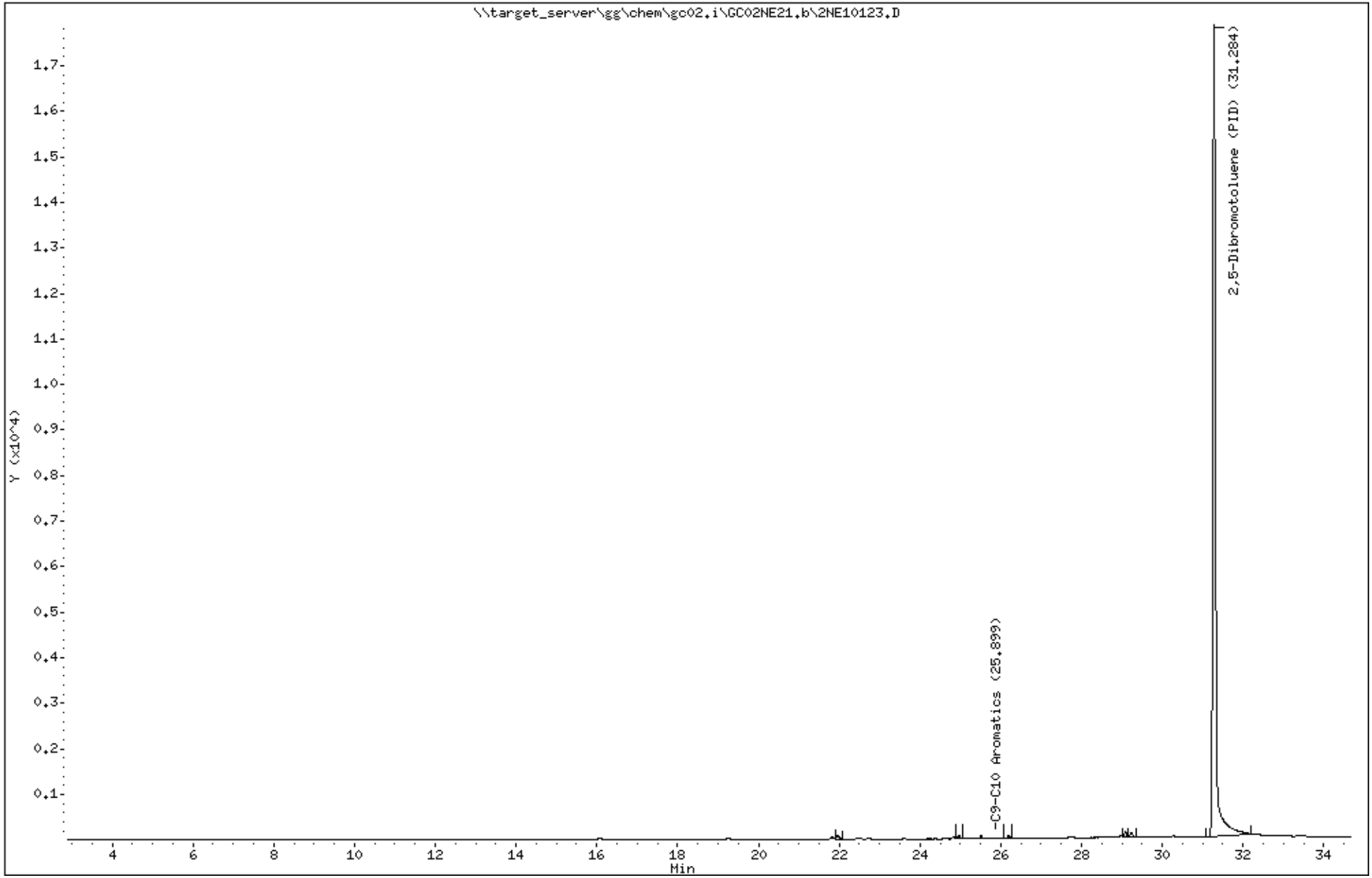
Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10123.D
Lab Smp Id: SN3818-1 Client Smp ID: 32M-01-13XBR-SPR20
Inj Date : 21-MAY-2020 14:19
Operator : DL Inst ID: gc02.i
Smp Info : SN3818-1
Misc Info : WG278133,WG277230-4
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

					CONCENTRATIONS ON-COLUMN	CONCENTRATIONS FINAL	
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
$ 11 2,5-Dibromotoluene (PID)	31.283	31.309	-0.026	183347	85.0875	85.1	

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10123.D
Date : 21-MAY-2020 14:19
Client ID: 32M-01-13XBR-SPR20 Instrument: gc02.i
Sample Info: SN3818-1
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



Data File: 2NE10123.D
Report Date: 01-Jun-2020 08:49

Katahdin Analytical Services

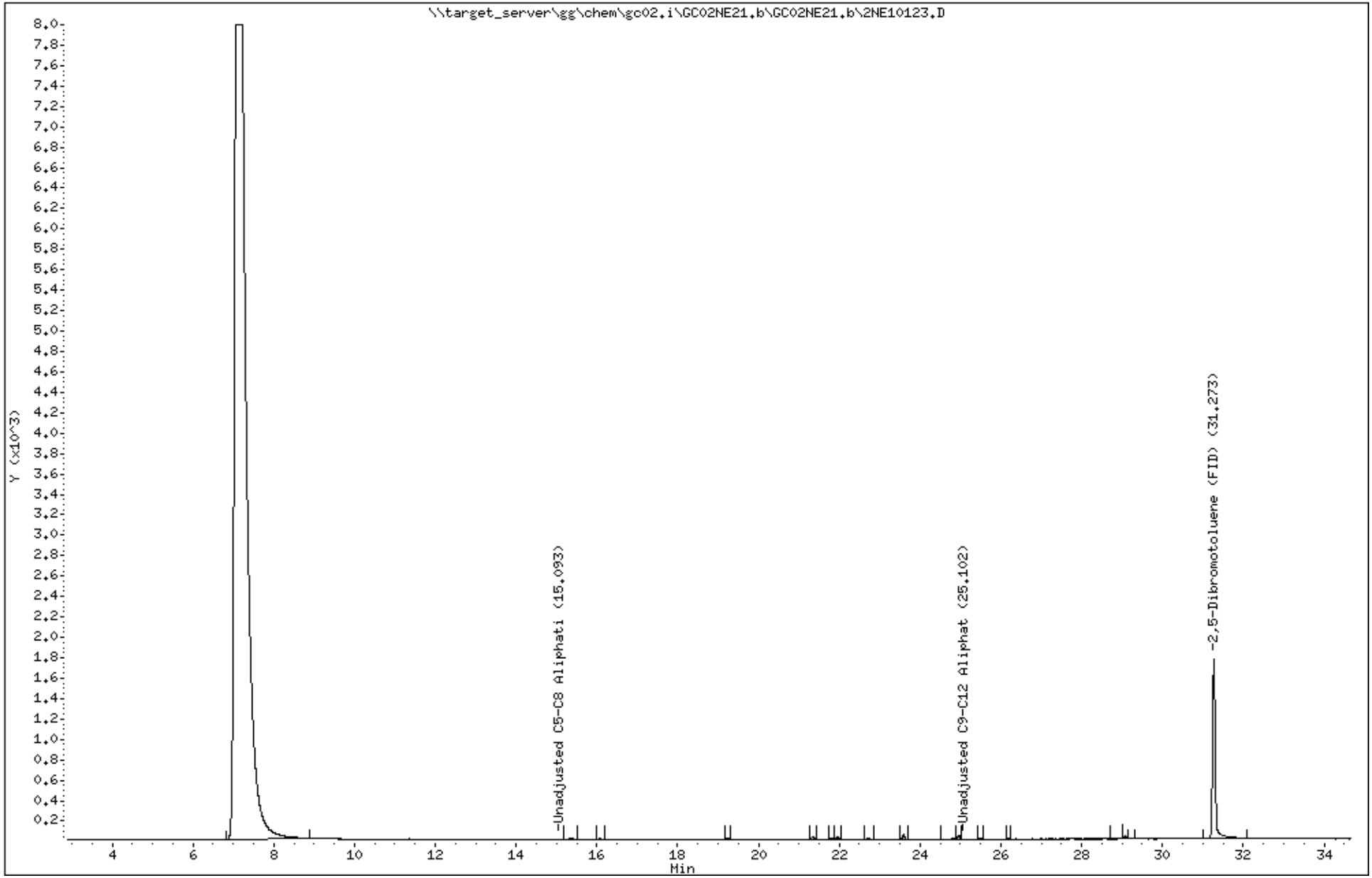
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Lab Smp Id: SN3818-1 Client Smp ID: 32M-01-13XBR-SPR20
Inj Date : 21-MAY-2020 14:19
Operator : DL Inst ID: gc02.i
Smp Info : SN3818-1
Misc Info : WG278133,WG277230-4
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 21 2,5-Dibromotoluene (FID)	31.272	31.304	-0.032	172180	86.1419	86.1	

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10123.D
Date : 21-MAY-2020 14:19
Client ID: 32M-01-13XBR-SPR20 Instrument: gc02.i
Sample Info: SN3818-1
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



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ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3818-2
Client ID: 32M-01-14XOB-SPR20
Project: JV, LTM - AOC 32/43A Spring 2020
SDG: SN3818
Lab File ID: 2NE10124.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 02-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)	*	52.6	%				
2,5-Dibromotoluene (PID)	*	52.2	%				

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Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10124.D
Report Date: 02-Jun-2020 13:11

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10124.D
Lab Smp Id: SN3818-2 Client Smp ID: 32M-01-14XOB-SPR20
Inj Date : 21-MAY-2020 14:59
Operator : DL Inst ID: gc02.i
Smp Info : SN3818-2
Misc Info : WG278133,WG277230-4
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

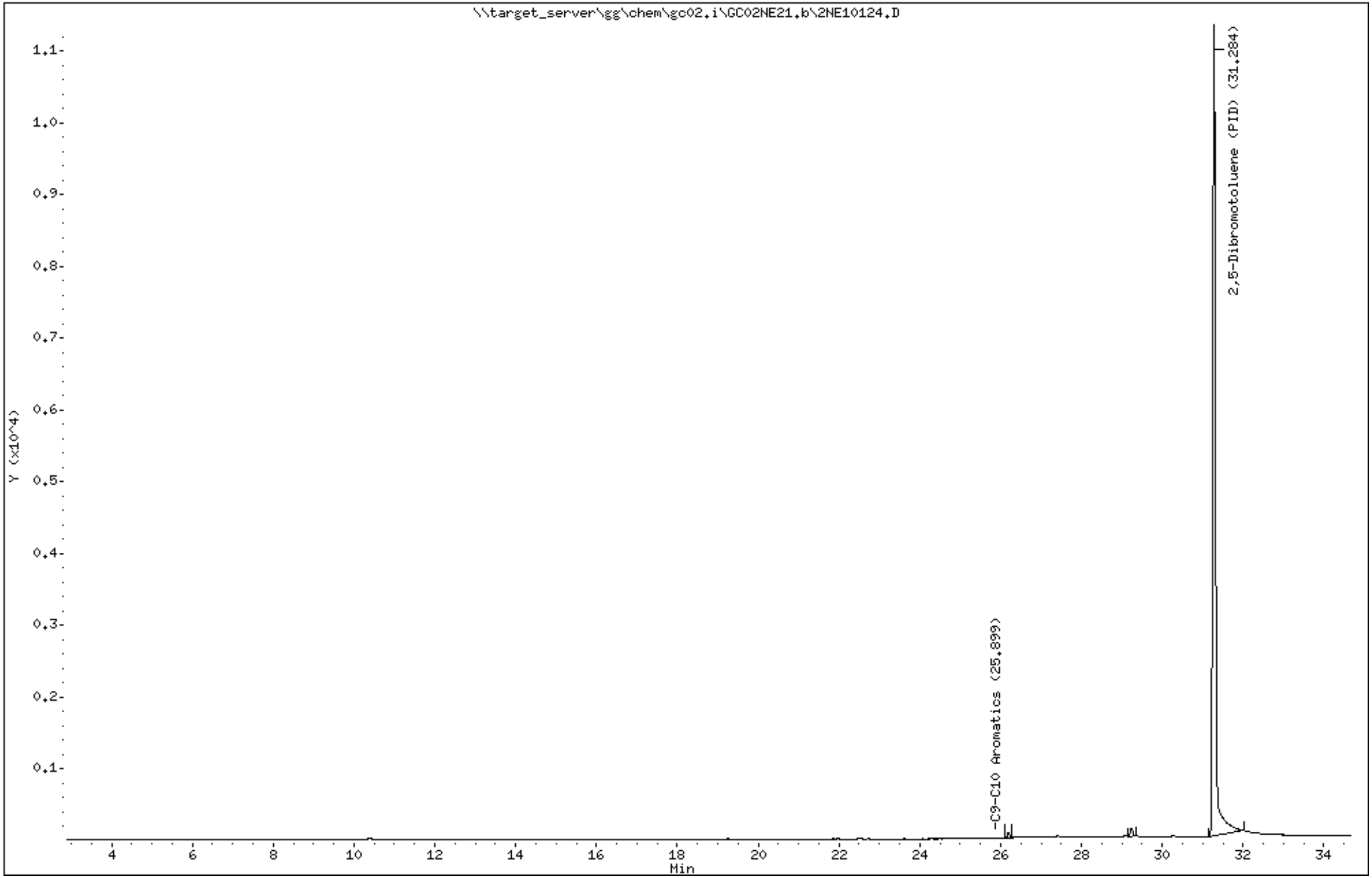
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 11 2,5-Dibromotoluene (PID)	31.283	31.309	-0.026	112487	52.2029	52.2(R)	

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10124.D
Date : 21-MAY-2020 14:59
Client ID: 32M-01-14XOB-SPR20 Instrument: gc02.i
Sample Info: SN3818-2
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



Data File: 2NE10124.D
Report Date: 02-Jun-2020 13:11

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10124.D
Lab Smp Id: SN3818-2 Client Smp ID: 32M-01-14XOB-SPR20
Inj Date : 21-MAY-2020 14:59
Operator : DL Inst ID: gc02.i
Smp Info : SN3818-2
Misc Info : WG278133,WG277230-4
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

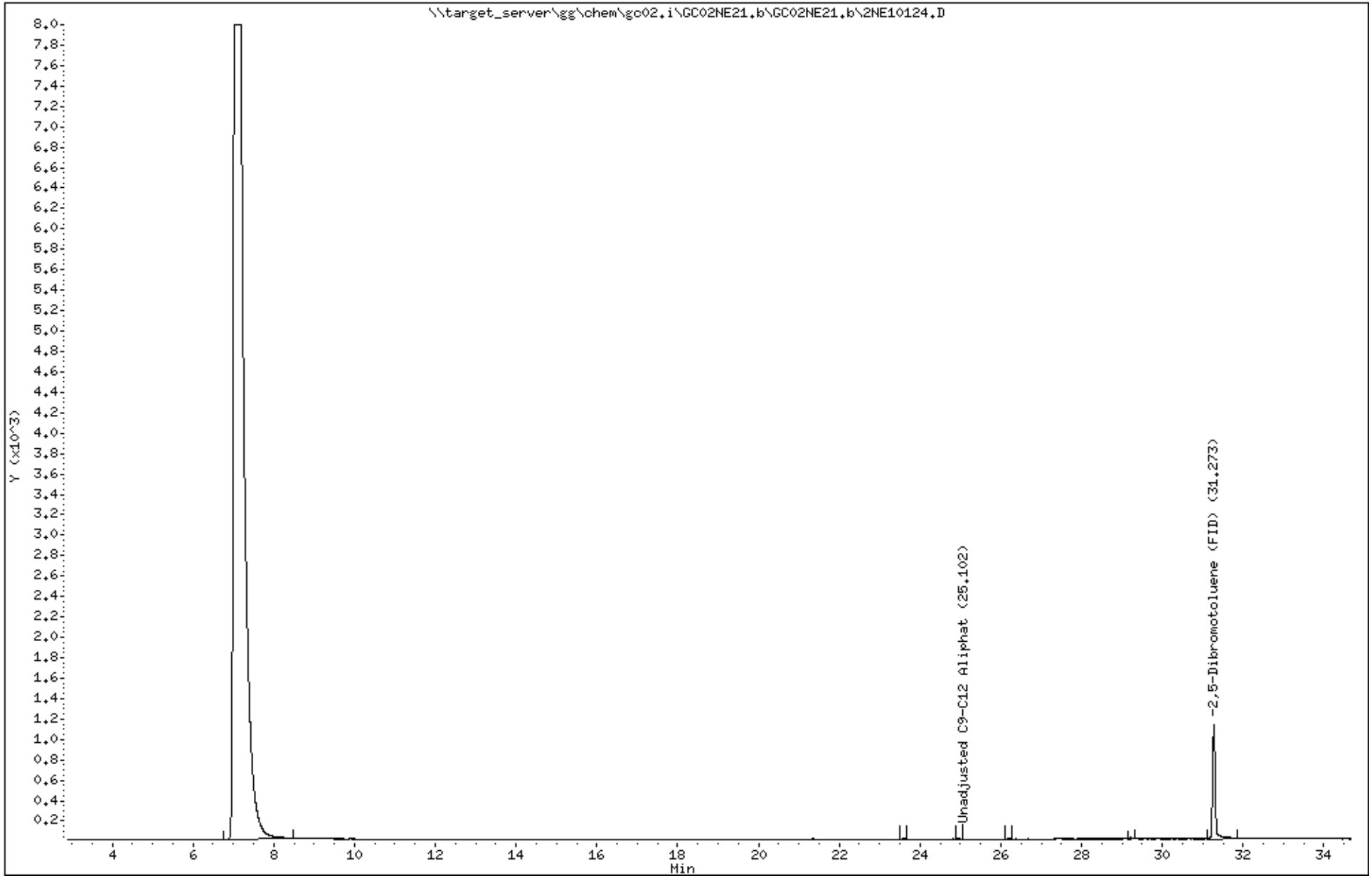
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 21 2,5-Dibromotoluene (FID)	31.272	31.304	-0.032	105174	52.6187	52.6(R)	

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10124.D
Date : 21-MAY-2020 14:59
Client ID: 32M-01-14XOB-SPR20 Instrument: gc02.i
Sample Info: SN3818-2
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3818-2RA
Client ID: 32M-01-14XOB-SPR20
Project: JV, LTM - AOC 32/43A Spring 2020
SDG: SN3818
Lab File ID: 2NE10169.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 26-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391

Analysis Date: 26-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		71.3	%				
2,5-Dibromotoluene (PID)	*	67.8	%				

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Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10169.D
Report Date: 01-Jun-2020 08:44

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10169.D
Lab Smp Id: SN3818-2RA Client Smp ID: 32M-01-14XOB-SPR20
Inj Date : 26-MAY-2020 23:32
Operator : DL Inst ID: gc02.i
Smp Info : SN3818-2RA
Misc Info : WG278391,WG277230-4
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m
Meth Date : 27-May-2020 07:24 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

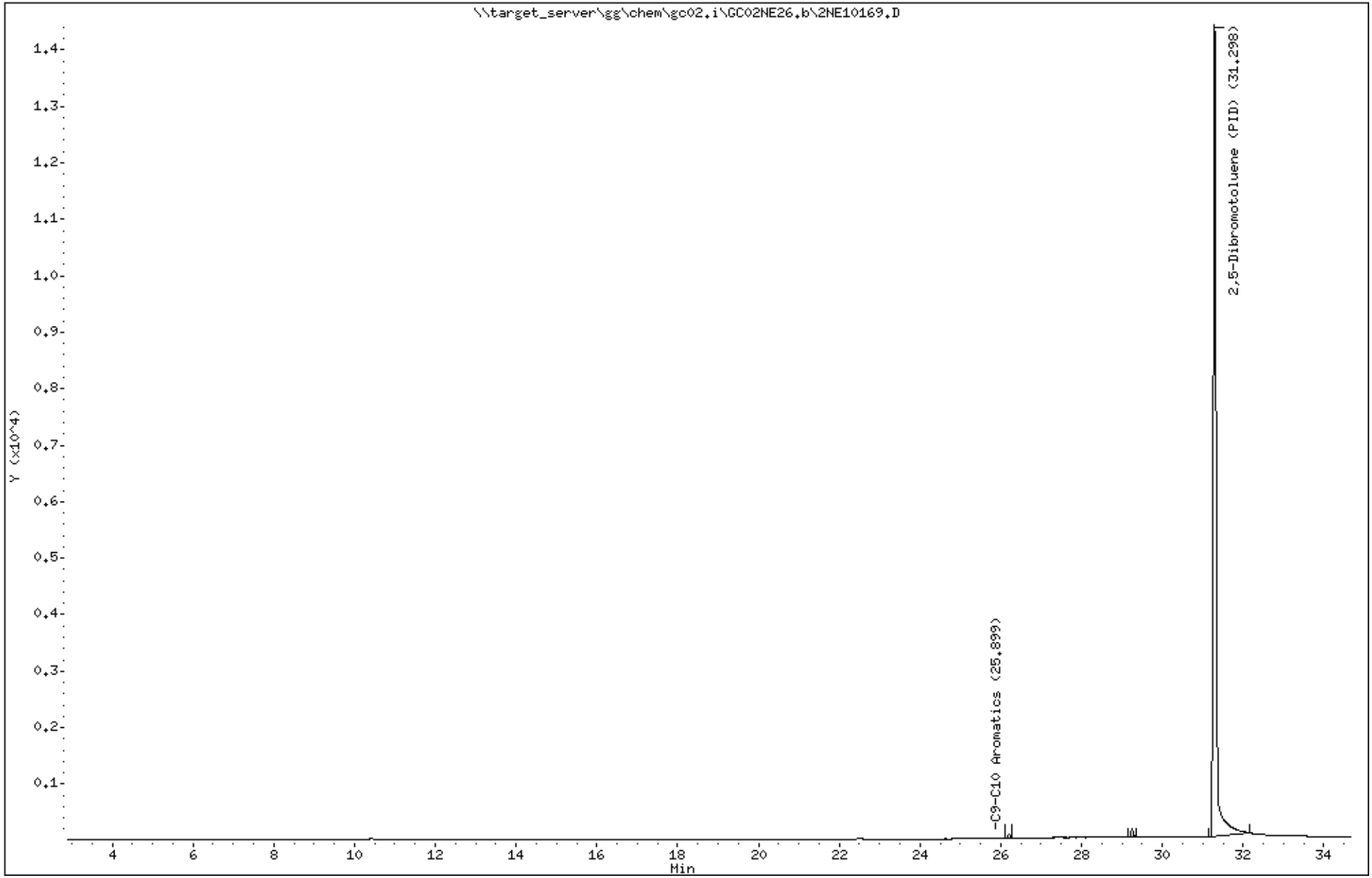
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 11 2,5-Dibromotoluene (PID)	31.297	31.309	-0.012	146151	67.8256	67.8(R)	

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10169.D
Date : 26-MAY-2020 23:32
Client ID: 32M-01-14XOB-SPR20 Instrument: gc02.i
Sample Info: SN3818-2RA
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



Data File: 2NE10169.D
Report Date: 01-Jun-2020 08:47

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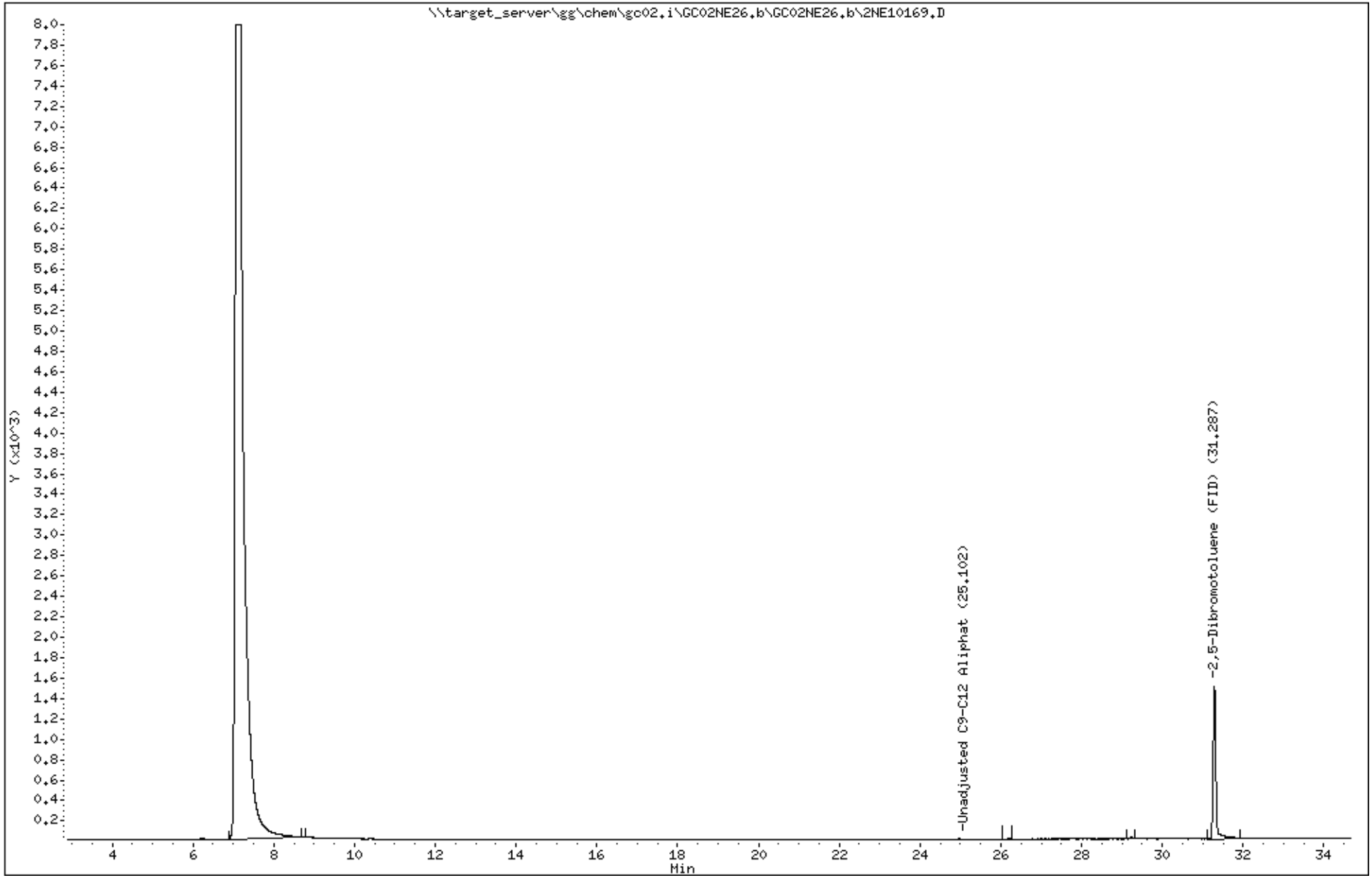
Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10169.D
Lab Smp Id: SN3818-2RA Client Smp ID: 32M-01-14XOB-SPR20
Inj Date : 26-MAY-2020 23:32
Operator : DL Inst ID: gc02.i
Smp Info : SN3818-2RA
Misc Info : WG278391,WG277230-4
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m\VPHFID91.m
Meth Date : 27-May-2020 07:31 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 21 2,5-Dibromotoluene (FID)	31.287	31.304	-0.017	142460	71.2730	71.3	

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10169.D
Date : 26-MAY-2020 23:32
Client ID: 32M-01-14XOB-SPR20 Instrument: gc02.i
Sample Info: SN3818-2RA
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3818-3
Client ID: 32M-01-17XBR-SPR20
Project: JV, LTM - AOC 32/43A Spring 2020
SDG: SN3818
Lab File ID: 2NE10125.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)	*	53.4	%				
2,5-Dibromotoluene (PID)	*	54.6	%				

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Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10125.D
Report Date: 01-Jun-2020 08:40

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10125.D
Lab Smp Id: SN3818-3 Client Smp ID: 32M-01-17XBR-SPR20
Inj Date : 21-MAY-2020 15:40
Operator : DL Inst ID: gc02.i
Smp Info : SN3818-3
Misc Info : WG278133,WG277230-4
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

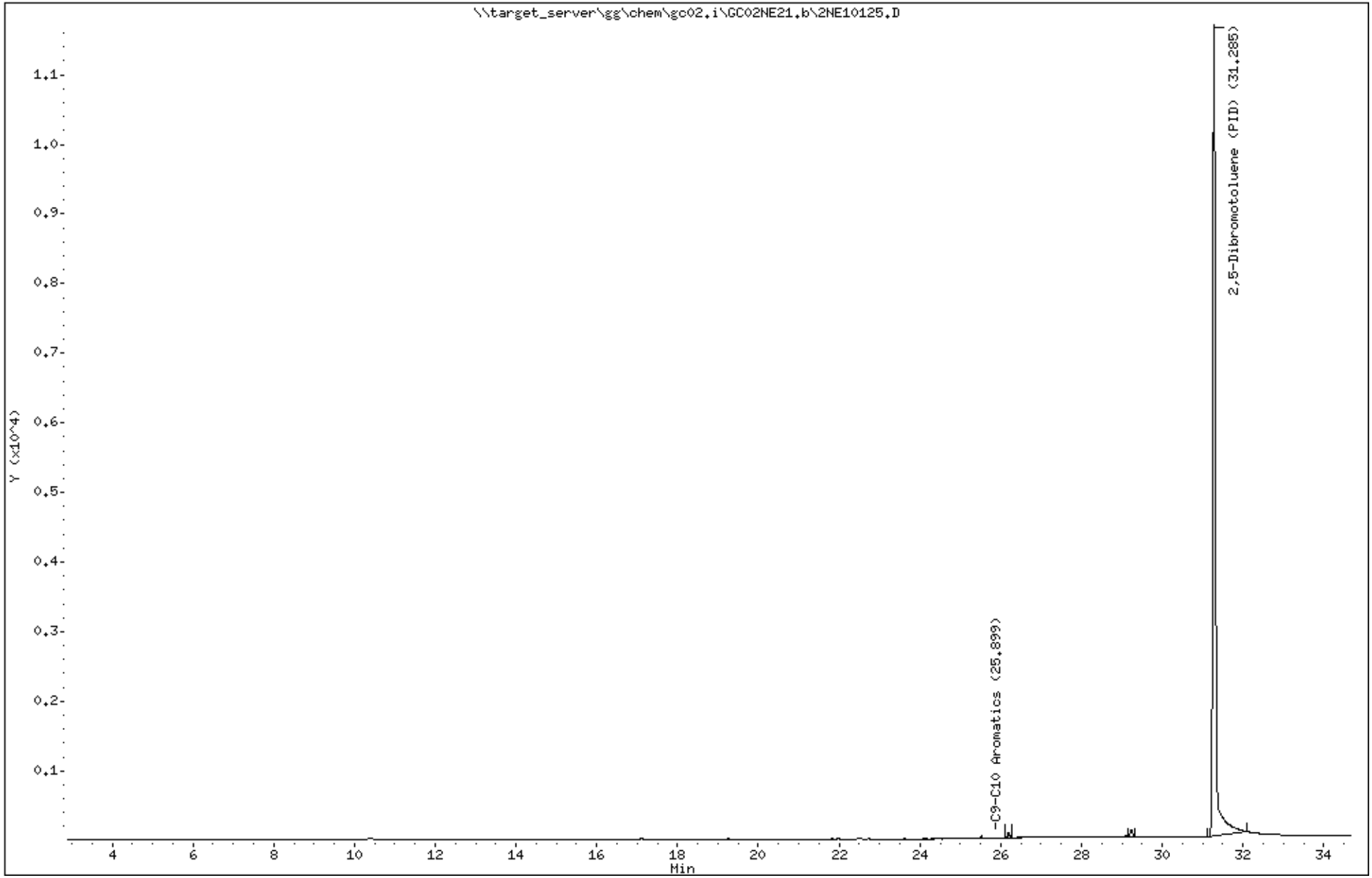
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 11 2,5-Dibromotoluene (PID)	31.284	31.309	-0.025	117627	54.5882	54.6(R)	

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10125.D
Date : 21-MAY-2020 15:40
Client ID: 32M-01-17XBR-SPR20 Instrument: gc02.i
Sample Info: SN3818-3
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



06/05/2020
Katahdin Analytical Services 1000027

Data File: 2NE10125.D
Report Date: 01-Jun-2020 08:49

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10125.D
Lab Smp Id: SN3818-3 Client Smp ID: 32M-01-17XBR-SPR20
Inj Date : 21-MAY-2020 15:40
Operator : DL Inst ID: gc02.i
Smp Info : SN3818-3
Misc Info : WG278133,WG277230-4
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

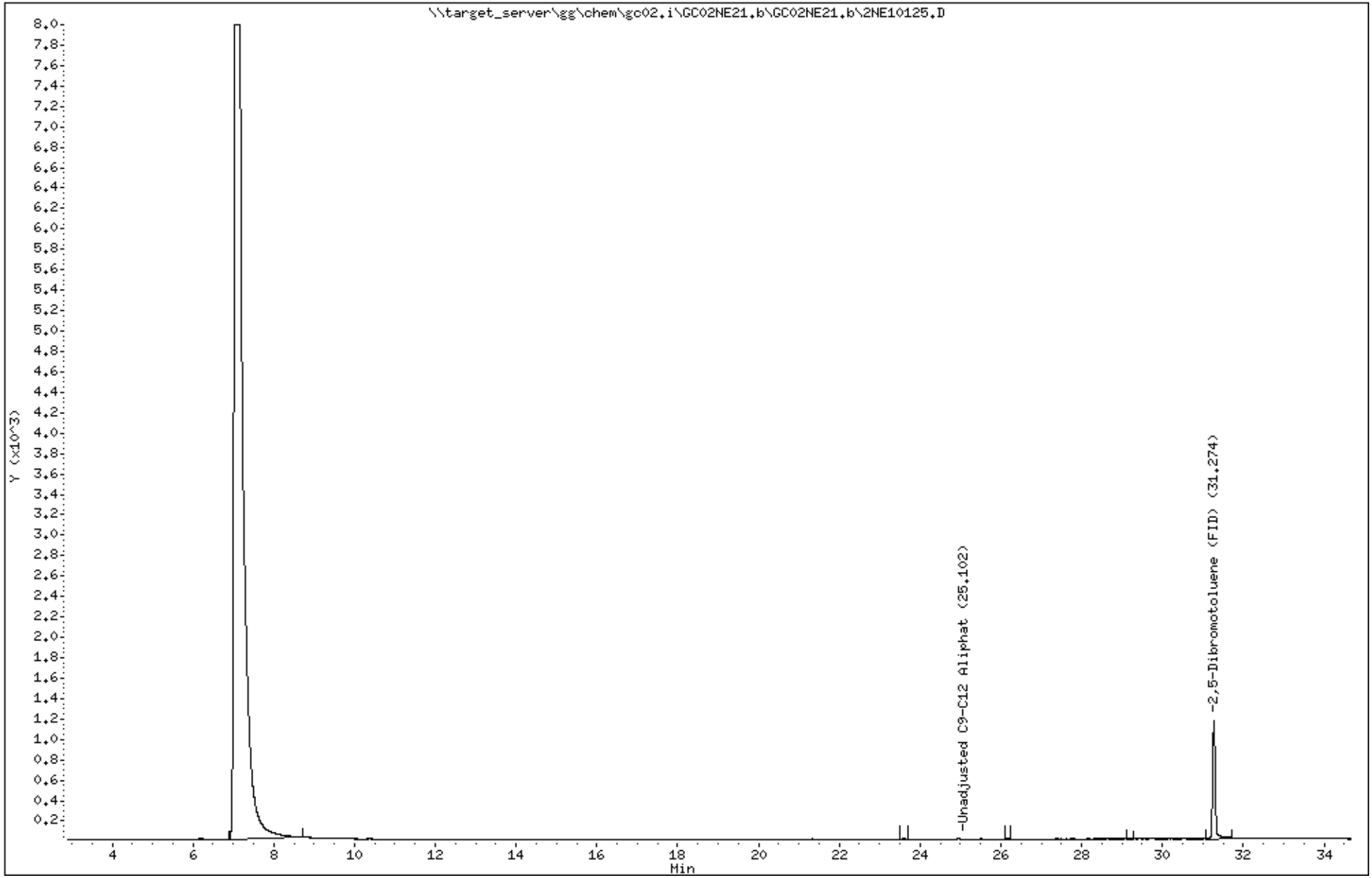
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 21 2,5-Dibromotoluene (FID)	31.274	31.304	-0.030	106772	53.4182	53.4(R)	

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10125.D
Date : 21-MAY-2020 15:40
Client ID: 32M-01-17XBR-SPR20 Instrument: gc02.i
Sample Info: SN3818-3
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3818-4
Client ID: 32M-01-18XBR-SPR20
Project: JV, LTM - AOC 32/43A Spring 2020
SDG: SN3818
Lab File ID: 2NE10126.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics		700	ug/L	1	100	100	50.
C9-C10 Aromatics	E	730	ug/L	1	100	100	50.
Benzene	J	1.3	ug/L	1	3	3.0	0.31
Ethylbenzene	E	580	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		93.9	%				
2,5-Dibromotoluene (PID)		93.7	%				

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Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10126.D
Report Date: 01-Jun-2020 09:56

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10126.D
Lab Smp Id: SN3818-4 Client Smp ID: 32M-01-18XBR-SPR20
Inj Date : 21-MAY-2020 16:21
Operator : DL Inst ID: gc02.i
Smp Info : SN3818-4
Misc Info : WG278133,WG277230-4
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

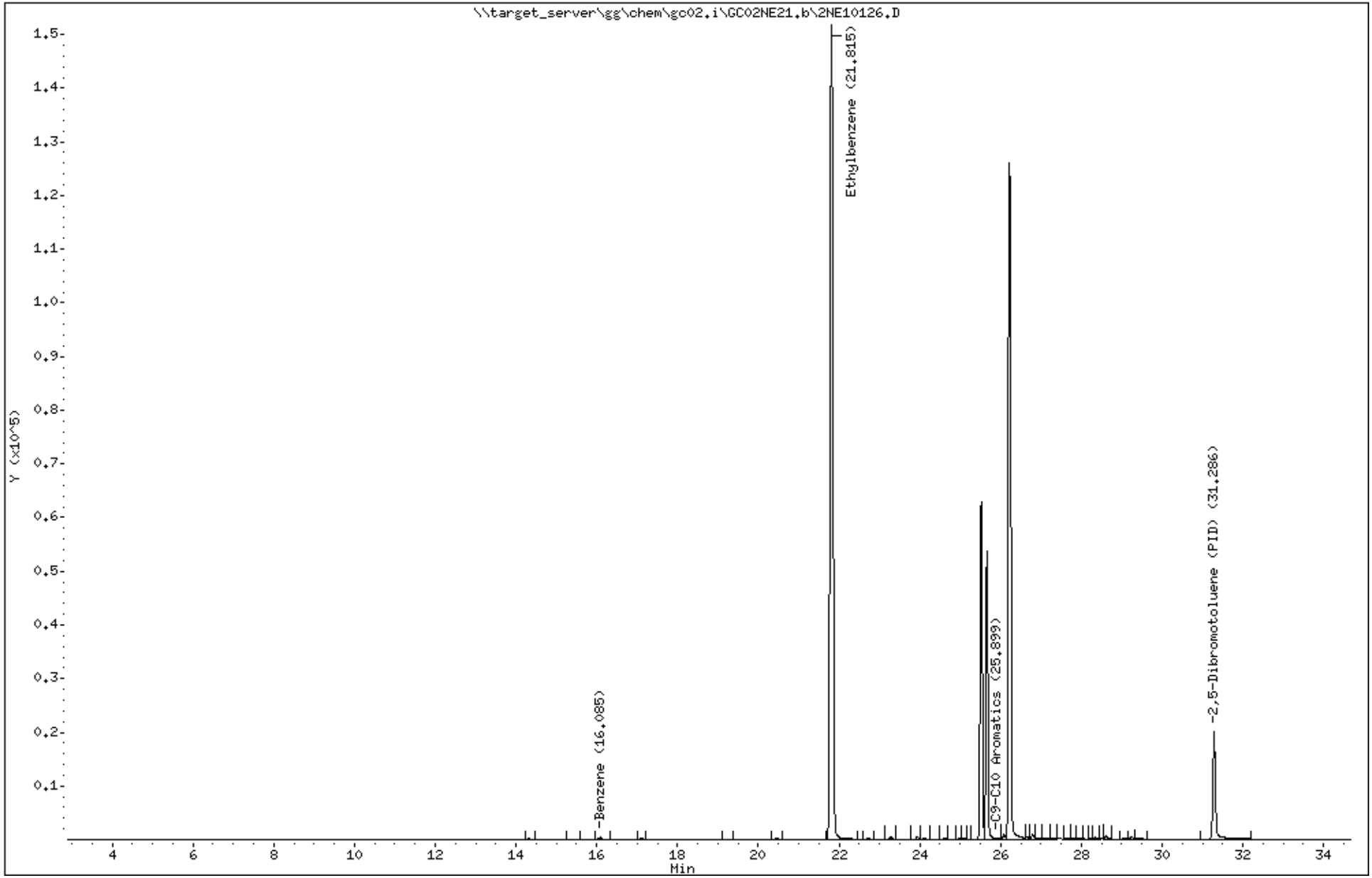
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
3	Benzene	16.085	16.099	-0.014	4410	1.26305	1.26(a)	
5	Ethylbenzene	21.814	21.860	-0.046	1561564	580.668	581(A)	
S 9	C9-C10 Aromatics	22.818	-28.980		2073579	733.855	734(A)	
$ 11	2,5-Dibromotoluene (PID)	31.285	31.309	-0.024	201981	93.7351	93.7	

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount
exceeded maximum amount.

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10126.D
Date : 21-MAY-2020 16:21
Client ID: 32M-01-18XBR-SPR20 Instrument: gc02.i
Sample Info: SN3818-4
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



Data File: 2NE10126.D
Report Date: 01-Jun-2020 09:56

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10126.D
Lab Smp Id: SN3818-4 Client Smp ID: 32M-01-18XBR-SPR20
Inj Date : 21-MAY-2020 16:21
Operator : DL Inst ID: gc02.i
Smp Info : SN3818-4
Misc Info : WG278133,WG277230-4
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

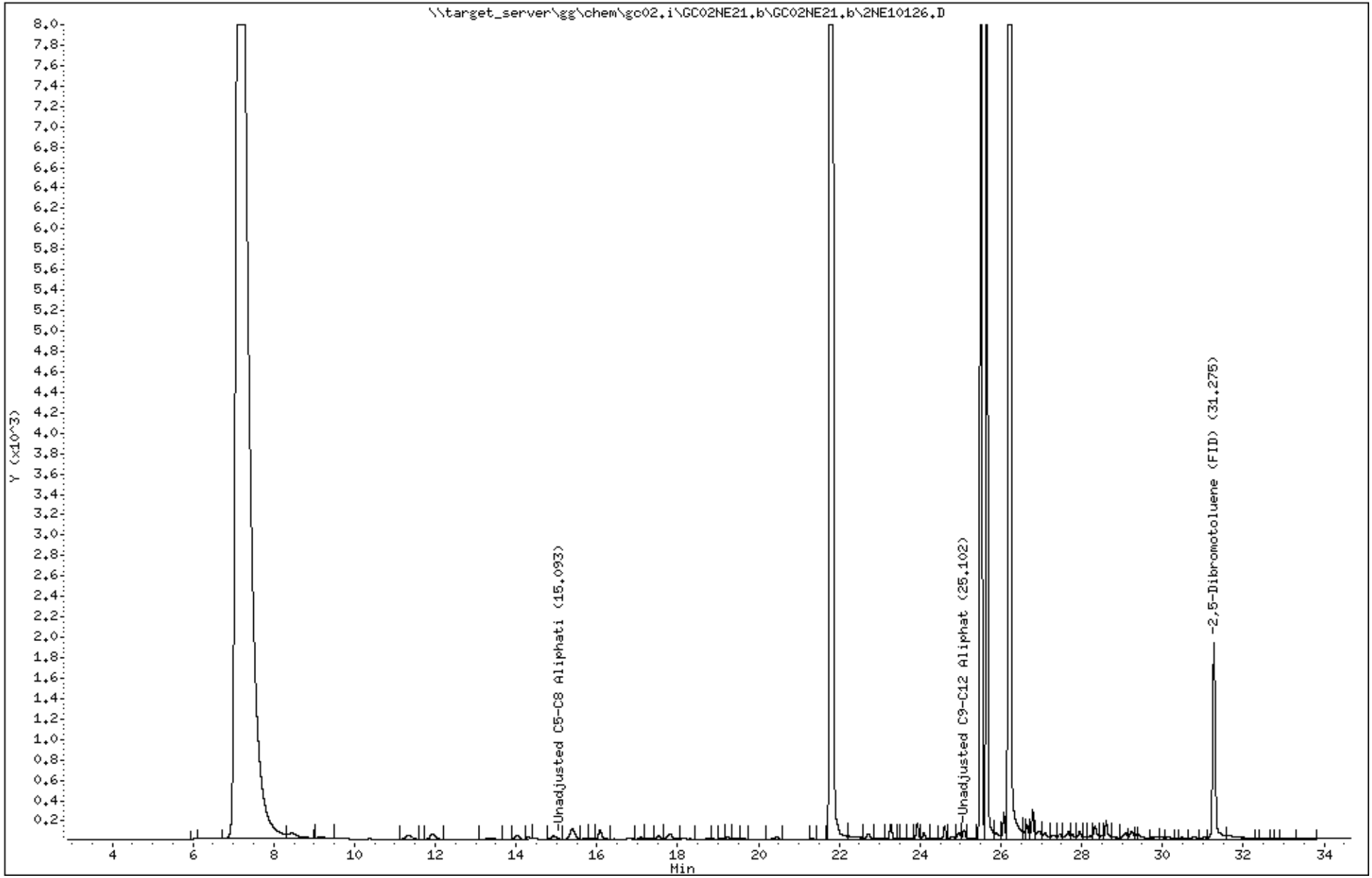
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
S 17 Unadjusted C9-C12 Aliphatics	21.234-28.969			11274786	2021.60	2020(A)	
$ 21 2,5-Dibromotoluene (FID)	31.274	31.304	-0.030	187779	93.9461	93.9	

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10126.D
Date : 21-MAY-2020 16:21
Client ID: 32M-01-18XBR-SPR20 Instrument: gc02.i
Sample Info: SN3818-4
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3818-4DL
Client ID: 32M-01-18XBR-SPR20
Project: JV, LTM - AOC 32/43A Spring 2020
SDG: SN3818
Lab File ID: 2NE10170.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 27-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391

Analysis Date: 27-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	400	ug/L	4	100	400	200
C9-C12 Aliphatics	U	400	ug/L	4	100	400	200
C9-C10 Aromatics		1000	ug/L	4	100	400	200
Benzene	U	12	ug/L	4	3	12.	1.2
Ethylbenzene		800	ug/L	4	5	20.	1.7
Methyl tert-butylether	U	20	ug/L	4	5	20.	1.2
Naphthalene	U	20	ug/L	4	5	20.	6.4
Toluene	U	20	ug/L	4	5	20.	1.4
m+p-Xylenes	U	40	ug/L	4	10	40.	3.7
o-Xylene	U	20	ug/L	4	5	20.	1.9
2,5-Dibromotoluene (FID)	*	56.6	%				
2,5-Dibromotoluene (PID)	*	55.2	%				

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Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10170.D
Report Date: 01-Jun-2020 10:03

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Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10170.D
Lab Smp Id: SN3818-4DL Client Smp ID: 32M-01-18XBR-SPR20
Inj Date : 27-MAY-2020 00:15
Operator : DL Inst ID: gc02.i
Smp Info : SN3818-4DL
Misc Info : WG278391,WG277230-4
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m
Meth Date : 27-May-2020 07:24 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 4.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

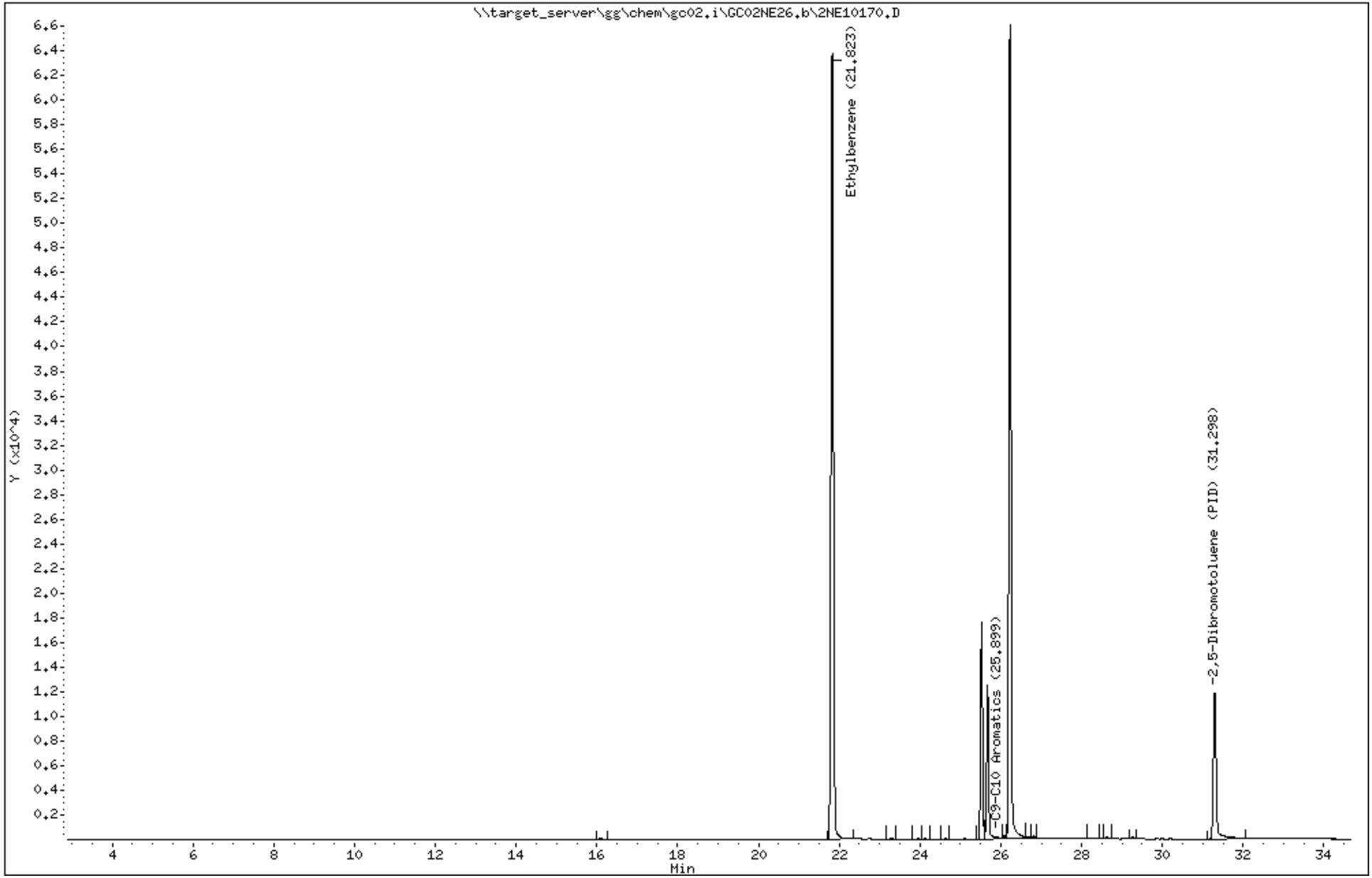
Name	Value	Description
DF	4.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
	5 Ethylbenzene	21.823	21.860	-0.037	534736	198.842	795	
S	9 C9-C10 Aromatics	22.818	-28.980		715605	253.258	1010	
$	11 2,5-Dibromotoluene (PID)	31.297	31.309	-0.012	118953	55.2036	55.2(R)	

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10170.D
Date : 27-MAY-2020 00:15
Client ID: 32M-01-18XBR-SPR20
Instrument: gc02.i
Sample Info: SN3818-4DL
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



Data File: 2NE10170.D
Report Date: 01-Jun-2020 10:04

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10170.D
Lab Smp Id: SN3818-4DL Client Smp ID: 32M-01-18XBR-SPR20
Inj Date : 27-MAY-2020 00:15
Operator : DL Inst ID: gc02.i
Smp Info : SN3818-4DL
Misc Info : WG278391,WG277230-4
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m\VPHFID91.m
Meth Date : 27-May-2020 07:31 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 4.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

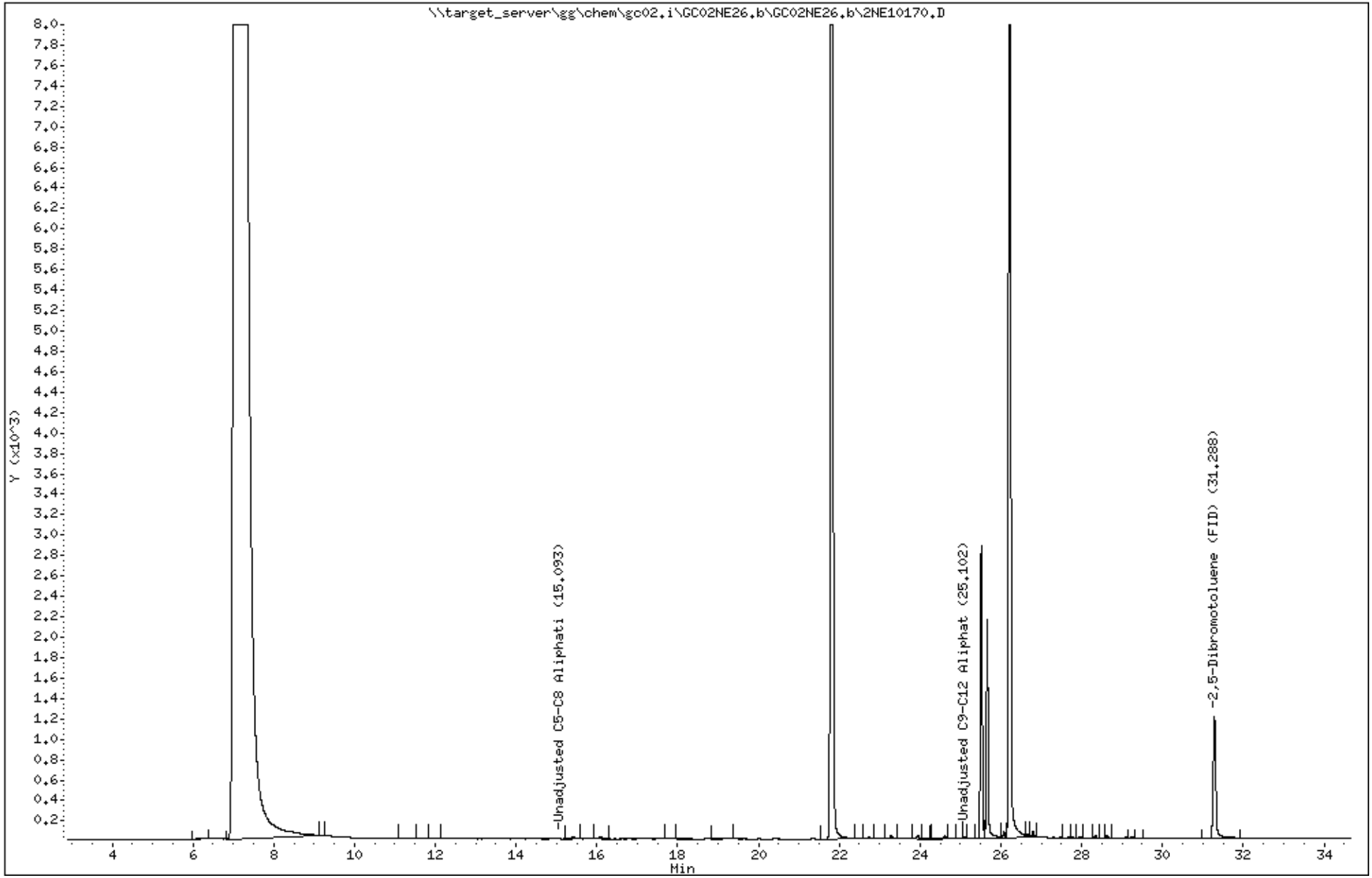
Name	Value	Description
DF	4.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

					CONCENTRATIONS ON-COLUMN	CONCENTRATIONS FINAL	
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
S 17 Unadjusted C9-C12 Aliphatics	21.234-28.969			2515109	450.966	1800	
$ 21 2,5-Dibromotoluene (FID)	31.287	31.304	-0.017	113068	56.5681	56.6(R)	

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10170.D
Date : 27-MAY-2020 00:15
Client ID: 32M-01-18XBR-SPR20 Instrument: gc02.i
Sample Info: SN3818-4DL
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3818-5
Client ID: AOC32-DUP01-SPR20
Project: JV, LTM - AOC 32/43A Spring 2020
SDG: SN3818
Lab File ID: 2NE10127.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics		700	ug/L	1	100	100	50.
C9-C10 Aromatics	E	730	ug/L	1	100	100	50.
Benzene	J	1.2	ug/L	1	3	3.0	0.31
Ethylbenzene	E	580	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		96.7	%				
2,5-Dibromotoluene (PID)		83.8	%				

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http://www.katahdinlab.com

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10127.D
Report Date: 01-Jun-2020 09:56

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10127.D
Lab Smp Id: SN3818-5 Client Smp ID: AOC32-DUP01-SPR20
Inj Date : 21-MAY-2020 17:01
Operator : DL Inst ID: gc02.i
Smp Info : SN3818-5
Misc Info : WG278133,WG277230-4
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

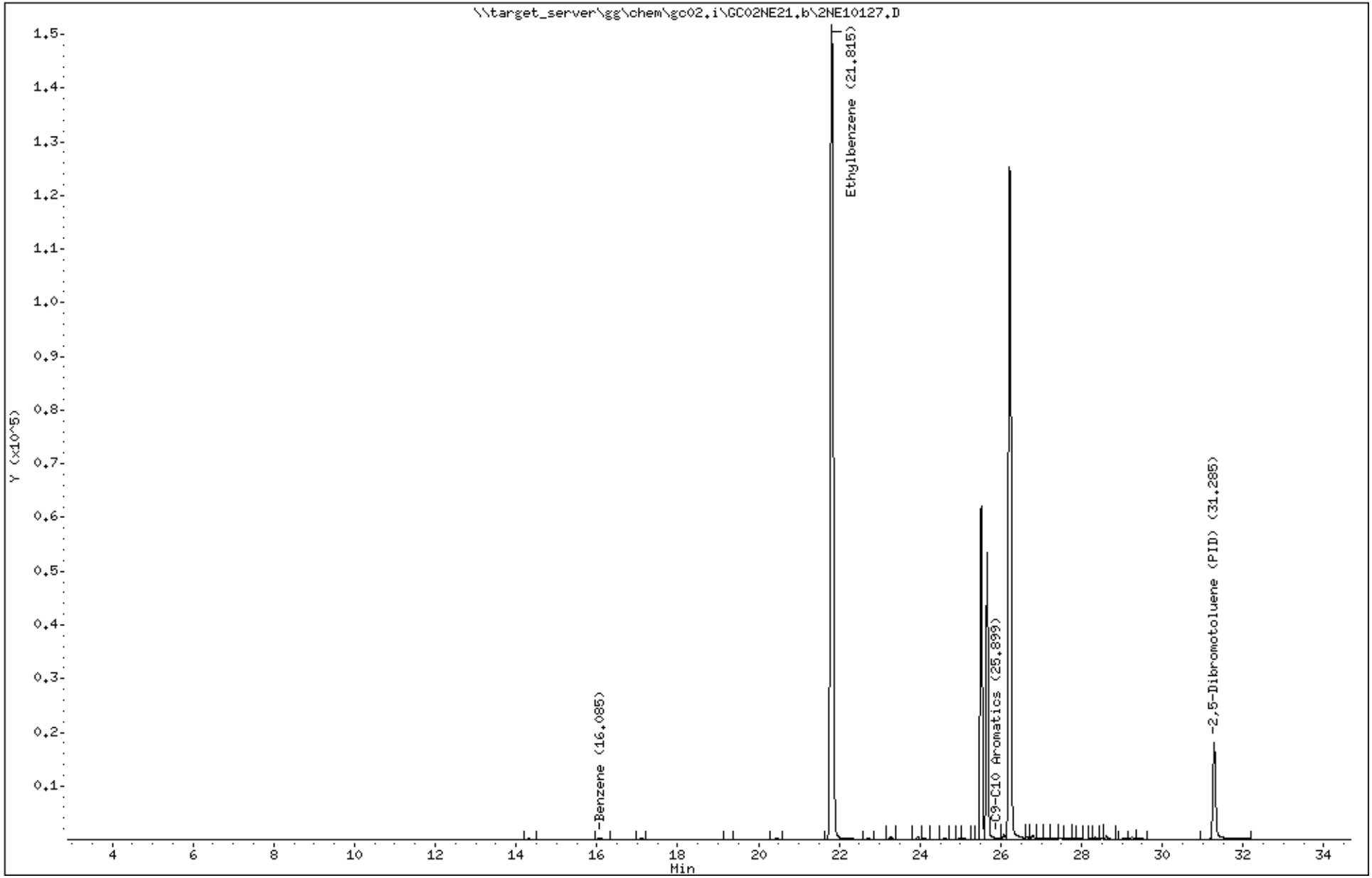
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)	REVIEW CODE
Compounds		RT	EXP RT	DLT RT	RESPONSE			
	3 Benzene	16.084	16.099	-0.015	4187	1.19919	1.20(a)	
	5 Ethylbenzene	21.814	21.860	-0.046	1560027	580.097	580(A)	
S	9 C9-C10 Aromatics	22.818	28.980		2055585	727.487	727(A)	
$	11 2,5-Dibromotoluene (PID)	31.285	31.309	-0.024	180546	83.7876	83.8	

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount
exceeded maximum amount.

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10127.D
Date : 21-MAY-2020 17:01
Client ID: AOC32-DUP01-SPR20
Instrument: gc02.i
Sample Info: SN3818-5
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



Data File: 2NE10127.D
Report Date: 01-Jun-2020 09:56

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10127.D
Lab Smp Id: SN3818-5 Client Smp ID: AOC32-DUP01-SPR20
Inj Date : 21-MAY-2020 17:01
Operator : DL Inst ID: gc02.i
Smp Info : SN3818-5
Misc Info : WG278133,WG277230-4
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

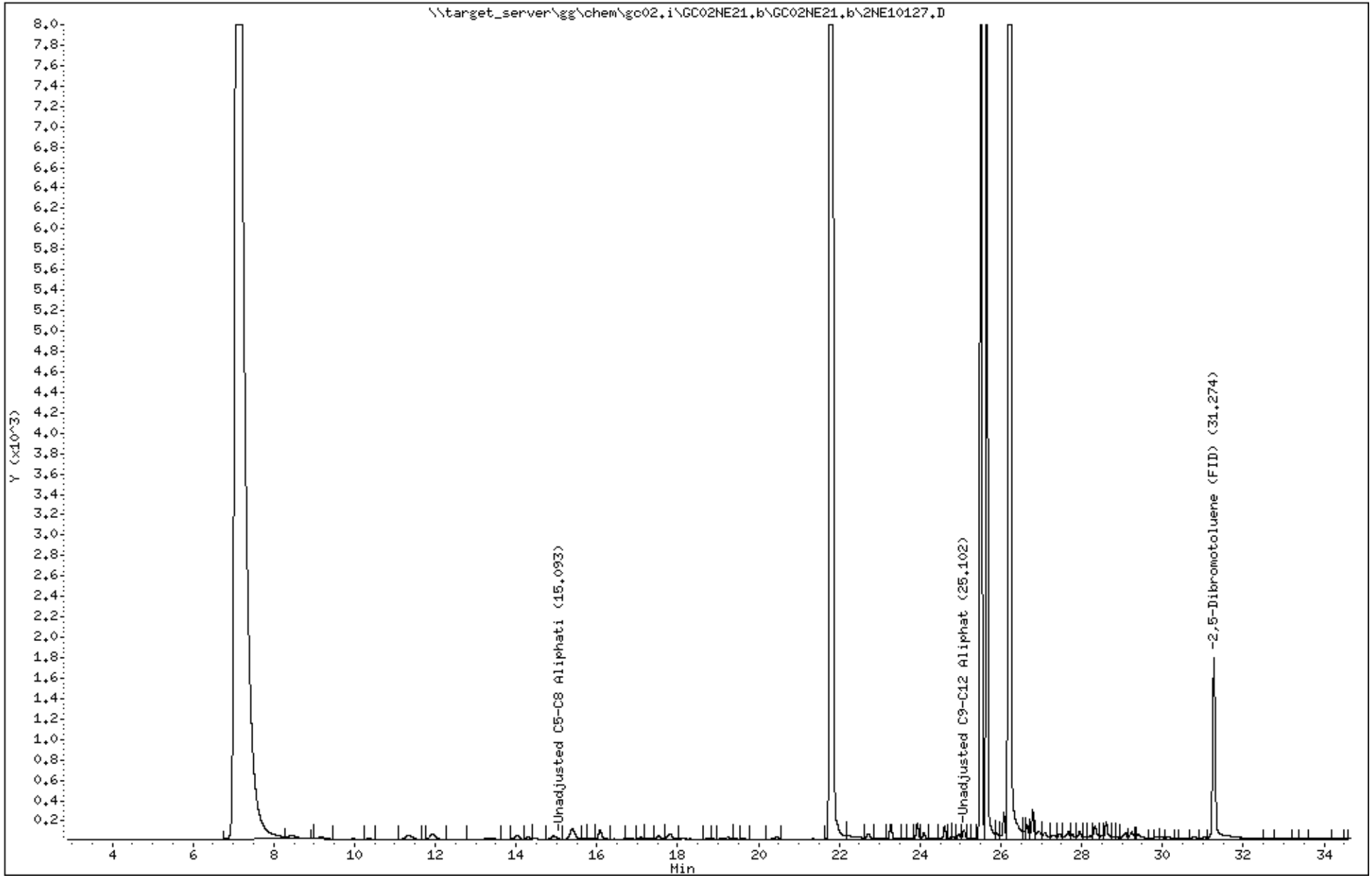
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
S 17 Unadjusted C9-C12 Aliphatics	21.234-28.969			11231633	2013.86	2010(A)	
$ 21 2,5-Dibromotoluene (FID)	31.274	31.304	-0.030	193363	96.7398	96.7	

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10127.D
Date : 21-MAY-2020 17:01
Client ID: AOC32-DUP01-SPR20 Instrument: gc02.i
Sample Info: SN3818-5
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3818-5DL
Client ID: AOC32-DUP01-SPR20
Project: JV, LTM - AOC 32/43A Spring 2020
SDG: SN3818
Lab File ID: 2NE10171.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 27-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391

Analysis Date: 27-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	400	ug/L	4	100	400	200
C9-C12 Aliphatics	U	400	ug/L	4	100	400	200
C9-C10 Aromatics		1000	ug/L	4	100	400	200
Benzene	U	12	ug/L	4	3	12.	1.2
Ethylbenzene		810	ug/L	4	5	20.	1.7
Methyl tert-butylether	U	20	ug/L	4	5	20.	1.2
Naphthalene	U	20	ug/L	4	5	20.	6.4
Toluene	U	20	ug/L	4	5	20.	1.4
m+p-Xylenes	U	40	ug/L	4	10	40.	3.7
o-Xylene	U	20	ug/L	4	5	20.	1.9
2,5-Dibromotoluene (FID)	*	64.6	%				
2,5-Dibromotoluene (PID)	*	62.9	%				

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http://www.katahdinlab.com

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10171.D
Report Date: 01-Jun-2020 10:03

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10171.D
Lab Smp Id: SN3818-5DL Client Smp ID: AOC32-DUP01-SPR20
Inj Date : 27-MAY-2020 00:58
Operator : DL Inst ID: gc02.i
Smp Info : SN3818-5DL
Misc Info : WG278391,WG277230-4
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m
Meth Date : 27-May-2020 07:24 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 4.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

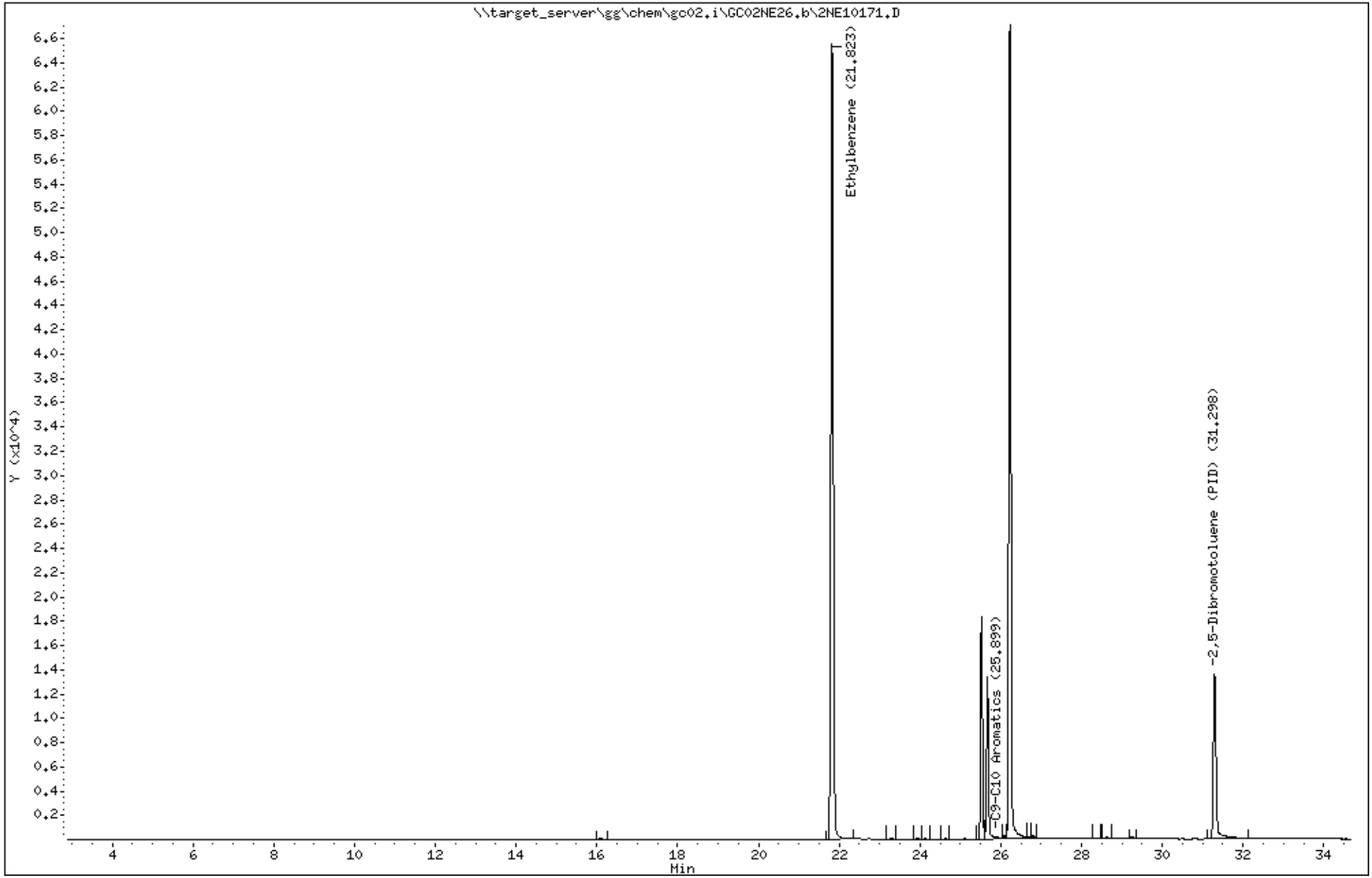
Name	Value	Description
DF	4.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
	5 Ethylbenzene	21.823	21.860	-0.037	546238	203.119	812	
S	9 C9-C10 Aromatics	22.818	-28.980		735409	260.267	1040	
$	11 2,5-Dibromotoluene (PID)	31.297	31.309	-0.012	135456	62.8623	62.9(R)	

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10171.D
Date : 27-MAY-2020 00:58
Client ID: AOC32-DUP01-SPR20
Instrument: gc02.i
Sample Info: SN3818-5DL
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



Data File: 2NE10171.D
Report Date: 01-Jun-2020 10:04

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10171.D
Lab Smp Id: SN3818-5DL Client Smp ID: AOC32-DUP01-SPR20
Inj Date : 27-MAY-2020 00:58
Operator : DL Inst ID: gc02.i
Smp Info : SN3818-5DL
Misc Info : WG278391,WG277230-4
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m\VPHFID91.m
Meth Date : 27-May-2020 07:31 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 4.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

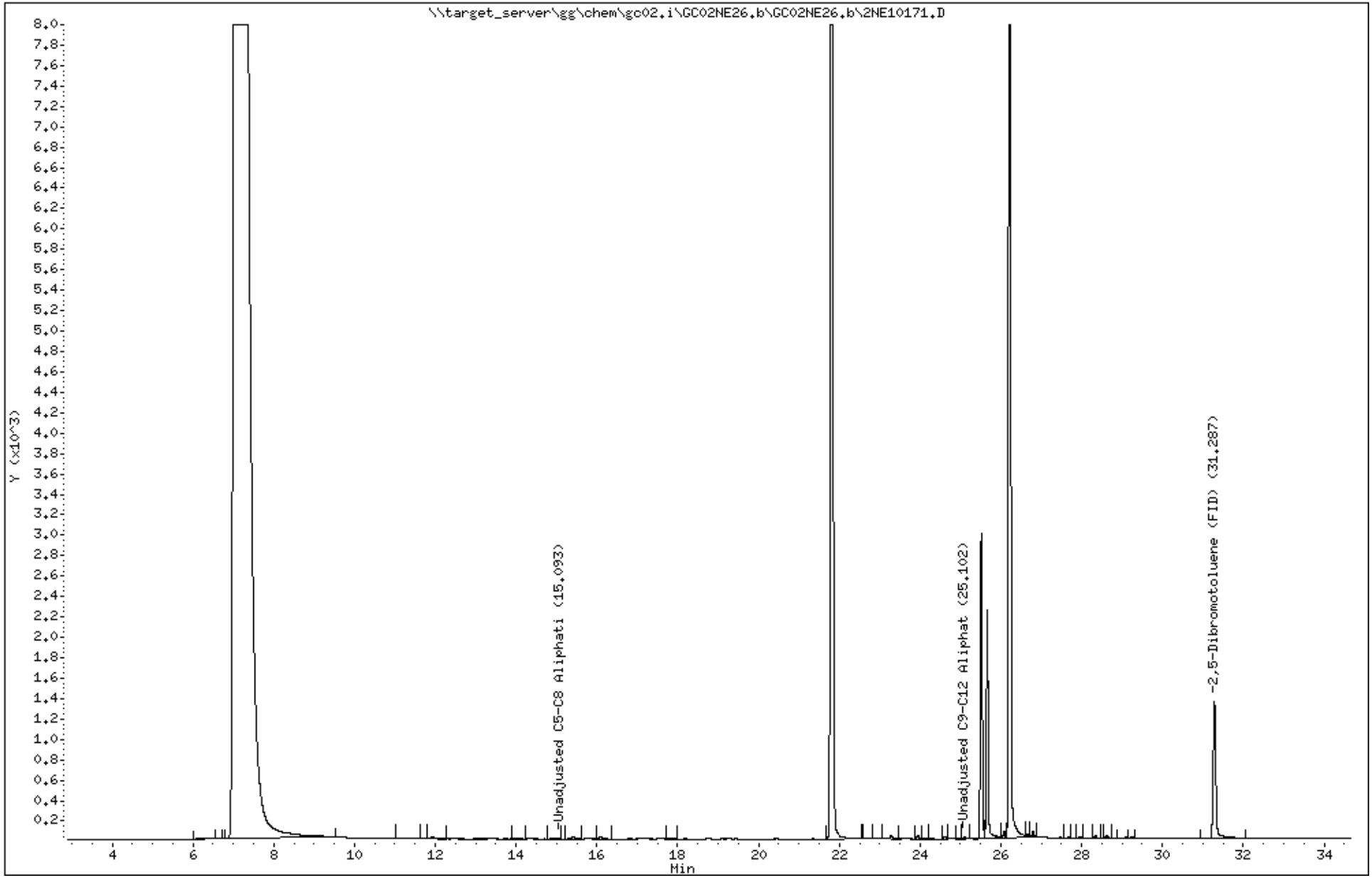
Name	Value	Description
DF	4.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

					CONCENTRATIONS ON-COLUMN	CONCENTRATIONS FINAL	
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
S 17 Unadjusted C9-C12 Aliphatics	21.234-28.969			2572734	461.298	1840	
$ 21 2,5-Dibromotoluene (FID)	31.287	31.304	-0.017	129113	64.5955	64.6(R)	

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10171.D
Date : 27-MAY-2020 00:58
Client ID: AOC32-DUP01-SPR20 Instrument: gc02.i
Sample Info: SN3818-5DL
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



Standards Data Section

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN3818
Project : JV, LTM - AOC 32/43A Spring 2020 **Instrument ID:** GC02
Lab File IDs : 2NE10031.D 2NE10032.D 2NE10037.D 2NE10036.D 2NE10034.D 2NE10035.D **Calibration Date(s):** 07-MAY-20 09:25 07-MAY-20 14:39

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C10 Aromatic	2653	2703	2836	3021	3138	2603	AVG		2826		7.59424	25.00000	M C
Methyl tert-butylether	1484	1674	1686	1569	1771	1669	AVG		1642		6.12724	25.00000	O
Benzene	3397	3518	3561	3387	3616	3470	AVG		3492		2.60540	25.00000	O
Toluene	2922	3194	3266	3149	3325	2968	AVG		3137		5.14062	25.00000	O
Ethylbenzene	2501	2621	2740	2770	2917	2587	AVG		2689		5.55429	25.00000	O
m+p-Xylene	3076	3247	3376	3362	3350	2410	AVG		3137		11.9094	25.00000	O
o-Xylene	2559	2771	2889	2911	2964	2591	AVG		2781		6.18361	25.00000	O
1,2,4-trimethylbenzene	2653	2703	2836	3021	3138	2603	AVG		2826		7.59424	25.00000	O
Naphthalene	2949	2410	2270	3103	3272	2611	AVG		2769		14.4410	25.00000	O
2,5-Dibromotoluene (PID)	2274	1715	+++++	2433	2566	1786	AVG		2155		17.8318	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10038.D
Report Date: 01-Jun-2020 08:03

Katahdin Analytical Services

RECOVERY REPORT

Client Name: Client SDG: SDGa01556
Sample Matrix: LIQUID Fraction: VPH
Lab Smp Id: IND
Level: LOW Operator: DL
Data Type: GC DATA SampleType: LCS
SpikeList File: ind.spk Quant Type: ESTD
Sublist File: IND.sub
Method File: \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Misc Info: WG277230,WG277230-4

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
2 Methyl tert-butyle	100	95.3	95.32	80-120
3 Benzene	100	98.1	98.08	80-120
4 Toluene	100	99.7	99.66	80-120
5 Ethylbenzene	100	102	102.56	80-120
6 m+p-Xylene	200	204	101.91	80-120
7 o-Xylene	100	102	101.83	80-120
8 1,2,4-trimethylben	100	105	104.67	80-120
10 Naphthalene	100	111	111.41	80-120

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
$ 11 2,5-Dibromotoluene	100	117	116.85	70-130

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN3818
Project : JV, LTM - AOC 32/43A Spring 2020 **Instrument ID:** GC02
Lab File IDs : 2NE10031.D 2NE10032.D 2NE10037.D 2NE10036.D 2NE10034.D 2NE10035.D **Calibration Date(s):** 07-MAY-20 08:43 07-MAY-20 14:39

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C5-C8 Aliphatic	5517	5727	5486	5639	5562	4787	AVG		5453		6.18987	25.00000	M C
C9-C12 Aliphatic	5393	5202	5196	5540	5789	6344	AVG		5577		7.83095	25.00000	M C
n-Pentane	4893	5095	4918	5071	5225	4097	AVG		4883		8.27021	25.00000	O
2-Methylpentane	5817	5819	5507	5664	5478	4763	AVG		5508		7.13290	25.00000	O
Methyl tert-butylether	4827	4506	4586	4238	4472	4253	AVG		4480		4.91417	25.00000	O
2,2,4-Trimethylpentane	5842	6268	6033	6181	5982	5502	AVG		5968		4.57751	25.00000	O
Benzene	7981	7809	8006	7554	7827	7749	AVG		7821		2.10939	25.00000	O
Toluene	7488	7650	7896	7530	7796	7762	AVG		7687		2.06964	25.00000	O
n-Nonane	5316	5073	5175	5605	5634	6100	AVG		5484		6.86907	25.00000	O
n-Decane	5241	4292	4329	5009	5679	6382	AVG		5155		15.60283	25.00000	O
Ethylbenzene	6766	6908	7348	7291	7575	7574	AVG		7244		4.67308	25.00000	O
m+p-Xylene	7128	7378	7979	7582	7801	7701	AVG		7595		4.02538	25.00000	O
o-Xylene	7109	7430	8156	7657	7929	7777	AVG		7677		4.82948	25.00000	O
1,2,4-trimethylbenzene	6680	6801	7123	7405	7774	7638	AVG		7237		6.15087	25.00000	O
n-Butylcyclohexane	5544	6112	6062	6070	5900	6305	AVG		5999		4.29738	25.00000	O
Naphthalene	5671	4589	4268	5559	5921	5635	AVG		5274		12.77292	25.00000	O
2,5-Dibromotoluene (FID)	2187	1573	+++++	2080	2220	1934	AVG		1999		13.15424	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Data File: 2NE10038.D
Report Date: 01-Jun-2020 08:03

Katahdin Analytical Services

RECOVERY REPORT

Client Name: Client SDG: SDGa01556
Sample Matrix: LIQUID Fraction: VPH
Lab Smp Id: IND
Level: LOW Operator: DL
Data Type: GC DATA SampleType: LCS
SpikeList File: ind.spk Quant Type: ESTD
Sublist File: IND.sub
Method File: \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Misc Info: WG277230,WG277230-4

	SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
5	n-Pentane	100	99.4	99.43	80-120
6	2-Methylpentane	100	100	100.03	80-120
7	Methyl tert-butyle	100	91.7	91.73	80-120
8	2,2,4-Trimethylpen	100	102	101.87	80-120
9	Benzene	100	95.6	95.66	80-120
11	Toluene	100	95.8	95.83	80-120
12	n-Nonane	100	105	105.41	80-120
13	n-Decane	100	114	113.70	80-120
14	Ethylbenzene	100	98.9	98.94	80-120
15	m+p-Xylene	200	195	97.55	80-120
16	o-Xylene	100	98.2	98.19	80-120
18	1,2,4-trimethylben	100	101	100.74	80-120
19	n-Butylcyclohexane	100	102	101.88	80-120
20	Naphthalene	100	105	105.31	80-120

	SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
$ 21	2,5-Dibromotoluene	100	108	108.34	70-130

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10031.D
Report Date: 01-Jun-2020 08:02

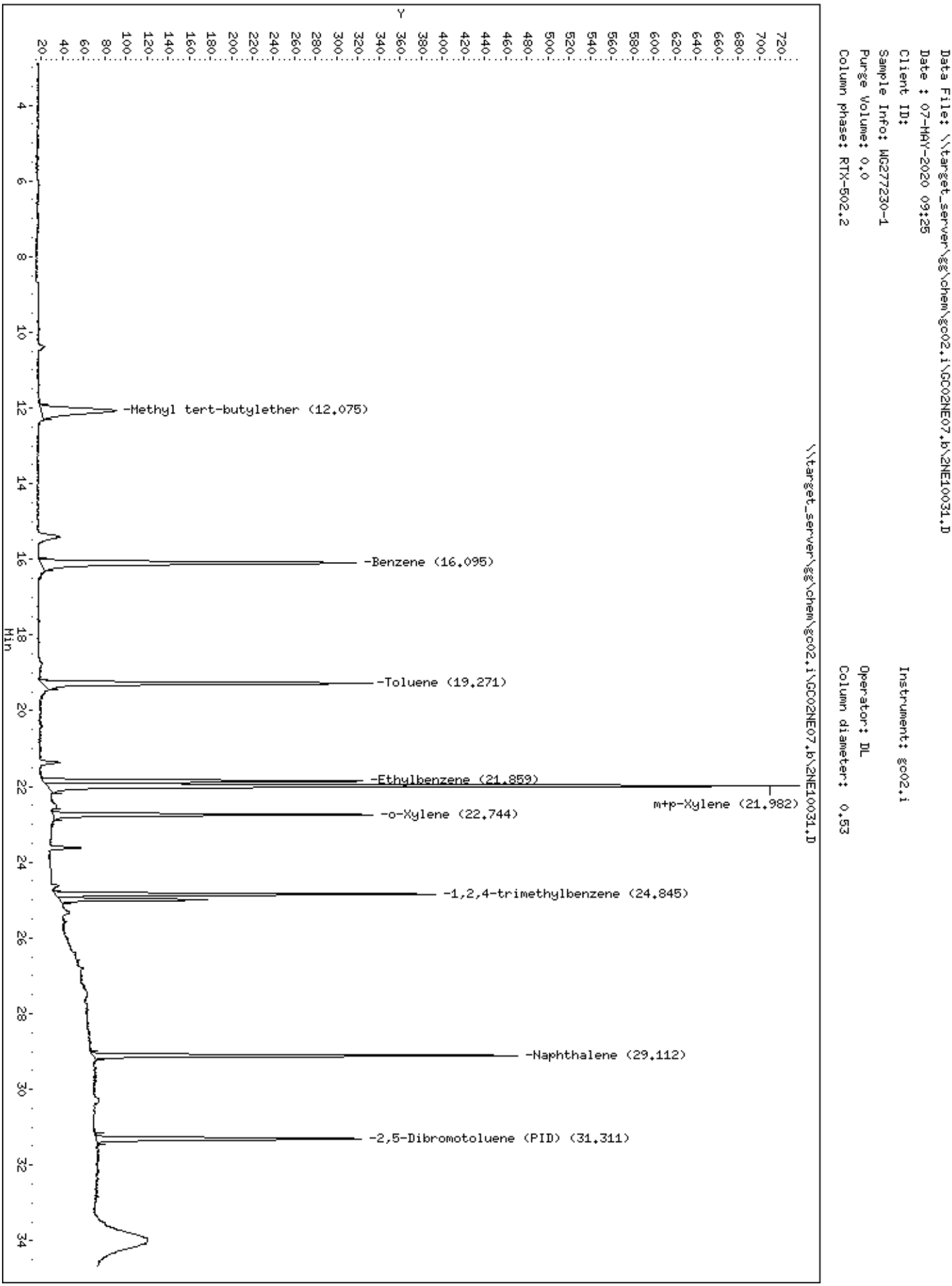
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10031.D
Lab Smp Id: ICAL1
Inj Date : 07-MAY-2020 09:25
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-1
Misc Info :
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 09:25   Cal File: 2NE10031.D
Als bottle: 1   Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
M	1	C9-C10 Aromatic				2653	1.00000		
	2	Methyl tert-butylether	12.074	12.078	-0.004	1484	1.00000		
	3	Benzene	16.094	16.099	-0.005	3397	1.00000		
	4	Toluene	19.271	19.274	-0.003	2922	1.00000		
	5	Ethylbenzene	21.859	21.860	-0.001	2501	1.00000		
	6	m+p-Xylene	21.982	21.983	-0.001	6152	2.00000		
	7	o-Xylene	22.743	22.745	-0.002	2559	1.00000		
	8	1,2,4-trimethylbenzene	24.844	24.844	0.000	2653	1.00000		
	10	Naphthalene	29.111	29.110	0.001	2949	1.00000		
$	11	2,5-Dibromotoluene (PID)	31.310	31.309	0.001	2274	1.00000		


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10031.D
Date : 07-MAY-2020 09:25
Client ID:
Sample Info: WG277230-1
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10031.D
Y
Min
-Methyl tert-butylether (12.075)
-Benzene (16.095)
-Toluene (19.271)
-Ethylbenzene (21.859)
m+p-Xylene (21.982)
-o-Xylene (22.744)
-1,2,4-trimethylbenzene (24.845)
-Naphthalene (29.112)
-2,5-Dibromotoluene (PID) (31.311)

Data File: 2NE10031.D
Report Date: 01-Jun-2020 08:03

Katahdin Analytical Services

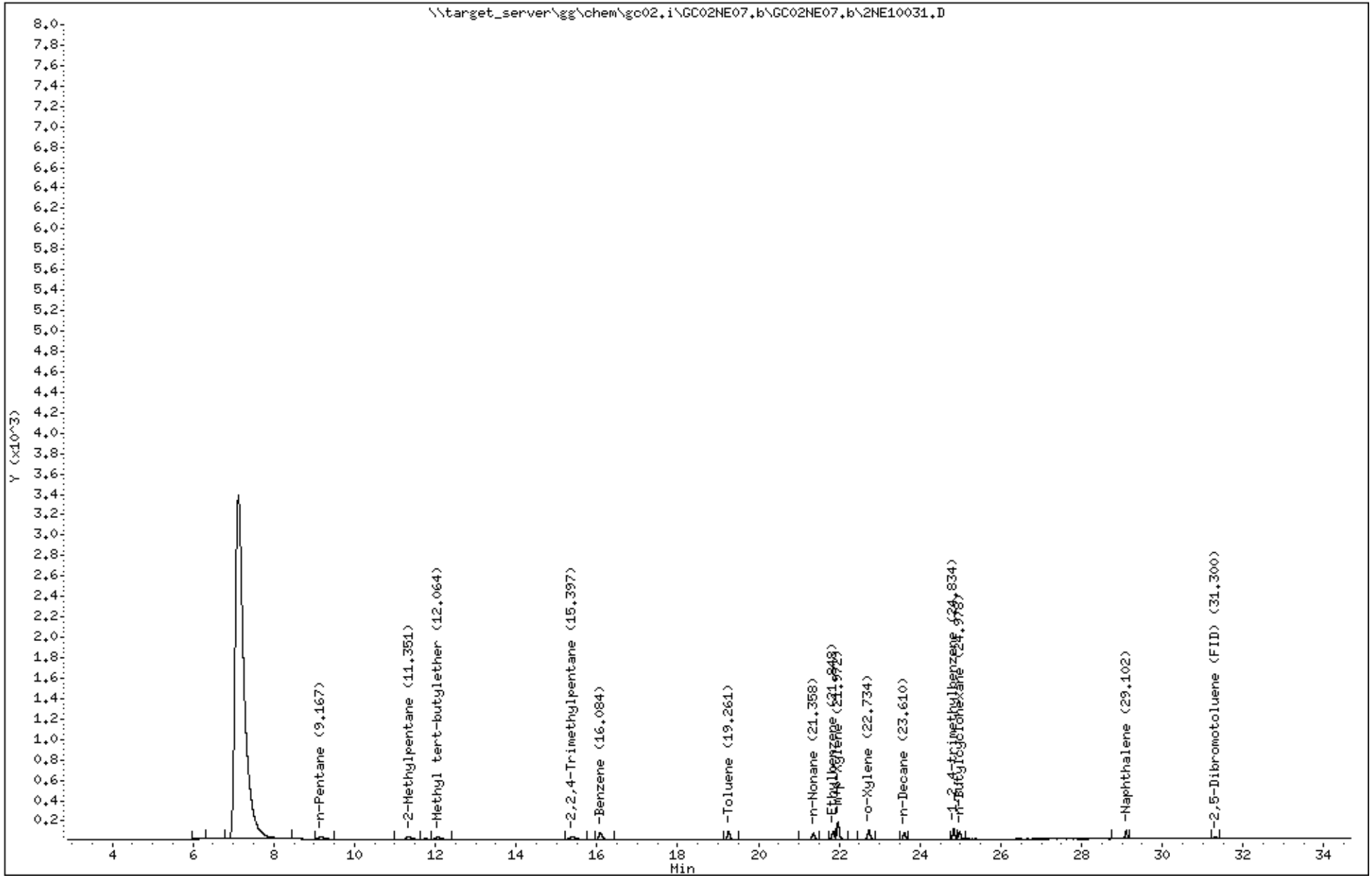
Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10031.D
Lab Smp Id: ICAL1
Inj Date : 07-MAY-2020 09:25
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-1
Misc Info :
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 09:25   Cal File: 2NE10031.D
Als bottle: 1   Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
M	1 C5-C8 Aliphatic				16552	3.00000	3.06	
M	2 C9-C12 Aliphatic				10785	2.00000	2.06	
	5 n-Pentane	9.167	9.065	0.102	4893	1.00000	1.01	
	6 2-Methylpentane	11.351	11.282	0.069	5817	1.00000	1.04	
	7 Methyl tert-butylether	12.063	11.992	0.071	4827	1.00000	1.06	
	8 2,2,4-Trimethylpentane	15.397	15.386	0.011	5842	1.00000	1.00	
	9 Benzene	16.084	16.065	0.019	7981	1.00000	1.02	
	11 Toluene	19.260	19.257	0.003	7488	1.00000	0.992	
	12 n-Nonane	21.357	21.361	-0.004	5316	1.00000	1.01	
	14 Ethylbenzene	21.848	21.850	-0.002	6766	1.00000	0.962	
	15 m+p-Xylene	21.971	21.975	-0.004	14255	2.00000	1.94	
	16 o-Xylene	22.733	22.736	-0.003	7109	1.00000	0.962	
	13 n-Decane	23.610	23.614	-0.004	5241	1.00000	1.07	
	18 1,2,4-trimethylbenzene	24.834	24.838	-0.004	6680	1.00000	0.956	
	19 n-Butylcyclohexane	24.977	24.982	-0.005	5544	1.00000	0.986	
	20 Naphthalene	29.101	29.104	-0.003	5671	1.00000	1.08	
$	21 2,5-Dibromotoluene (FID)	31.299	31.304	-0.005	2187	1.00000	1.00	

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10031.D
Date : 07-MAY-2020 09:25
Client ID:
Instrument: gc02.i
Sample Info: WG277230-1
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10032.D
Report Date: 01-Jun-2020 08:02

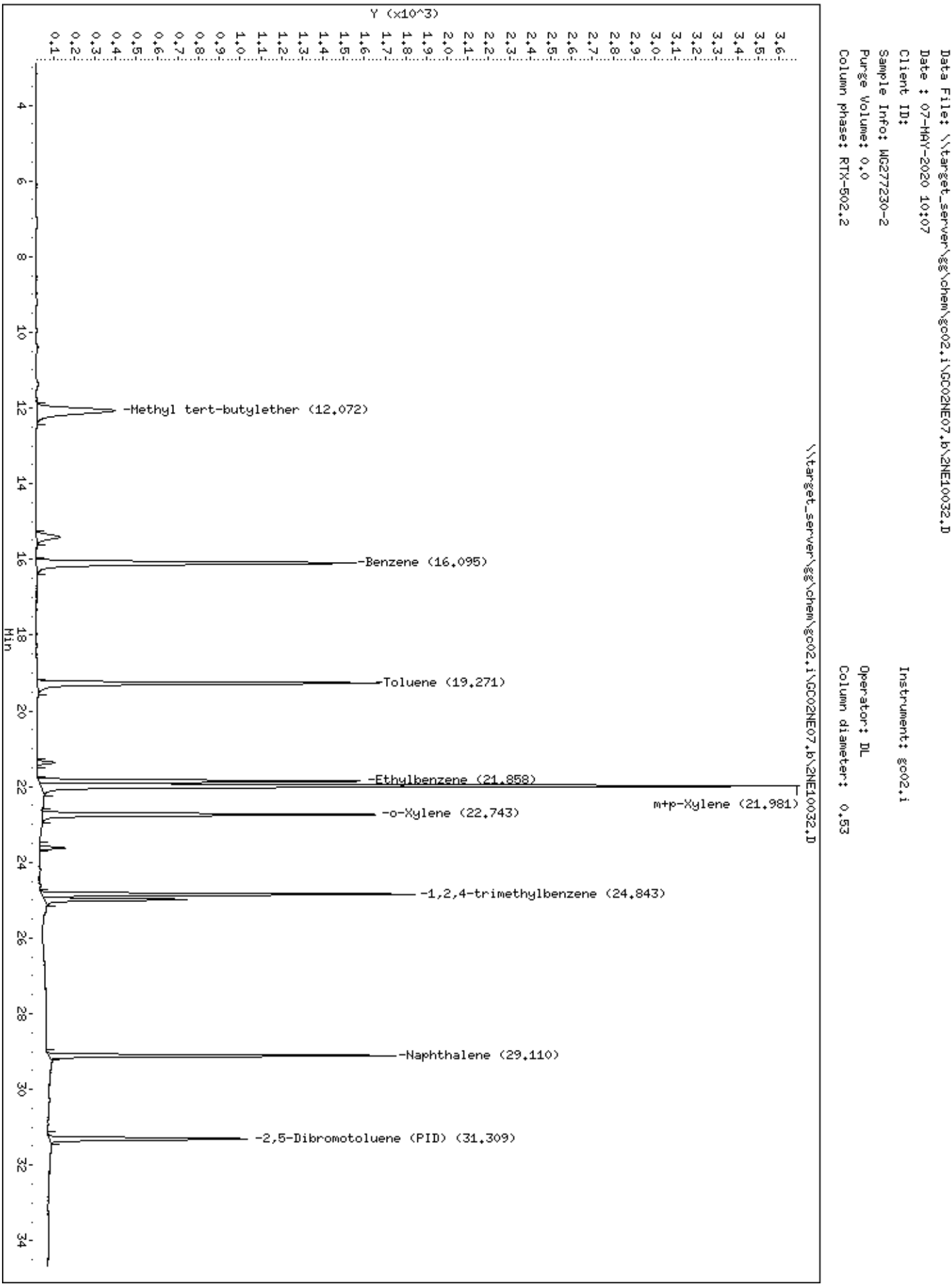
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10032.D
Lab Smp Id: ICAL5
Inj Date : 07-MAY-2020 10:07
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-2
Misc Info :
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 10:07   Cal File: 2NE10032.D
Als bottle: 1   Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
M	1	C9-C10 Aromatic				13514	5.00000		
	2	Methyl tert-butylether	12.072	12.078	-0.006	8368	5.00000	5.64	
	3	Benzene	16.095	16.099	-0.004	17591	5.00000	5.18	
	4	Toluene	19.270	19.274	-0.004	15969	5.00000	5.46	
	5	Ethylbenzene	21.857	21.860	-0.003	13105	5.00000	5.24	
	6	m+p-Xylene	21.980	21.983	-0.003	32468	10.0000	10.6	
	7	o-Xylene	22.742	22.745	-0.003	13854	5.00000	5.41	
	8	1,2,4-trimethylbenzene	24.842	24.844	-0.002	13514	5.00000	5.09	
	10	Naphthalene	29.110	29.110	0.000	12051	5.00000	4.09	
$	11	2,5-Dibromotoluene (PID)	31.308	31.309	-0.001	8574	5.00000	3.77	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10032.D
Date : 07-MAY-2020 10:07
Client ID:
Sample Info: WG277230-2
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
\\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10032.D
-Methyl tert-butylether (12.072)
-Benzene (16.095)
-Toluene (19.271)
-Ethylbenzene (21.858)
m+p-Xylene (21.981)
-o-Xylene (22.743)
-1,2,4-trimethylbenzene (24.843)
-Naphthalene (29.110)
-2,5-Dibromotoluene (PID) (31.309)

Data File: 2NE10032.D
Report Date: 01-Jun-2020 08:03

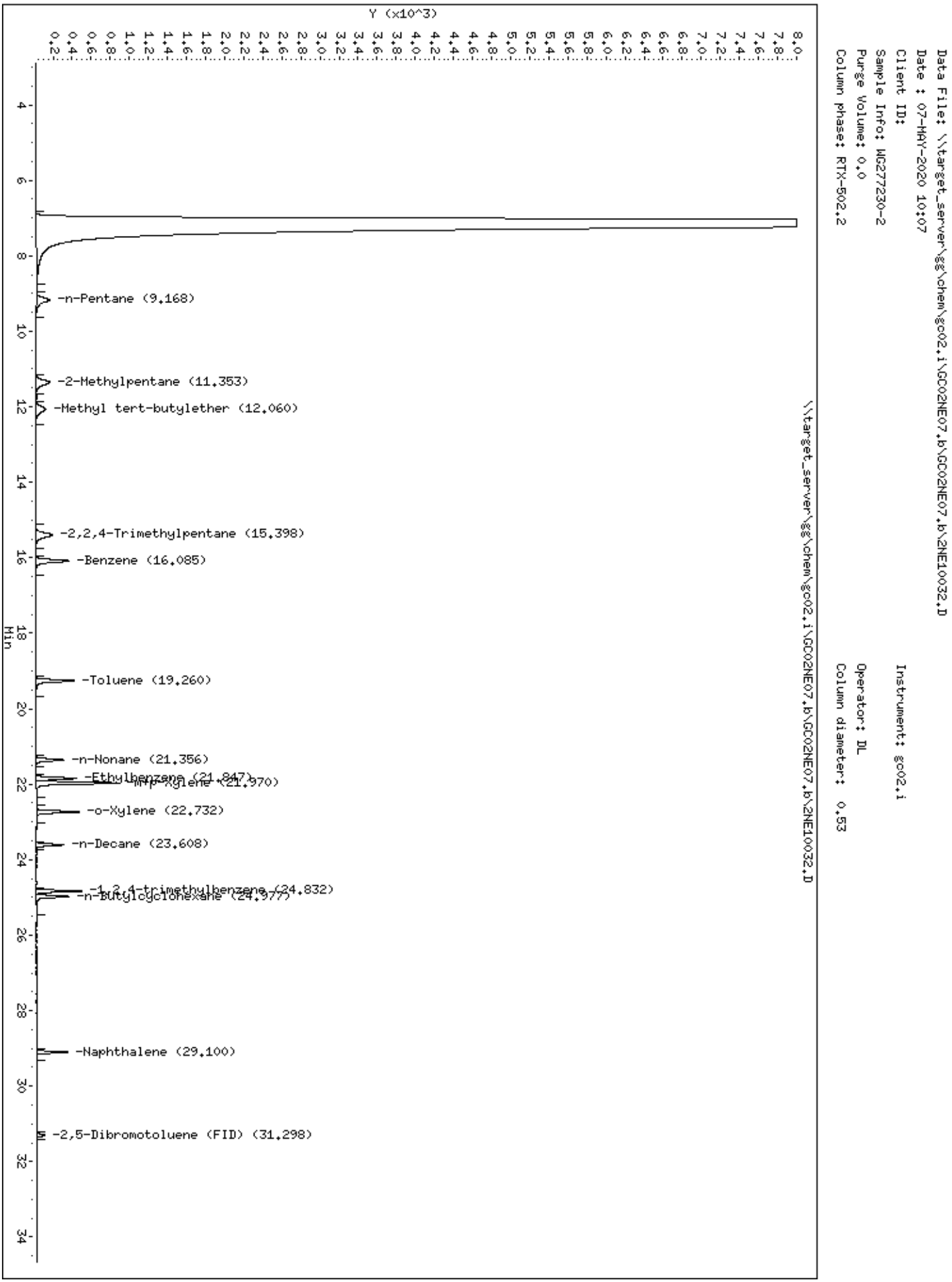
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10032.D
Lab Smp Id: ICAL5
Inj Date : 07-MAY-2020 10:07
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-2
Misc Info :
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 10:07   Cal File: 2NE10032.D
Als bottle: 1   Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
M	1	C5-C8 Aliphatic				85905	15.0000	15.6	
M	2	C9-C12 Aliphatic				52022	10.0000	10.0	
	5	n-Pentane	9.168	9.065	0.103	25474	5.00000	5.17	
	6	2-Methylpentane	11.352	11.282	0.070	29093	5.00000	5.14	
	7	Methyl tert-butylether	12.060	11.992	0.068	22532	5.00000	4.98	
	8	2,2,4-Trimethylpentane	15.397	15.386	0.011	31338	5.00000	5.25	
	9	Benzene	16.084	16.065	0.019	39046	5.00000	5.00	
	11	Toluene	19.260	19.257	0.003	38250	5.00000	5.04	
	12	n-Nonane	21.356	21.361	-0.005	25363	5.00000	4.87	
	14	Ethylbenzene	21.847	21.850	-0.003	34541	5.00000	4.94	
	15	m+p-Xylene	21.970	21.975	-0.005	73778	10.0000	10.0	
	16	o-Xylene	22.732	22.736	-0.004	37152	5.00000	5.02	
	13	n-Decane	23.608	23.614	-0.006	21461	5.00000	4.74	
	18	1,2,4-trimethylbenzene	24.832	24.838	-0.006	34005	5.00000	4.91	
	19	n-Butylcyclohexane	24.976	24.982	-0.006	30561	5.00000	5.28	
	20	Naphthalene	29.099	29.104	-0.005	22947	5.00000	4.55	
$	21	2,5-Dibromotoluene (FID)	31.298	31.304	-0.006	7864	5.00000	5.62	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10032.D
Date : 07-MAY-2020 10:07
Client ID:
Sample Info: WG277230-2
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10032.D
Y (x10^3)
Min
-n-Pentane (9.168)
-2-Methylpentane (11.353)
-Methyl tert-butylether (12.060)
-2,2,4-Trimethylpentane (15.398)
-Benzene (16.085)
-Toluene (19.260)
-n-Nonane (21.356)
-Ethylbenzene (21.847)
-m,p-Xylene (21.970)
-o-Xylene (22.732)
-n-Decane (23.608)
-1,2,4-trimethylbenzene (24.832)
-n-Butylcyclohexane (24.977)
-Naphthalene (29.100)
-2,5-Dibromotoluene (FID) (31.298)

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10037.D
Report Date: 01-Jun-2020 08:02

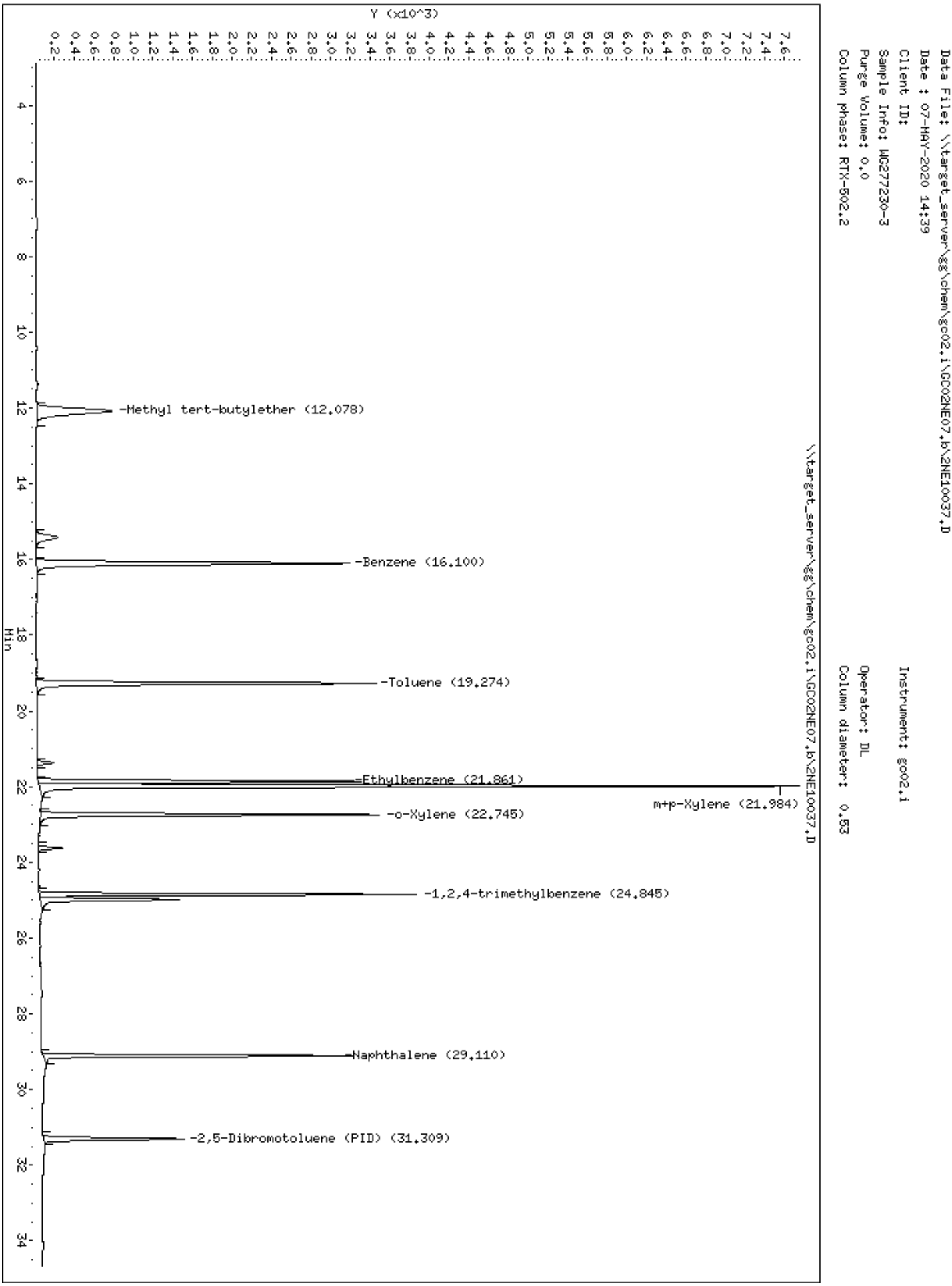
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10037.D
Lab Smp Id: ICAL10
Inj Date : 07-MAY-2020 14:39
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-3
Misc Info :
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
M	1	C9-C10 Aromatic				28362	10.0000		
	2	Methyl tert-butylether	12.077	12.078	-0.001	16857	10.0000	10.3	
	3	Benzene	16.099	16.099	0.000	35606	10.0000	10.2	
	4	Toluene	19.274	19.274	0.000	32657	10.0000	10.5	
	5	Ethylbenzene	21.860	21.860	0.000	27398	10.0000	10.2	
	6	m+p-Xylene	21.983	21.983	0.000	67524	20.0000	21.9	
	7	o-Xylene	22.745	22.745	0.000	28892	10.0000	10.5	
	8	1,2,4-trimethylbenzene	24.844	24.844	0.000	28362	10.0000	10.0	
	10	Naphthalene	29.110	29.110	0.000	22700	10.0000	7.91	
$	11	2,5-Dibromotoluene (PID)	31.308	31.309	-0.001	12745	10.0000	5.91	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10037.D
Date : 07-MAY-2020 14:39
Client ID:
Sample Info: WG277230-3
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
-Methyl tert-butylether (12.078)
-Benzene (16.100)
-Toluene (19.274)
=Ethylbenzene (21.861)
m+p-Xylene (21.984)
-o-Xylene (22.745)
-1,2,4-trimethylbenzene (24.845)
Naphthalene (29.110)
-2,5-Dibromotoluene (PID) (31.309)
\\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10037.D

Data File: 2NE10037.D
Report Date: 01-Jun-2020 08:03

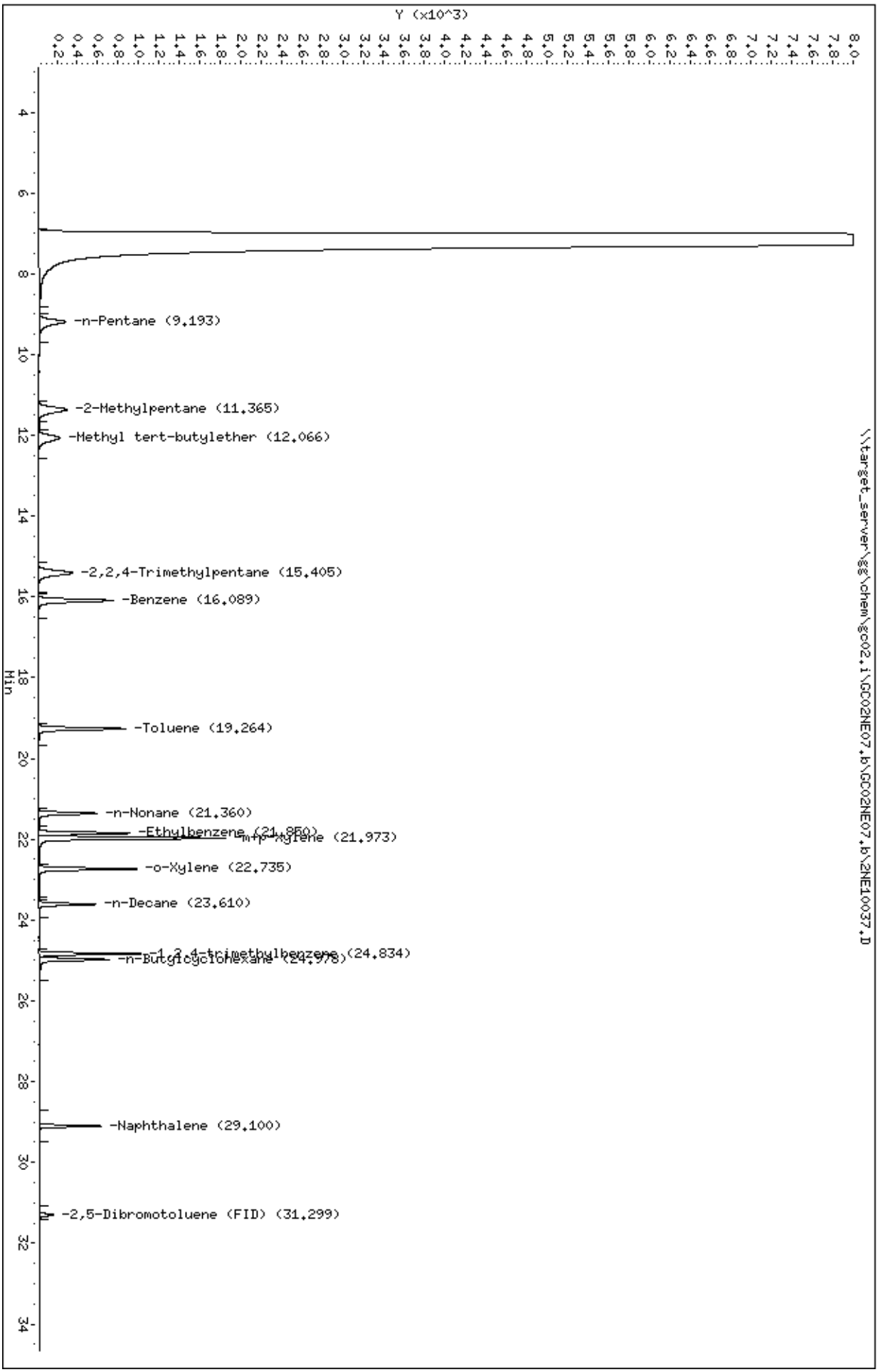
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10037.D
Lab Smp Id: ICAL10
Inj Date : 07-MAY-2020 14:39
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-3
Misc Info :
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
M	1 C5-C8 Aliphatic				164588	30.0000	30.2	
M	2 C9-C12 Aliphatic				103916	20.0000	18.5	
	5 n-Pentane	9.193	9.065	0.128	49181	10.0000	10.1	
	6 2-Methylpentane	11.365	11.282	0.083	55073	10.0000	10.0	
	7 Methyl tert-butylether	12.066	11.992	0.074	45858	10.0000	10.2	
	8 2,2,4-Trimethylpentane	15.405	15.386	0.019	60334	10.0000	10.1	
	9 Benzene	16.089	16.065	0.024	80055	10.0000	10.2	
	11 Toluene	19.263	19.257	0.006	78955	10.0000	10.3	
	12 n-Nonane	21.359	21.361	-0.002	51753	10.0000	9.44	
	14 Ethylbenzene	21.850	21.850	0.000	73478	10.0000	10.1	
	15 m+p-Xylene	21.973	21.975	-0.002	159585	20.0000	21.0	
	16 o-Xylene	22.734	22.736	-0.002	81564	10.0000	10.6	
	13 n-Decane	23.610	23.614	-0.004	43292	10.0000	8.40	
	18 1,2,4-trimethylbenzene	24.834	24.838	-0.004	71232	10.0000	9.84	
	19 n-Butylcyclohexane	24.978	24.982	-0.004	60624	10.0000	10.1	
	20 Naphthalene	29.099	29.104	-0.005	42678	10.0000	8.09	
$	21 2,5-Dibromotoluene (FID)	31.298	31.304	-0.006	11557	10.0000	5.78	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10037.D
Date : 07-MAY-2020 14:39
Client ID:
Sample Info: WG277230-3
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10037.D
Y (x10^3)
Min
-n-Pentane (9.193)
-2-Methylpentane (11.365)
-Methyl tert-butylether (12.066)
-2,2,4-Trimethylpentane (15.405)
-Benzene (16.089)
-Toluene (19.264)
-n-Nonane (21.360)
-Ethylbenzene (21.850)
-m+p-Xylene (21.973)
-o-Xylene (22.735)
-n-Decane (23.610)
-1,2,4-trimethylbenzene (24.834)
-n-Butylcyclohexane (24.978)
-Naphthalene (29.100)
-2,5-Dibromotoluene (FID) (31.299)

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10036.D
Report Date: 01-Jun-2020 08:02

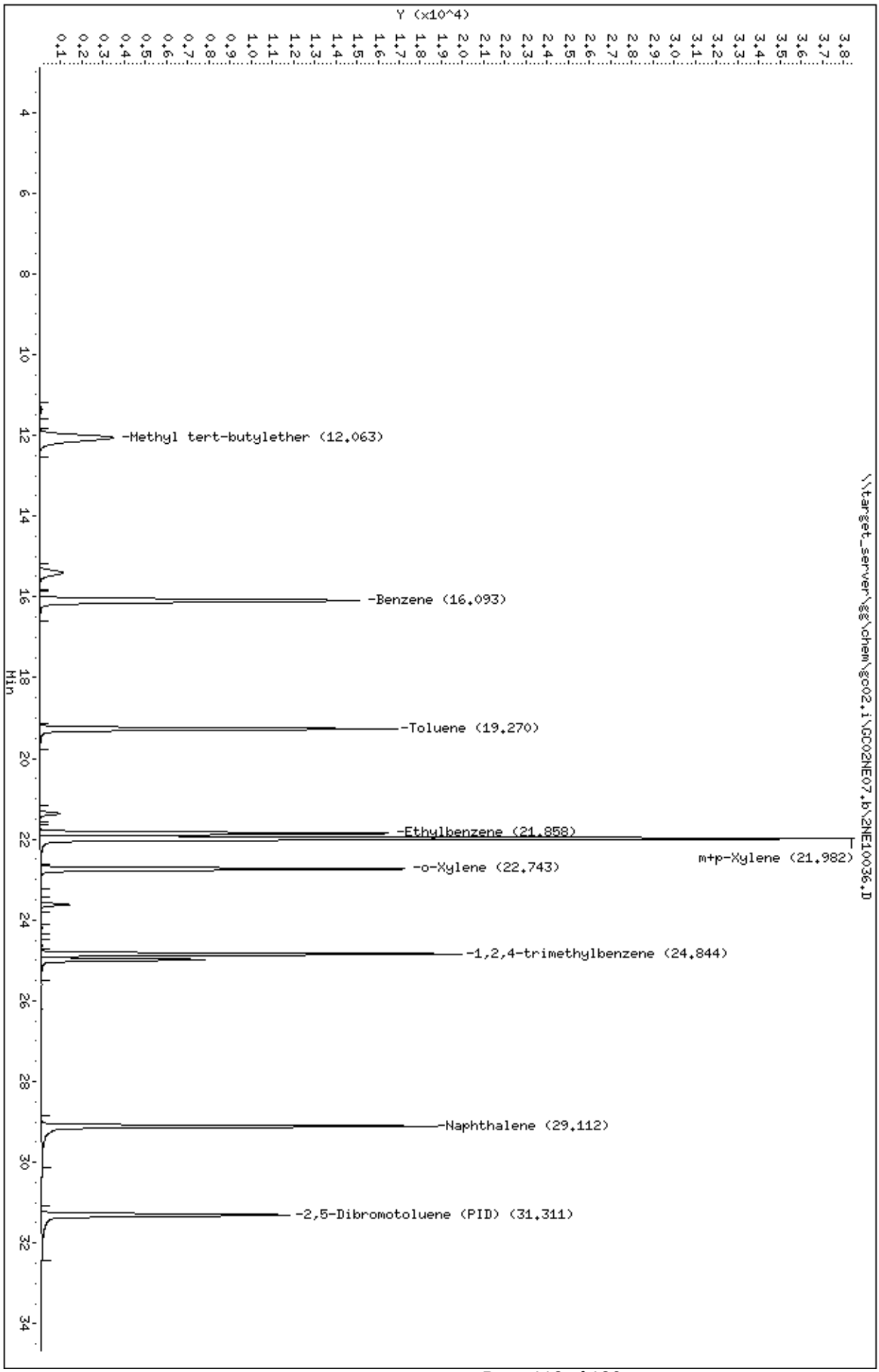
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10036.D
Lab Smp Id: ICAL50
Inj Date : 07-MAY-2020 13:58
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-4
Misc Info :
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 13:58   Cal File: 2NE10036.D
Als bottle: 1   Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
M	1	C9-C10 Aromatic				151033	50.0000		
	2	Methyl tert-butylether	12.063	12.078	-0.015	78463	50.0000	47.6	
	3	Benzene	16.093	16.099	-0.006	169359	50.0000	48.4	
	4	Toluene	19.270	19.274	-0.004	157470	50.0000	50.8	
	5	Ethylbenzene	21.858	21.860	-0.002	138493	50.0000	52.1	
	6	m+p-Xylene	21.981	21.983	-0.002	336182	100.000	111	
	7	o-Xylene	22.742	22.745	-0.003	145547	50.0000	53.5	
	8	1,2,4-trimethylbenzene	24.844	24.844	0.000	151033	50.0000	54.4	
	10	Naphthalene	29.111	29.110	0.001	155132	50.0000	55.2	
$	11	2,5-Dibromotoluene (PID)	31.310	31.309	0.001	121637	50.0000	58.3	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10036.D
Date : 07-MAY-2020 13:58
Client ID:
Sample Info: WG277230-4
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.063)
-Benzene (16.093)
-Toluene (19.270)
-Ethylbenzene (21.858)
m+p-Xylene (21.982)
-o-Xylene (22.743)
-1,2,4-trimethylbenzene (24.844)
-Naphthalene (29.112)
-2,5-Dibromotoluene (PID) (31.311)
\\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10036.D

Data File: 2NE10036.D
Report Date: 01-Jun-2020 08:03

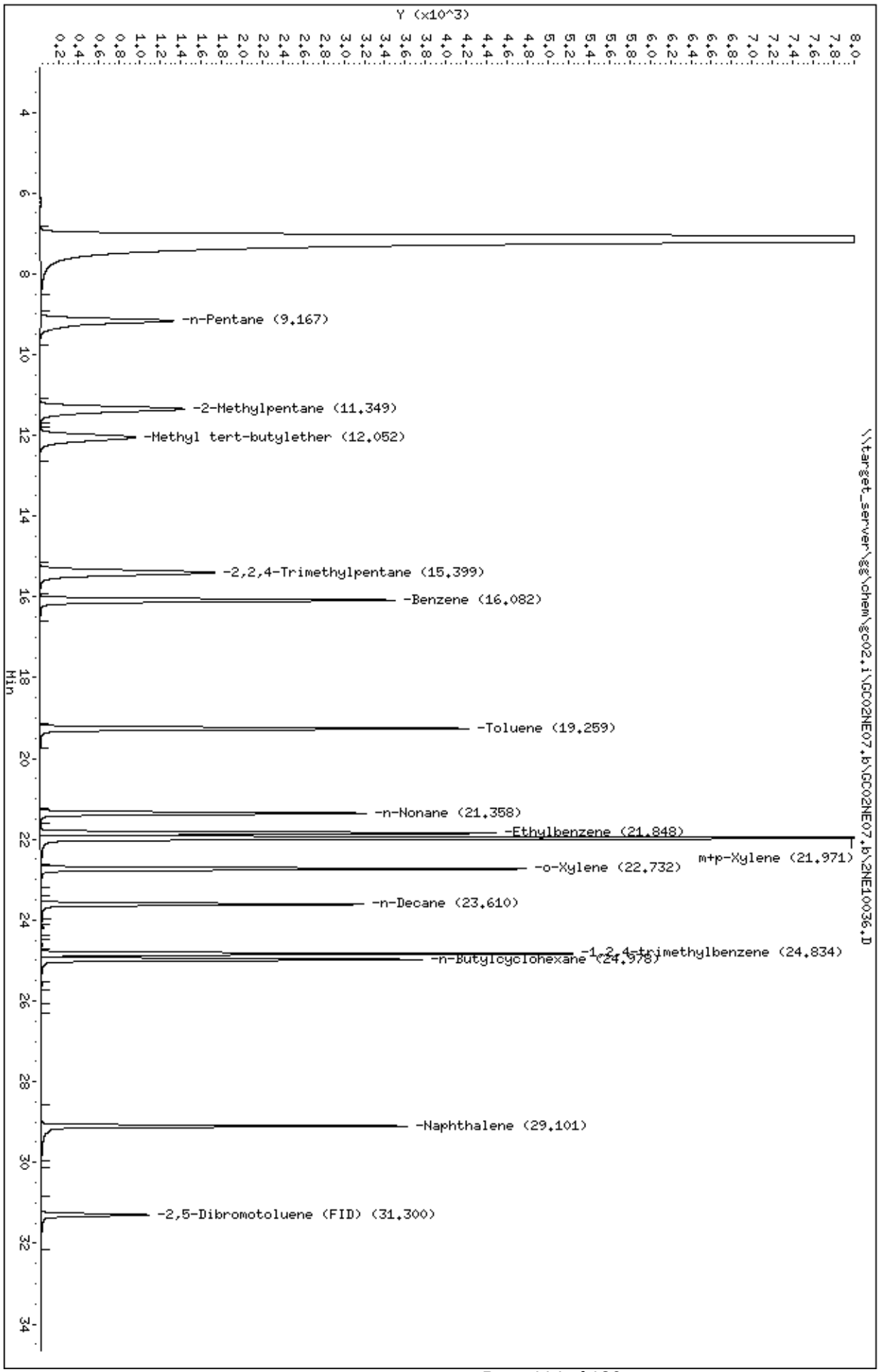
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10036.D
Lab Smp Id: ICAL50
Inj Date : 07-MAY-2020 13:58
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-4
Misc Info :
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 13:58   Cal File: 2NE10036.D
Als bottle: 1   Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
M	1 C5-C8 Aliphatic				845815	150.000	154	
M	2 C9-C12 Aliphatic				553964	100.000	98.9	
	5 n-Pentane	9.166	9.065	0.101	253559	50.0000	51.4	
	6 2-Methylpentane	11.348	11.282	0.066	283200	50.0000	50.9	
	7 Methyl tert-butylether	12.052	11.992	0.060	211894	50.0000	47.4	
	8 2,2,4-Trimethylpentane	15.398	15.386	0.012	309056	50.0000	51.4	
	9 Benzene	16.082	16.065	0.017	377714	50.0000	48.1	
	11 Toluene	19.259	19.257	0.002	376517	50.0000	48.7	
	12 n-Nonane	21.357	21.361	-0.004	280255	50.0000	50.9	
	14 Ethylbenzene	21.847	21.850	-0.003	364564	50.0000	50.2	
	15 m+p-Xylene	21.971	21.975	-0.004	758232	100.000	100	
	16 o-Xylene	22.732	22.736	-0.004	382871	50.0000	50.2	
	13 n-Decane	23.609	23.614	-0.005	250464	50.0000	48.7	
	18 1,2,4-trimethylbenzene	24.833	24.838	-0.005	370229	50.0000	51.1	
	19 n-Butylcyclohexane	24.977	24.982	-0.005	303500	50.0000	50.3	
	20 Naphthalene	29.101	29.104	-0.003	277932	50.0000	54.4	
$	21 2,5-Dibromotoluene (FID)	31.300	31.304	-0.004	103997	50.0000	52.0	


Data File: \\target_server\gc\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10036.D
Date : 07-MAY-2020 13:58
Client ID:
Sample Info: WG277230-4
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
\\target_server\gc\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10036.D
-n-Pentane (9.167)
-2-Methylpentane (11.349)
-Methyl tert-butylether (12.052)
-2,2,4-Trimethylpentane (15.399)
-Benzene (16.082)
-Toluene (19.259)
-n-Nonane (21.358)
-Ethylbenzene (21.848)
m+p-Xylene (21.971)
-o-Xylene (22.732)
-n-Decane (23.610)
-1,2,4-trimethylbenzene (24.834)
-n-Butylcyclohexane (24.978)
-Naphthalene (29.101)
-2,5-Dibromotoluene (FID) (31.300)

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10034.D
Report Date: 01-Jun-2020 08:02

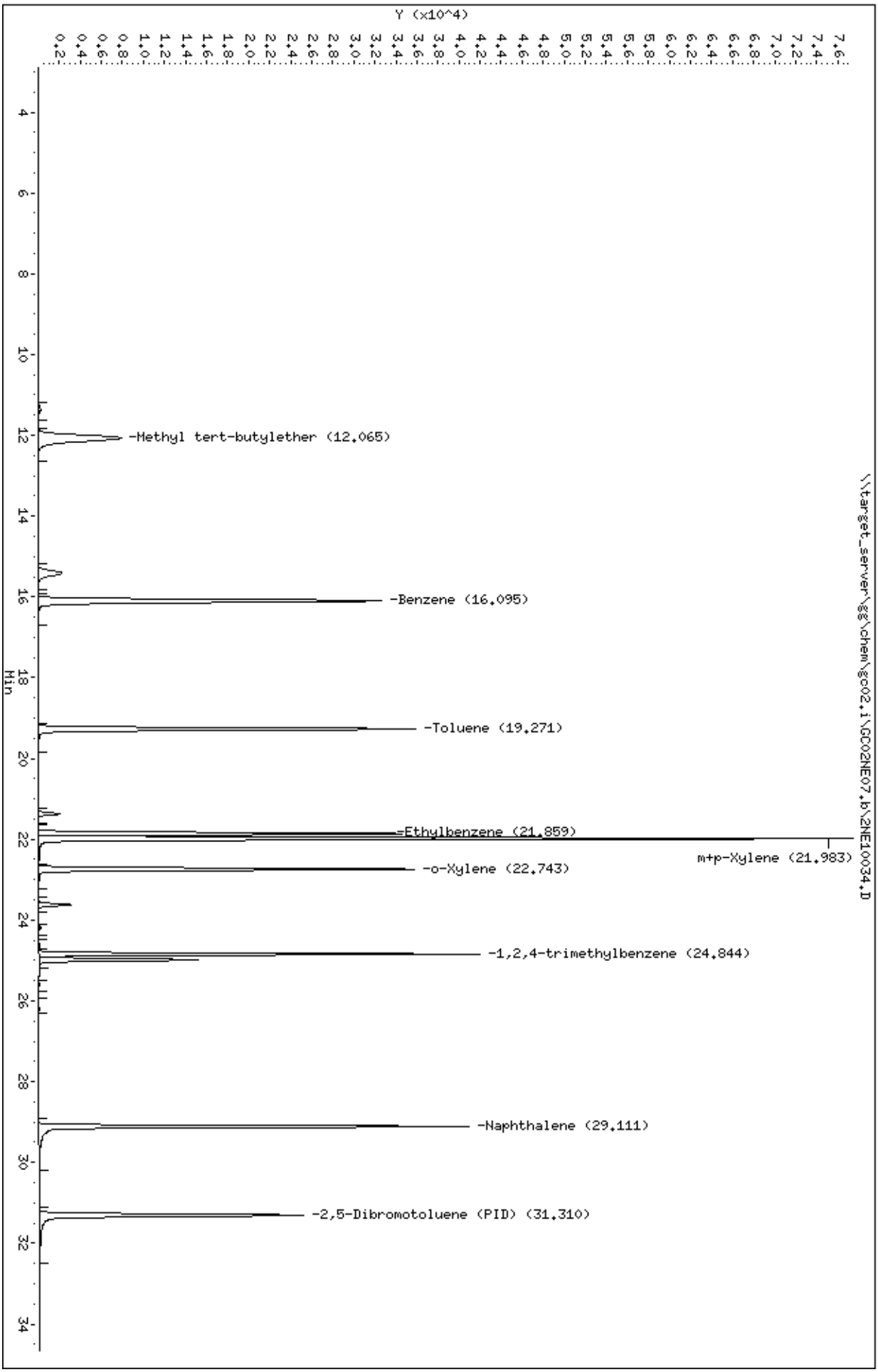
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10034.D
Lab Smp Id: ICAL100
Inj Date : 07-MAY-2020 11:31
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-5
Misc Info :
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 11:31   Cal File: 2NE10034.D
Als bottle: 1   Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
M	1	C9-C10 Aromatic				313802	100.000		
	2	Methyl tert-butylether	12.065	12.078	-0.013	177132	100.000	112	
	3	Benzene	16.094	16.099	-0.005	361642	100.000	104	
	4	Toluene	19.270	19.274	-0.004	332465	100.000	109	
	5	Ethylbenzene	21.858	21.860	-0.002	291708	100.000	114	
	6	m+p-Xylene	21.982	21.983	-0.001	669939	200.000	212	
	7	o-Xylene	22.742	22.745	-0.003	296441	100.000	111	
	8	1,2,4-trimethylbenzene	24.843	24.844	-0.001	313802	100.000	117	
	10	Naphthalene	29.111	29.110	0.001	327219	100.000	122	
$	11	2,5-Dibromotoluene (PID)	31.309	31.309	0.000	256649	100.000	129	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10034.D
Date : 07-MAY-2020 11:31
Client ID:
Sample Info: WG277230-5
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.065)
-Benzene (16.095)
-Toluene (19.271)
=Ethylbenzene (21.859)
m+p-Xylene (21.983)
-o-Xylene (22.743)
-1,2,4-trimethylbenzene (24.844)
-Naphthalene (29.111)
-2,5-Dibromotoluene (PID) (31.310)
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Data File: 2NE10034.D
Report Date: 01-Jun-2020 08:03

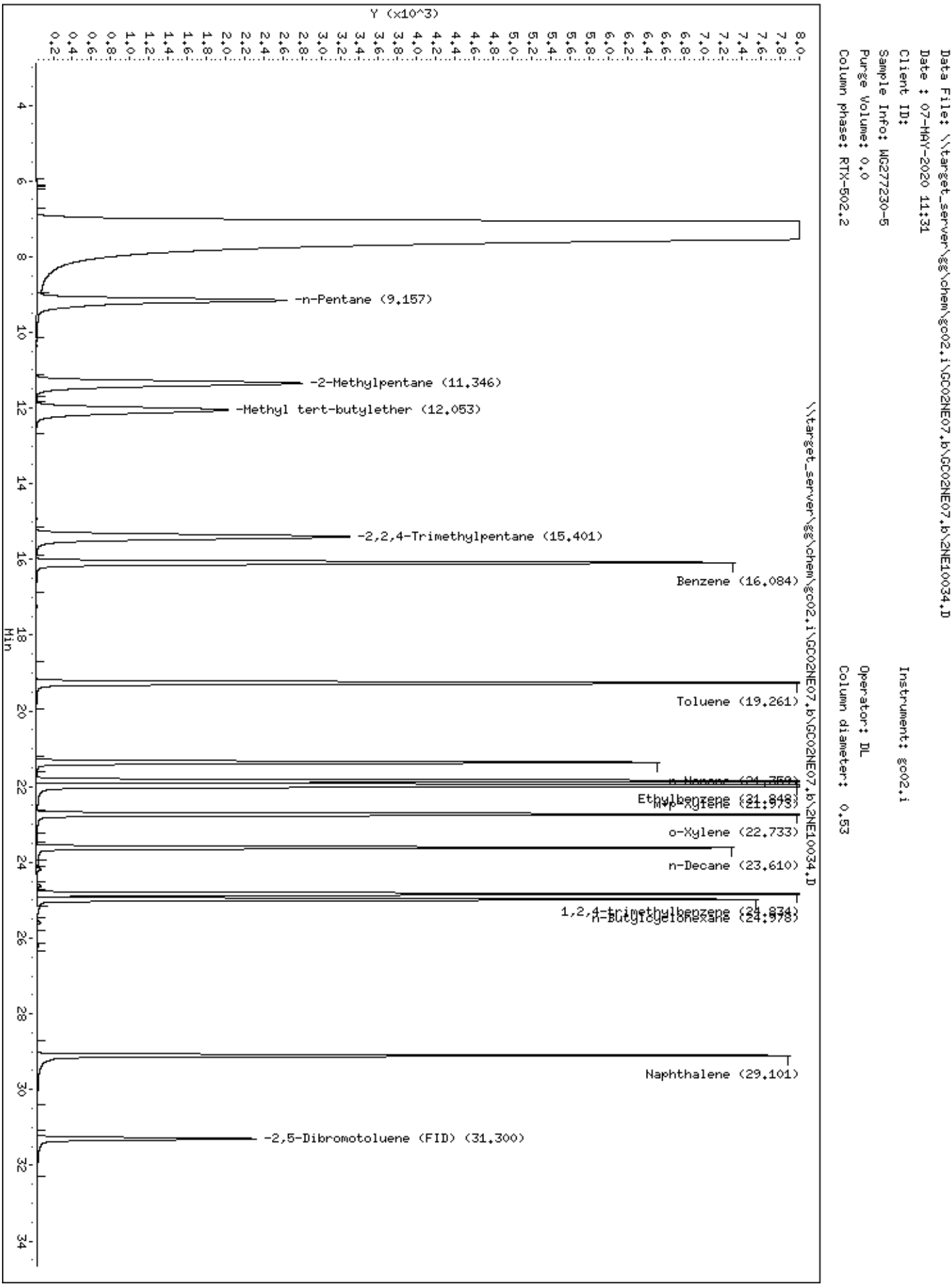
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10034.D
Lab Smp Id: ICAL100
Inj Date : 07-MAY-2020 11:31
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-5
Misc Info :
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 11:31   Cal File: 2NE10034.D
Als bottle: 1   Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/L)	ON-COL (ug/L)	REVIEW CODE
M	1 C5-C8 Aliphatic				1668466	300.000	300	
M	2 C9-C12 Aliphatic				1157841	200.000	203	
	5 n-Pentane	9.157	9.065	0.092	522459	100.000	104	
	6 2-Methylpentane	11.346	11.282	0.064	547815	100.000	96.8	
	7 Methyl tert-butylether	12.052	11.992	0.060	447197	100.000	98.9	
	8 2,2,4-Trimethylpentane	15.401	15.386	0.015	598192	100.000	99.1	
	9 Benzene	16.084	16.065	0.019	782678	100.000	99.2	
	11 Toluene	19.260	19.257	0.003	779632	100.000	101	
	12 n-Nonane	21.359	21.361	-0.002	563377	100.000	106	
	14 Ethylbenzene	21.848	21.850	-0.002	757506	100.000	105	
	15 m+p-Xylene	21.972	21.975	-0.003	1560223	200.000	206	
	16 o-Xylene	22.732	22.736	-0.004	792920	100.000	104	
	13 n-Decane	23.609	23.614	-0.005	567866	100.000	103	
	18 1,2,4-trimethylbenzene	24.833	24.838	-0.005	777387	100.000	109	
	19 n-Butylcyclohexane	24.977	24.982	-0.005	589975	100.000	99.8	
	20 Naphthalene	29.100	29.104	-0.004	592101	100.000	122	
$	21 2,5-Dibromotoluene (FID)	31.299	31.304	-0.005	221990	100.000	104	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10034.D
Date : 07-MAY-2020 11:31
Client ID:
Sample Info: WG277230-5
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
\\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10034.D
-n-Pentane (9.157)
-2-Methylpentane (11.346)
-Methyl tert-butylether (12.053)
-2,2,4-Trimethylpentane (15.401)
Benzene (16.084)
Toluene (19.261)
n-Hexane (21.369)
Ethylbenzene (21.848)
m,p-Xylene (21.973)
o-Xylene (22.733)
n-Decane (23.610)
1,2,4-trimethylbenzene (24.834)
n-Butylcyclohexane (24.978)
Naphthalene (29.101)
-2,5-Dibromotoluene (FID) (31.300)

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10035.D
Report Date: 01-Jun-2020 08:02

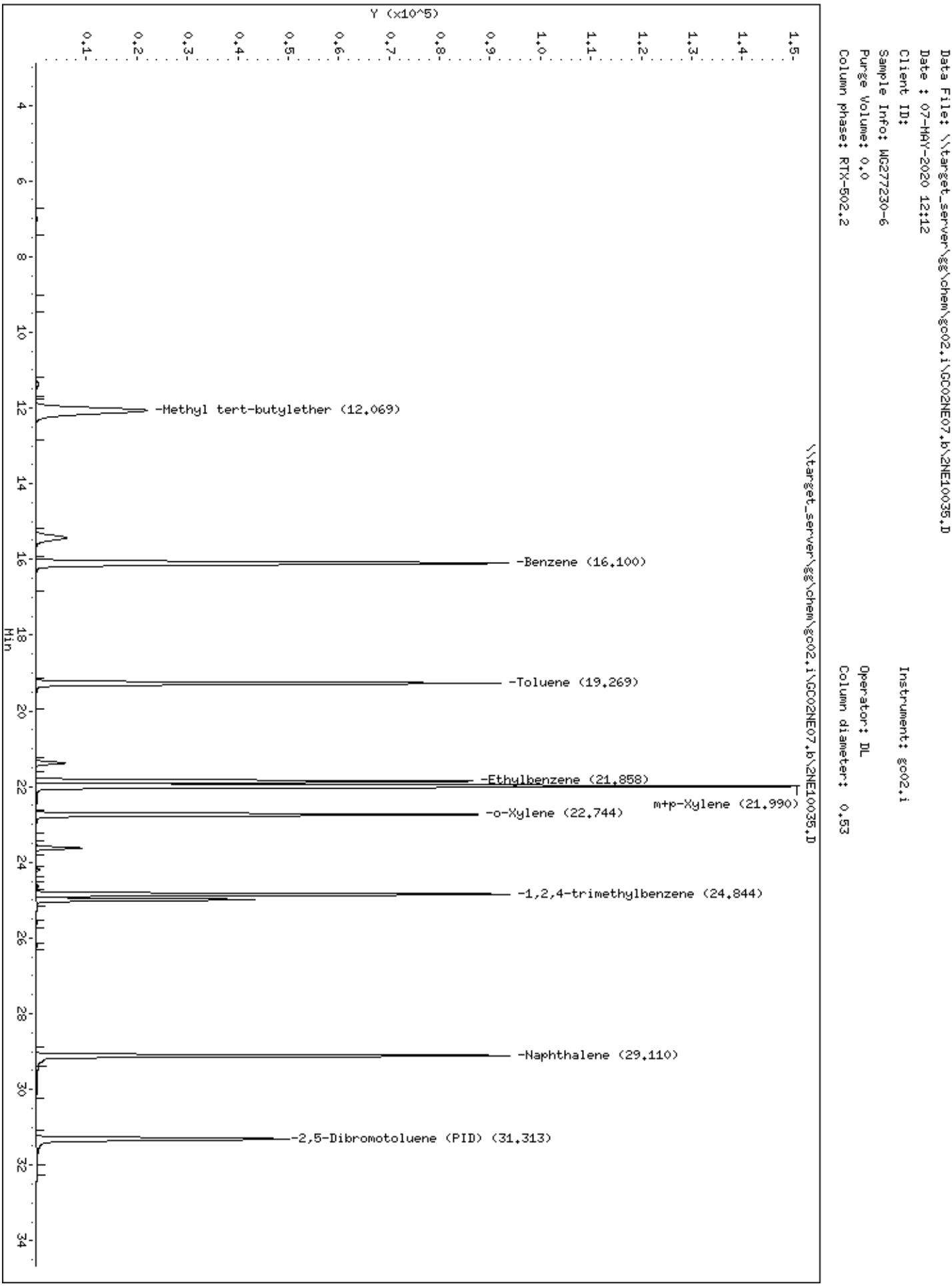
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10035.D
Lab Smp Id: ICAL300
Inj Date : 07-MAY-2020 12:12
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-6
Misc Info :
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 12:12   Cal File: 2NE10035.D
Als bottle: 1   Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
M	1 C9-C10 Aromatic				780873	300.000		
	2 Methyl tert-butylether	12.069	12.078	-0.009	500729	300.000	305	
	3 Benzene	16.099	16.099	0.000	1040942	300.000	296	
	4 Toluene	19.268	19.274	-0.006	890310	300.000	283	
	5 Ethylbenzene	21.858	21.860	-0.002	776035	300.000	290	
	6 m+p-Xylene	21.990	21.983	0.007	1445815	600.000	448	
	7 o-Xylene	22.744	22.745	-0.001	777201	300.000	281	
	8 1,2,4-trimethylbenzene	24.843	24.844	-0.001	780873	300.000	276	
	10 Naphthalene	29.109	29.110	-0.001	783322	300.000	272	
$	11 2,5-Dibromotoluene (PID)	31.313	31.309	0.004	535799	300.000	245	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10035.D
Date : 07-MAY-2020 12:12
Client ID:
Sample Info: WG277230-6
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^5)
Min
\\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10035.D
-Methyl tert-butylether (12.069)
-Benzene (16.100)
-Toluene (19.269)
-Ethylbenzene (21.858)
m+p-Xylene (21.990)
-o-Xylene (22.744)
-1,2,4-trimethylbenzene (24.844)
-Naphthalene (29.110)
-2,5-Dibromotoluene (PID) (31.313)

Data File: 2NE10035.D
Report Date: 01-Jun-2020 08:03

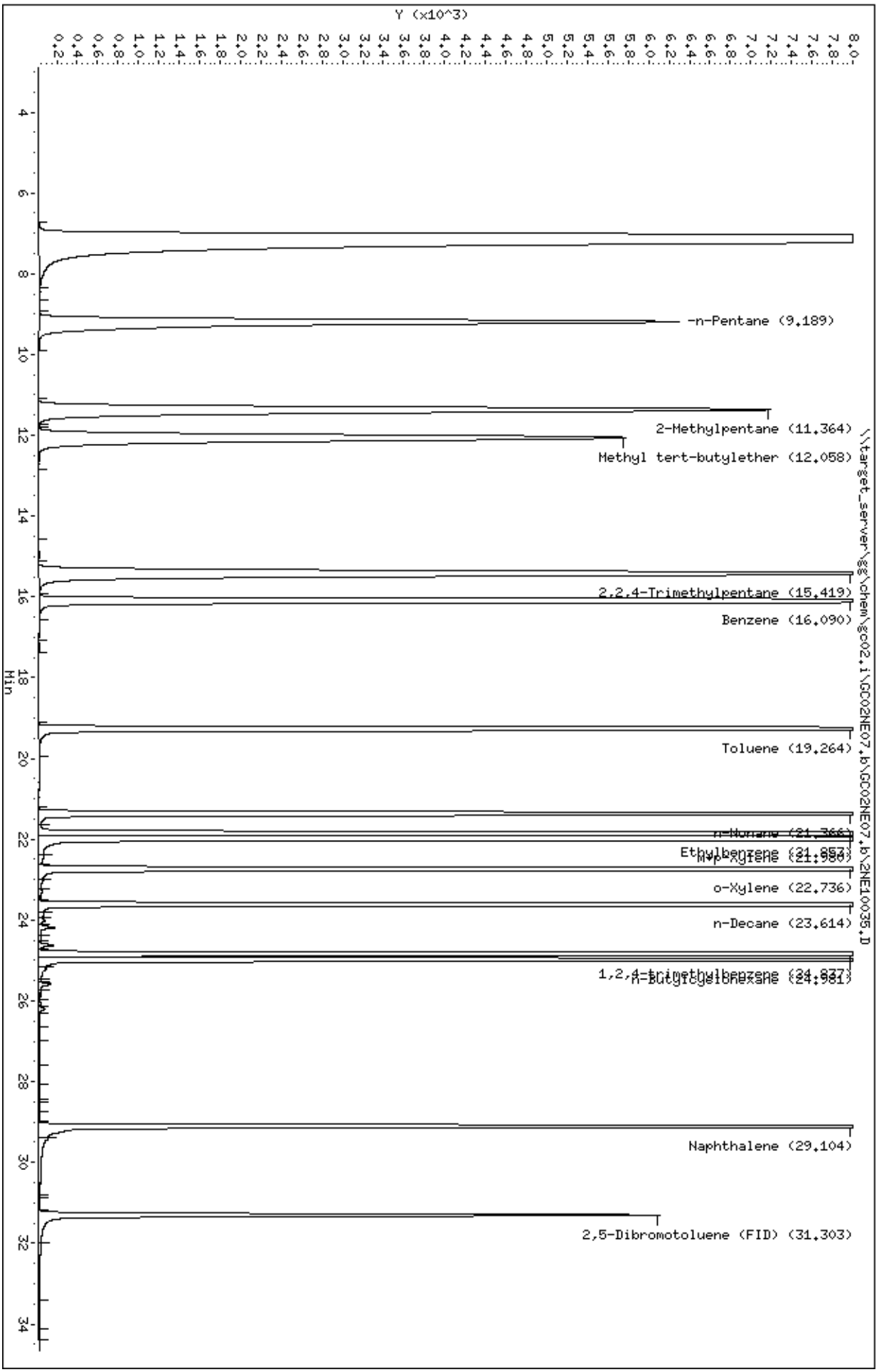
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10035.D
Lab Smp Id: ICAL300
Inj Date : 07-MAY-2020 12:12
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-6
Misc Info :
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 12:12   Cal File: 2NE10035.D
Als bottle: 1   Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
M	1 C5-C8 Aliphatic				4308653	900.000	788	
M	2 C9-C12 Aliphatic				3806111	600.000	620	
	5 n-Pentane	9.189	9.065	0.124	1229217	300.000	252	
	6 2-Methylpentane	11.364	11.282	0.082	1428984	300.000	259	
	7 Methyl tert-butylether	12.058	11.992	0.066	1275987	300.000	285	
	8 2,2,4-Trimethylpentane	15.418	15.386	0.032	1650452	300.000	277	
	9 Benzene	16.089	16.065	0.024	2324808	300.000	295	
	11 Toluene	19.264	19.257	0.007	2328586	300.000	301	
	12 n-Nonane	21.366	21.361	0.005	1830035	300.000	336	
	14 Ethylbenzene	21.853	21.850	0.003	2272281	300.000	313	
	15 m+p-Xylene	21.979	21.975	0.004	4620809	600.000	609	
	16 o-Xylene	22.736	22.736	0.000	2333081	300.000	306	
	13 n-Decane	23.613	23.614	-0.001	1914659	300.000	303	
	18 1,2,4-trimethylbenzene	24.836	24.838	-0.002	2291507	300.000	317	
	19 n-Butylcyclohexane	24.980	24.982	-0.002	1891452	300.000	316	
	20 Naphthalene	29.103	29.104	-0.001	1690566	300.000	338	
$	21 2,5-Dibromotoluene (FID)	31.303	31.304	-0.001	580299	300.000	296	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10035.D
Date : 07-MAY-2020 12:12
Client ID:
Sample Info: WG277230-6
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
-n-Pentane (9.189)
2-Methylpentane (11.364)
Methyl tert-butylether (12.058)
2,2,4-Trimethylpentane (15.419)
Benzene (16.090)
Toluene (19.264)
n-Nonane (21.366)
Ethylbenzene (21.857)
m,p-Xylene (21.986)
o-Xylene (22.736)
n-Decane (23.614)
1,2,4-Trimethylbenzene (24.837)
n-Butylcyclohexane (24.981)
Naphthalene (29.104)
2,5-Dibromotoluene (FID) (31.303)
\\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10035.D

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10038.D
Report Date: 01-Jun-2020 08:03

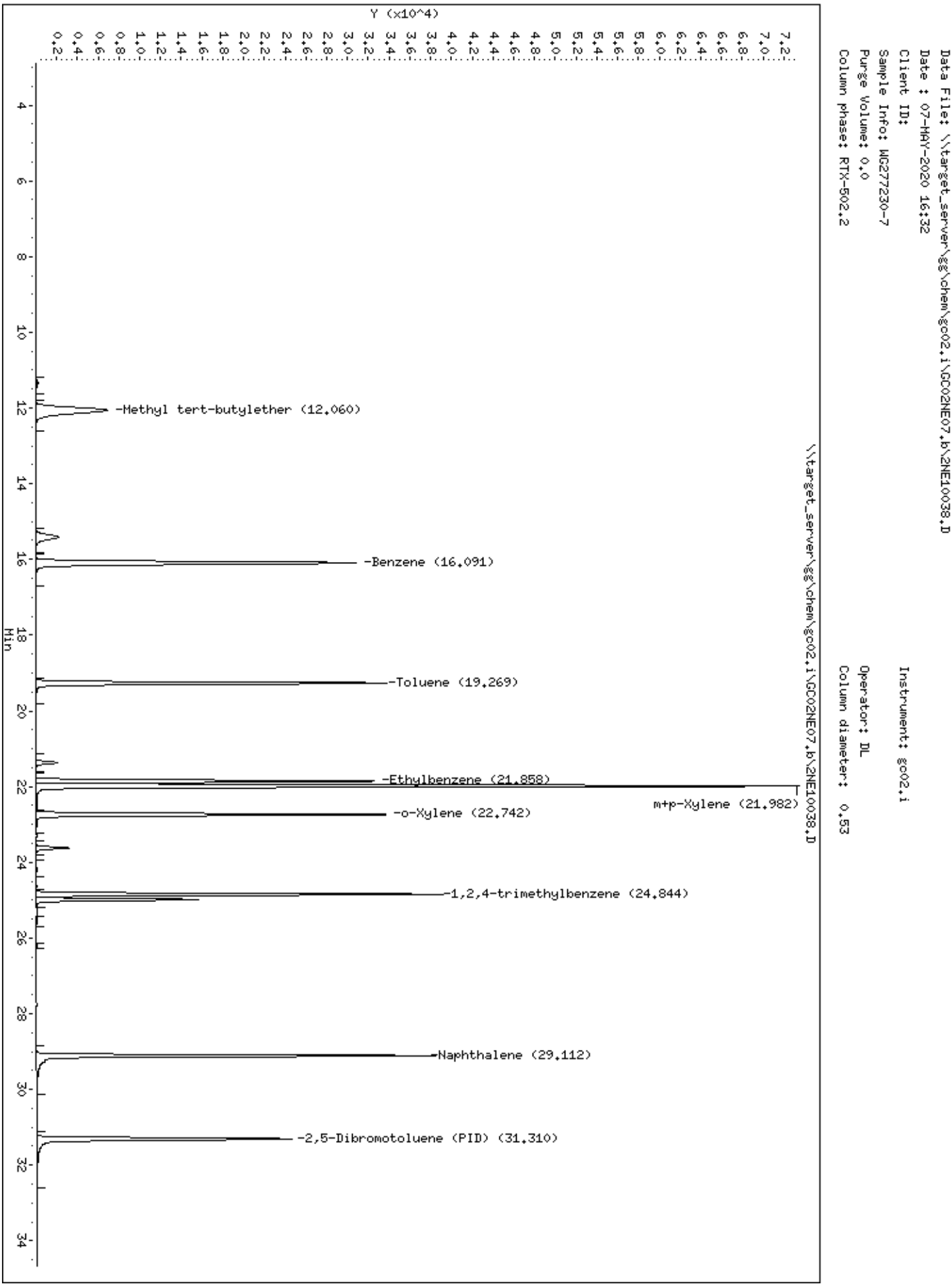
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10038.D
Lab Smp Id: IND
Inj Date : 07-MAY-2020 16:32
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-7
Misc Info : WG277230,WG277230-4
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: IND.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
2	Methyl tert-butylether	12.059	12.078	-0.019	156532	95.3206	95.3	
3	Benzene	16.091	16.099	-0.008	342444	98.0784	98.1	
4	Toluene	19.269	19.274	-0.005	312662	99.6625	99.7	
5	Ethylbenzene	21.857	21.860	-0.003	275799	102.556	102	
6	m+p-Xylene	21.982	21.983	-0.001	639321	203.820	204	
7	o-Xylene	22.742	22.745	-0.003	283164	101.827	102	
8	1,2,4-trimethylbenzene	24.843	24.844	-0.001	295759	104.671	105	
10	Naphthalene	29.111	29.110	0.001	308511	111.409	111	
$ 11	2,5-Dibromotoluene (PID)	31.310	31.309	0.001	251794	116.852	117	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10038.D
Date : 07-MAY-2020 16:32
Client ID:
Sample Info: WG277230-7
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.060)
-Benzene (16.091)
-Toluene (19.269)
-Ethylbenzene (21.858)
m+p-Xylene (21.982)
-o-Xylene (22.742)
-1,2,4-trimethylbenzene (24.844)
Naphthalene (29.112)
-2,5-Dibromotoluene (PID) (31.310)
\\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10038.D

Data File: 2NE10038.D
Report Date: 01-Jun-2020 08:03

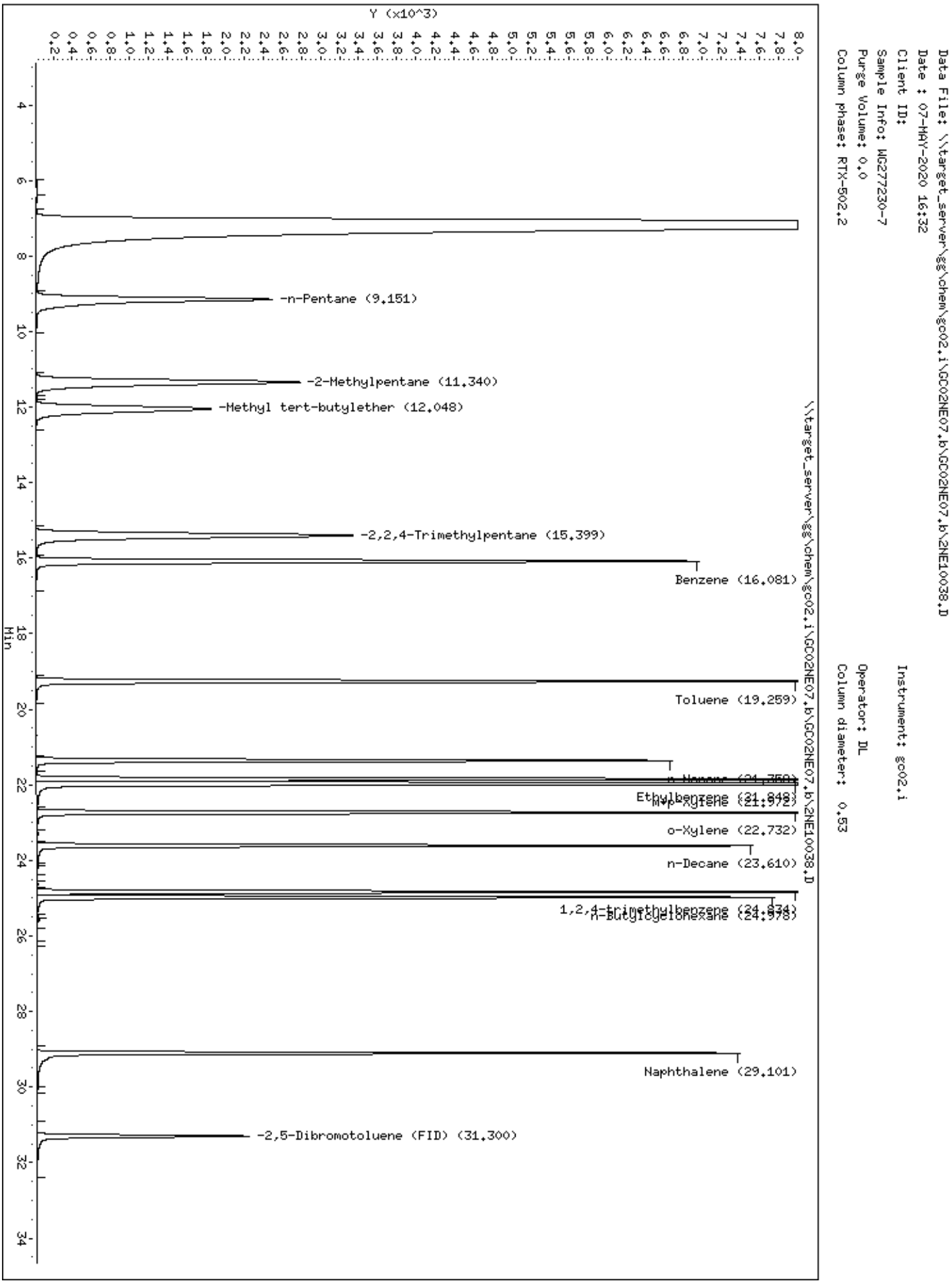
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10038.D
Lab Smp Id: IND
Inj Date : 07-MAY-2020 16:32
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-7
Misc Info : WG277230,WG277230-4
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: IND.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
5	n-Pentane	9.150	9.065	0.085	485526	99.4283	99.4	
6	2-Methylpentane	11.340	11.282	0.058	550992	100.034	100	
7	Methyl tert-butylether	12.048	11.992	0.056	410967	91.7257	91.7	
8	2,2,4-Trimethylpentane	15.399	15.386	0.013	607934	101.867	102	
9	Benzene	16.080	16.065	0.015	748122	95.6553	95.6	
11	Toluene	19.259	19.257	0.002	736654	95.8309	95.8	
12	n-Nonane	21.358	21.361	-0.003	578043	105.409	105	
14	Ethylbenzene	21.847	21.850	-0.003	716730	98.9444	98.9	
15	m+p-Xylene	21.971	21.975	-0.004	1481803	195.105	195	
16	o-Xylene	22.732	22.736	-0.004	753735	98.1866	98.2	
13	n-Decane	23.609	23.614	-0.005	586184	113.702	114	
18	1,2,4-trimethylbenzene	24.833	24.838	-0.005	729068	100.744	101	
19	n-Butylcyclohexane	24.977	24.982	-0.005	611139	101.876	102	
20	Naphthalene	29.101	29.104	-0.003	555370	105.306	105	
$ 21	2,5-Dibromotoluene (FID)	31.300	31.304	-0.004	216552	108.341	108	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10038.D
Date : 07-MAY-2020 16:32
Client ID:
Sample Info: WG277230-7
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10038.D
Y (x10^3)
Min
-n-Pentane (9.151)
-2-Methylpentane (11.340)
-Methyl tert-butylether (12.048)
-2,2,4-Trimethylpentane (15.399)
Benzene (16.081)
Toluene (19.259)
n-Hexane (21.358)
Ethylbenzene (21.848)
m,p-Xylene (21.972)
o-Xylene (22.732)
n-Decane (23.610)
1,2,4-trimethylbenzene (24.834)
n-Butylcyclohexane (24.978)
Naphthalene (29.101)
-2,5-Dibromotoluene (FID) (31.300)

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring 2
Lab ID : WG278133-4
Lab File ID : 2NE10119.D
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39

SDG: SN3818
Analytical Date: 05/21/20 09:36
Instrument ID: GC02
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	2826	2887	0.100	2.19056	25.00000	Averaged
20	Benzene	3492	3242	0.100	-7.14169	25.00000	Averaged
30	Ethylbenzene	2689	2636	0.100	-1.97132	25.00000	Averaged
40	Methyl tert-butylether	1642	1625	0.100	-1.05975	25.00000	Averaged
50	Naphthalene	2769	2756	0.100	-0.48620	25.00000	Averaged
60	Toluene	3137	2986	0.100	-4.82557	25.00000	Averaged
70	m+p-Xylene	3137	3121	0.100	-0.49227	25.00000	Averaged
80	o-Xylene	2781	2730	0.100	-1.83890	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	2155	1902	0.100	-11.72196	25.00000	Averaged
180	1,2,4-trimethylbenzene	2826	2887	0.100	2.19004	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10119.D
Report Date: 01-Jun-2020 10:40

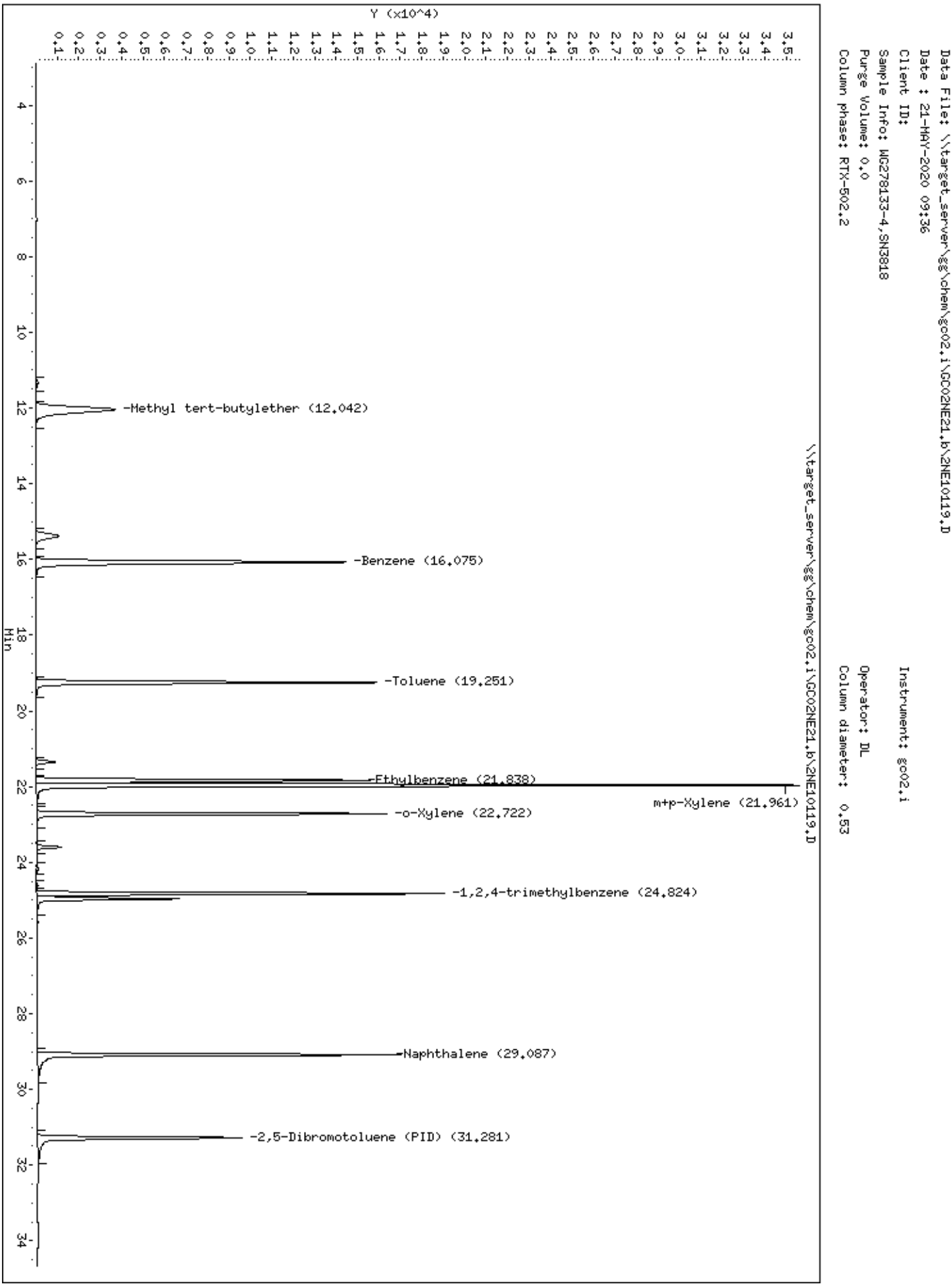
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10119.D
Lab Smp Id: WG278133-4
Inj Date : 21-MAY-2020 09:36
Operator : DL   Inst ID: gc02.i
Smp Info : WG278133-4,SN3818
Misc Info : WG278133,WG277230-4,SN3818-1
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
	2 Methyl tert-butylether	12.041	12.078	-0.037	81238	50.0000	49.5	
	3 Benzene	16.074	16.099	-0.025	162109	50.0000	46.4	
	4 Toluene	19.250	19.274	-0.024	149291	50.0000	47.6	
	5 Ethylbenzene	21.837	21.860	-0.023	131812	50.0000	49.0	
	6 m+p-Xylene	21.961	21.983	-0.022	312126	100.000	99.5	
	7 o-Xylene	22.722	22.745	-0.023	136485	50.0000	49.1	
	8 1,2,4-trimethylbenzene	24.824	24.844	-0.020	144374	50.0000	51.1	
	10 Naphthalene	29.087	29.110	-0.023	137786	50.0000	49.8	
M	1 C9-C10 Aromatic				144374	50.0000	51.1	
$	11 2,5-Dibromotoluene (PID)	31.280	31.309	-0.029	95111	50.0000	44.1	


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10119.D
Date : 21-MAY-2020 09:36
Client ID:
Sample Info: WG278133-4,SN3818
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10119.D
Y (x10^4)
Min
-Methyl tert-butylether (12.042)
-Benzene (16.075)
-Toluene (19.251)
-Ethylbenzene (21.838)
m+p-Xylene (21.961)
-o-Xylene (22.722)
-1,2,4-trimethylbenzene (24.824)
Naphthalene (29.087)
-2,5-Dibromotoluene (PID) (31.281)

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring 2
Lab ID : WG278133-4
Lab File ID : 2NE10119.D
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39

SDG: SN3818
Analytical Date: 05/21/20 09:36
Instrument ID: GC02
Column ID: B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
30	C5-C8 Aliphatic	5453	4905	0.100	-10.05248	25.00000	Averaged
40	C9-C12 Aliphatic	5577	4908	0.100	-11.99198	25.00000	Averaged
60	Benzene	7821	7227	0.100	-7.59466	25.00000	Averaged
70	Ethylbenzene	7244	7025	0.100	-3.01402	25.00000	Averaged
80	Methyl tert-butylether	4480	4293	0.100	-4.18959	25.00000	Averaged
90	Naphthalene	5274	5156	0.100	-2.23869	25.00000	Averaged
100	Toluene	7687	7193	0.100	-6.43213	25.00000	Averaged
110	m+p-Xylene	7595	7346	0.100	-3.27982	25.00000	Averaged
120	o-Xylene	7677	7474	0.100	-2.64310	25.00000	Averaged
200	n-Pentane	4883	4030	0.100	-17.46315	25.00000	Averaged
210	2-Methylpentane	5508	5054	0.100	-8.24928	25.00000	Averaged
220	2,2,4-Trimethylpentane	5968	5631	0.100	-5.65263	25.00000	Averaged
230	n-Nonane	5484	4949	0.100	-9.75406	30.00000	Averaged
240	n-Decane	5155	4325	0.100	-16.10969	25.00000	Averaged
250	n-Butylcyclohexane	5999	5492	0.100	-8.45268	25.00000	Averaged
260	1,2,4-trimethylbenzene	7237	7300	0.100	0.87477	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	1999	1687	0.100	-15.59610	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: 2NE10119.D
Report Date: 01-Jun-2020 10:40

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10119.D
Lab Smp Id: WG278133-4
Inj Date : 21-MAY-2020 09:36
Operator : DL   Inst ID: gc02.i
Smp Info : WG278133-4,SN3818
Misc Info : WG278133,WG277230-4,SN3818-1
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

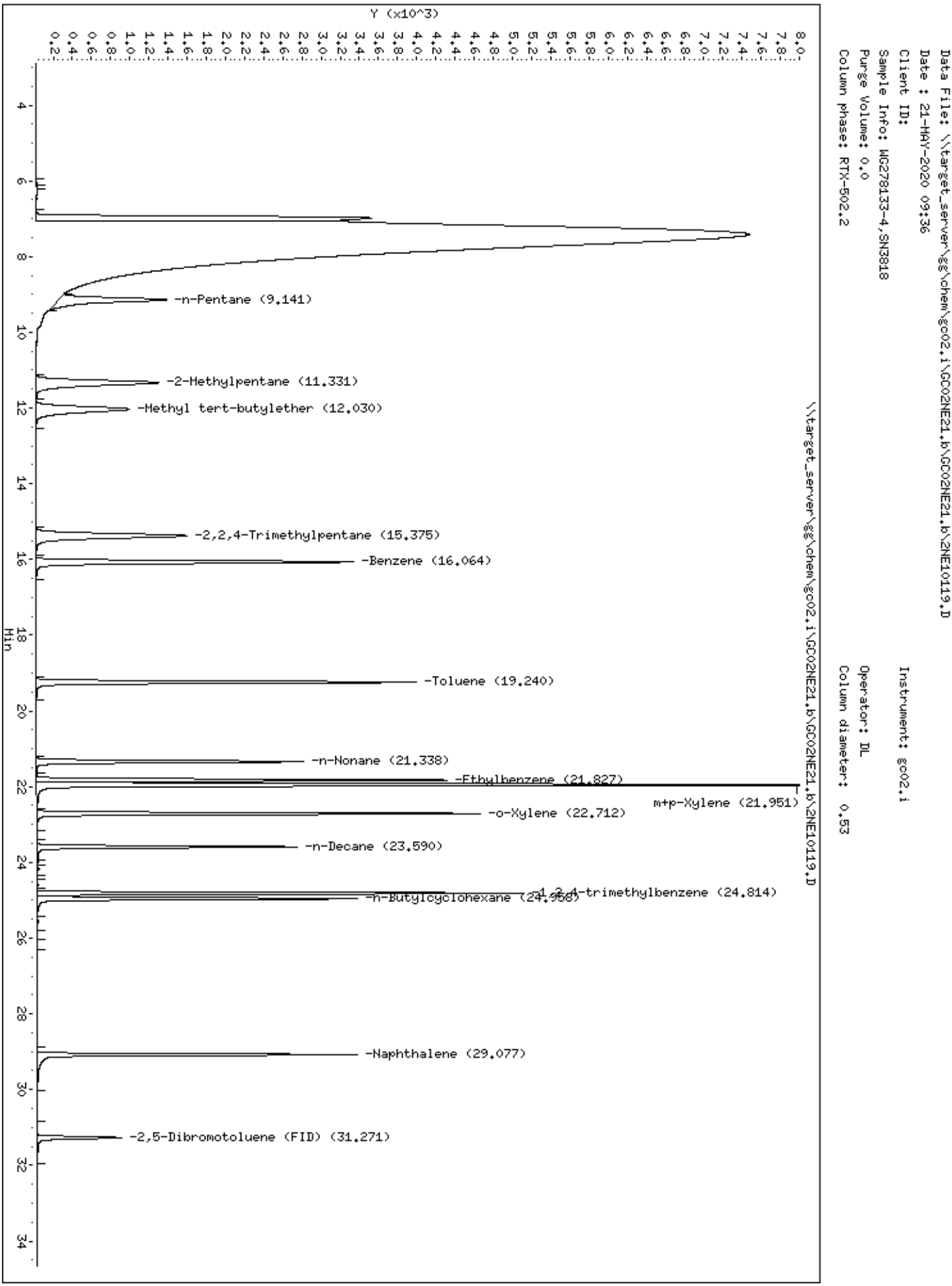
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
5	n-Pentane	9.141	9.065	0.076	201521	50.0000	41.3(M)	M2
6	2-Methylpentane	11.331	11.282	0.049	252684	50.0000	45.9	
7	Methyl tert-butylether	12.030	11.992	0.038	214634	50.0000	47.9	
8	2,2,4-Trimethylpentane	15.374	15.386	-0.012	281529	50.0000	47.2	
9	Benzene	16.064	16.065	-0.001	361352	50.0000	46.2	
11	Toluene	19.240	19.257	-0.017	359629	50.0000	46.8	
12	n-Nonane	21.338	21.361	-0.023	247446	50.0000	45.1	
14	Ethylbenzene	21.827	21.850	-0.023	351272	50.0000	48.5	
15	m+p-Xylene	21.951	21.975	-0.024	734579	100.000	96.7	
16	o-Xylene	22.712	22.736	-0.024	373683	50.0000	48.7	
13	n-Decane	23.590	23.614	-0.024	216245	50.0000	41.9	
18	1,2,4-trimethylbenzene	24.814	24.838	-0.024	365007	50.0000	50.4	
19	n-Butylcyclohexane	24.957	24.982	-0.025	274590	50.0000	45.8	
20	Naphthalene	29.077	29.104	-0.027	257789	50.0000	48.9	
$ 21	2,5-Dibromotoluene (FID)	31.270	31.304	-0.034	84353	50.0000	42.2	

DL
11:04 am, Jun 01, 2020

QC Flag Legend

M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10119.D
Date : 21-MAY-2020 09:36
Client ID:
Sample Info: WG278133-4,SN3818
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10119.D
Y (x10^3)
Min
-n-Pentane (9.141)
-2-Methylpentane (11.331)
-Methyl tert-butylether (12.030)
-2,2,4-Trimethylpentane (15.375)
-Benzene (16.064)
-Toluene (19.240)
-n-Nonane (21.338)
-Ethylbenzene (21.827)
m+p-Xylene (21.951)
-o-Xylene (22.712)
-n-Decane (23.590)
1,2,4-trimethylbenzene (24.814)
-n-Butylcyclohexane (24.958)
-Naphthalene (29.077)
-2,5-Dibromotoluene (FID) (31.271)

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring
SDG: SN3818
Lab ID : WG278133-5
Analytical Date: 05/22/20 01:36
Lab File ID : 2NE10139.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
10	C9-C10 Aromatic	2826	2849	0.100	0.84239	25.00000	Averaged	
20	Benzene	3492	3367	0.100	-3.57134	25.00000	Averaged	
30	Ethylbenzene	2689	2688	0.100	-0.05853	25.00000	Averaged	
40	Methyl tert-butylether	1642	1536	0.100	-6.48308	25.00000	Averaged	
50	Naphthalene	2769	2736	0.100	-1.21277	25.00000	Averaged	
60	Toluene	3137	3123	0.100	-0.43823	25.00000	Averaged	
70	m+p-Xylene	3137	3229	0.100	2.92852	25.00000	Averaged	
80	o-Xylene	2781	2807	0.100	0.95667	25.00000	Averaged	
90	2,5-Dibromotoluene (PID)	2155	1425	0.100	-33.86224	25.00000	Averaged	<-
180	1,2,4-trimethylbenzene	2826	2849	0.100	0.84236	25.00000	Averaged	

*** = Compound out of QC criteria**

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10139.D
Report Date: 01-Jun-2020 10:40

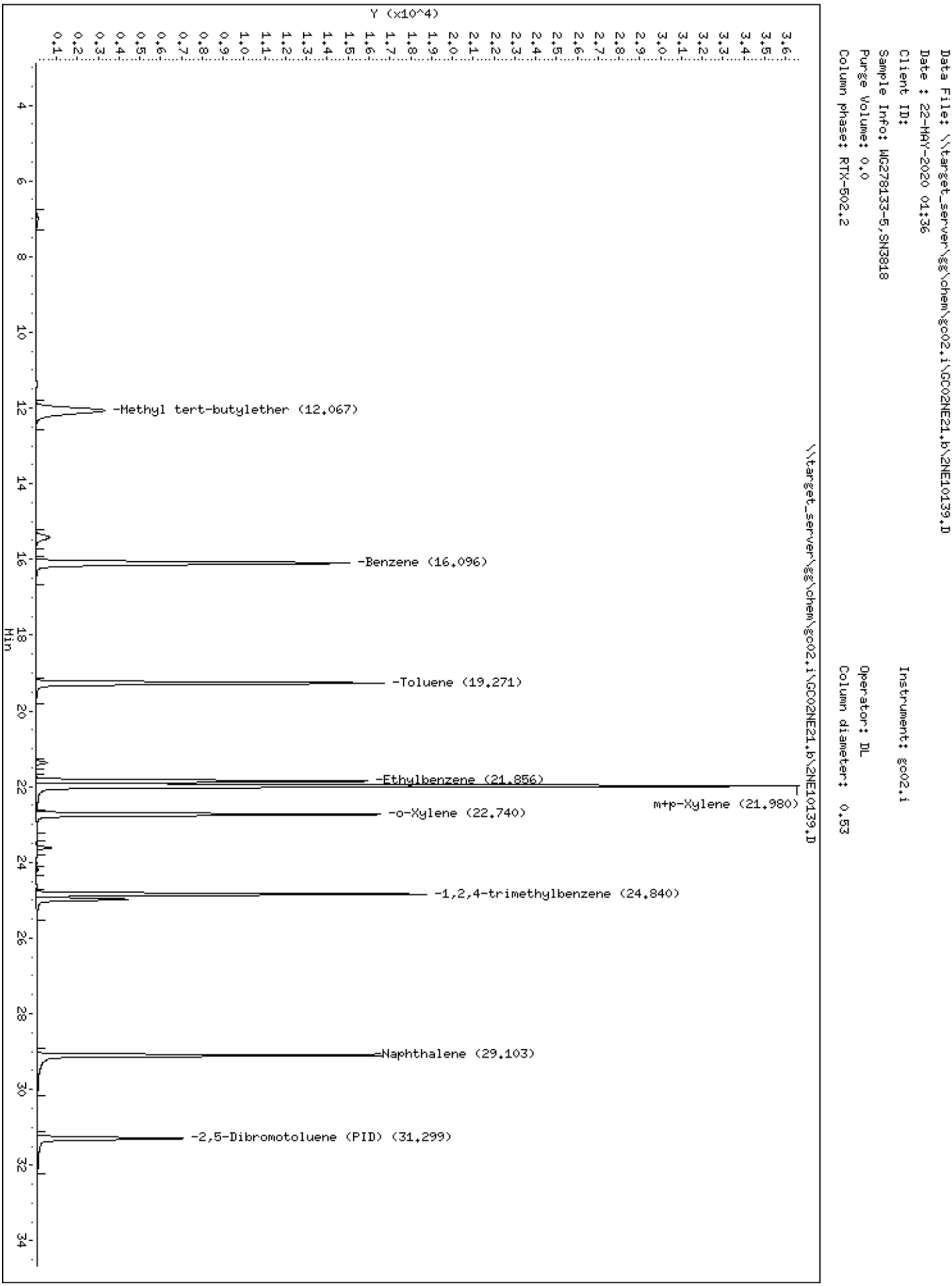
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10139.D
Lab Smp Id: WG278133-5
Inj Date : 22-MAY-2020 01:36
Operator : DL   Inst ID: gc02.i
Smp Info : WG278133-5,SN3818
Misc Info : WG278133,WG277230-4,SN3818-1
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/L)	ON-COL (ug/L)	REVIEW CODE
	2 Methyl tert-butylether	12.066	12.078	-0.012	76785	50.0000	46.8	
	3 Benzene	16.096	16.099	-0.003	168342	50.0000	48.2	
	4 Toluene	19.270	19.274	-0.004	156173	50.0000	49.8	
	5 Ethylbenzene	21.856	21.860	-0.004	134384	50.0000	50.0	
	6 m+p-Xylene	21.979	21.983	-0.004	322856	100.000	103	
	7 o-Xylene	22.740	22.745	-0.005	140372	50.0000	50.5	
	8 1,2,4-trimethylbenzene	24.839	24.844	-0.005	142470	50.0000	50.4	
	10 Naphthalene	29.103	29.110	-0.007	136780	50.0000	49.4	
M	1 C9-C10 Aromatic				142470	50.0000	50.4	
$	11 2,5-Dibromotoluene (PID)	31.299	31.309	-0.010	71257	50.0000	33.1	


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10139.D
Date : 22-MAY-2020 01:36
Client ID:
Sample Info: WG278133-5,SN3818
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.067)
-Benzene (16.096)
-Toluene (19.271)
-Ethylbenzene (21.856)
m+p-Xylene (21.980)
-o-Xylene (22.740)
-1,2,4-trimethylbenzene (24.840)
Naphthalene (29.103)
-2,5-Dibromotoluene (PID) (31.299)
\\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10139.D

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring
SDG: SN3818
Lab ID : WG278133-5
Analytical Date: 05/22/20 01:36
Lab File ID : 2NE10139.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
30	C5-C8 Aliphatic	5453	3455	0.100	-36.63294	25.00000	Averaged	<-
40	C9-C12 Aliphatic	5577	3216	0.100	-42.34226	25.00000	Averaged	<-
60	Benzene	7821	7861	0.100	0.51579	25.00000	Averaged	
70	Ethylbenzene	7244	7454	0.100	2.90583	25.00000	Averaged	
80	Methyl tert-butylether	4480	4312	0.100	-3.75302	25.00000	Averaged	
90	Naphthalene	5274	5262	0.100	-0.23332	25.00000	Averaged	
100	Toluene	7687	7845	0.100	2.05387	25.00000	Averaged	
110	m+p-Xylene	7595	7811	0.100	2.84219	25.00000	Averaged	
120	o-Xylene	7677	7877	0.100	2.61472	25.00000	Averaged	
200	n-Pentane	4883	3078	0.100	-36.97545	25.00000	Averaged	<-
210	2-Methylpentane	5508	3477	0.100	-36.88080	25.00000	Averaged	<-
220	2,2,4-Trimethylpentane	5968	3812	0.100	-36.12453	25.00000	Averaged	<-
230	n-Nonane	5484	3100	0.100	-43.47694	30.00000	Averaged	<-
240	n-Decane	5155	2639	0.100	-48.80963	25.00000	Averaged	<-
250	n-Butylcyclohexane	5999	3792	0.100	-36.78404	25.00000	Averaged	<-
260	1,2,4-trimethylbenzene	7237	7440	0.100	2.80489	25.00000	Averaged	
21	2,5-Dibromotoluene (FID)	1999	1269	0.100	-36.49971	25.00000	Averaged	<-

*** = Compound out of QC criteria**

Data File: 2NE10139.D
Report Date: 01-Jun-2020 10:40

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10139.D
Lab Smp Id: WG278133-5
Inj Date : 22-MAY-2020 01:36
Operator : DL   Inst ID: gc02.i
Smp Info : WG278133-5,SN3818
Misc Info : WG278133,WG277230-4,SN3818-1
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12
Processing Host: V200T3

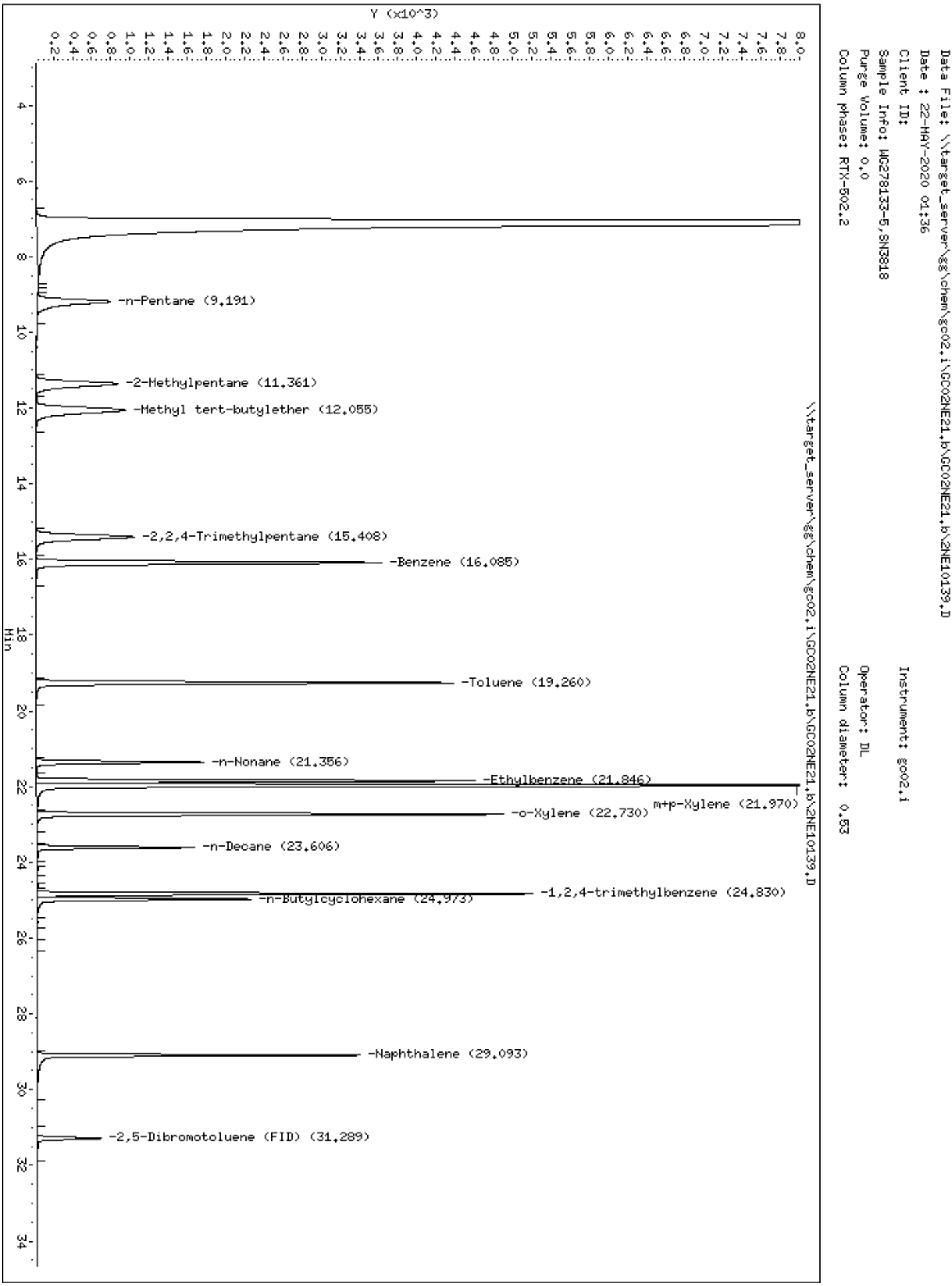
Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
5	n-Pentane	9.190	9.065	0.125	153880	50.0000	31.5	
6	2-Methylpentane	11.361	11.282	0.079	173832	50.0000	31.6	
7	Methyl tert-butylether	12.055	11.992	0.063	215612	50.0000	48.1	
8	2,2,4-Trimethylpentane	15.407	15.386	0.021	190602	50.0000	31.9	
9	Benzene	16.085	16.065	0.020	393068	50.0000	50.2	
11	Toluene	19.260	19.257	0.003	392245	50.0000	51.0	
12	n-Nonane	21.356	21.361	-0.005	154981	50.0000	28.3	
14	Ethylbenzene	21.845	21.850	-0.005	372713	50.0000	51.4	
15	m+p-Xylene	21.969	21.975	-0.006	781075	100.000	103	
16	o-Xylene	22.730	22.736	-0.006	393864	50.0000	51.3	
13	n-Decane	23.605	23.614	-0.009	131954	50.0000	25.6	
18	1,2,4-trimethylbenzene	24.829	24.838	-0.009	371991	50.0000	51.4	
19	n-Butylcyclohexane	24.973	24.982	-0.009	189612	50.0000	31.6	
20	Naphthalene	29.092	29.104	-0.012	263077	50.0000	49.9	
M 1	C5-C8 Aliphatic				518314	150.000	95.0(a)	
M 2	C9-C12 Aliphatic				321566	100.000	57.2(a)	
$ 21	2,5-Dibromotoluene (FID)	31.288	31.304	-0.016	63462	50.0000	31.8	

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10139.D
Date : 22-MAY-2020 01:36
Client ID:
Sample Info: WG278133-5,SN3818
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10139.D
Y (x10^3)
Min
-n-Pentane (9.191)
-2-Methylpentane (11.361)
-Methyl tert-butylether (12.055)
-2,2,4-Trimethylpentane (15.408)
-Benzene (16.085)
-Toluene (19.260)
-n-Nonane (21.356)
-Ethylbenzene (21.846)
m+p-Xylene (21.970)
-o-Xylene (22.730)
-n-Decane (23.606)
-1,2,4-trimethylbenzene (24.830)
-n-Butylcyclohexane (24.973)
-Naphthalene (29.093)
-2,5-Dibromotoluene (FID) (31.289)

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring 2
SDG: SN3818
Lab ID : WG278391-4
Analytical Date: 05/26/20 09:42
Lab File ID : 2NE10154.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	2826	2661	0.100	-5.82224	25.00000	Averaged
20	Benzene	3492	3122	0.100	-10.59576	25.00000	Averaged
30	Ethylbenzene	2689	2494	0.100	-7.24788	25.00000	Averaged
40	Methyl tert-butylether	1642	1483	0.100	-9.69592	25.00000	Averaged
50	Naphthalene	2769	2639	0.100	-4.69033	25.00000	Averaged
60	Toluene	3137	2870	0.100	-8.51675	25.00000	Averaged
70	m+p-Xylene	3137	2967	0.100	-5.39647	25.00000	Averaged
80	o-Xylene	2781	2558	0.100	-8.00395	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	2155	1913	0.100	-11.22261	25.00000	Averaged
180	1,2,4-trimethylbenzene	2826	2661	0.100	-5.82242	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10154.D
Report Date: 01-Jun-2020 10:32

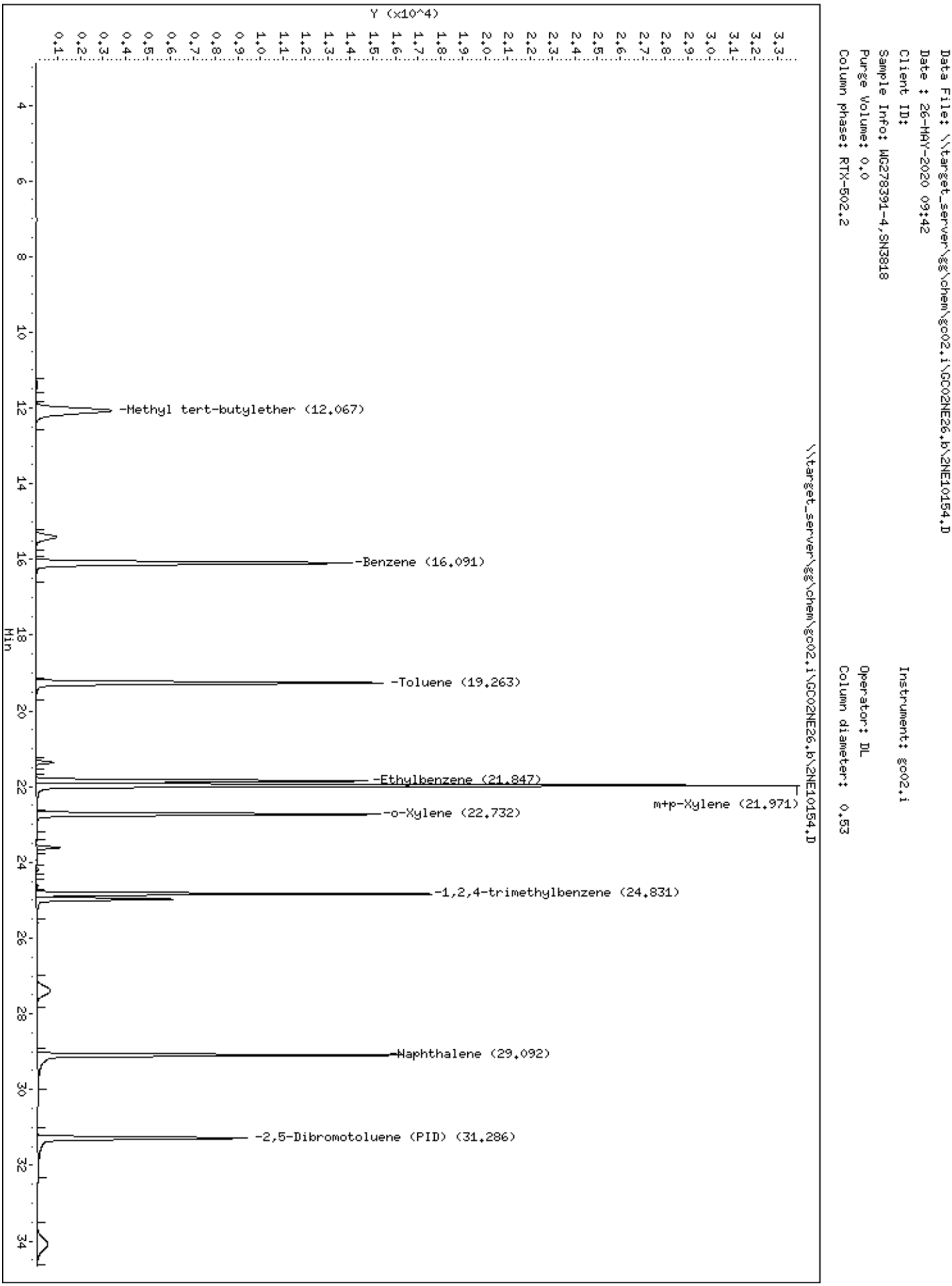
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10154.D
Lab Smp Id: WG278391-4
Inj Date : 26-MAY-2020 09:42
Operator : DL   Inst ID: gc02.i
Smp Info : WG278391-4,SN3818
Misc Info : WG278391,WG277230-4,SN3818-2
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m
Meth Date : 27-May-2020 07:24 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
	2 Methyl tert-butylether	12.066	12.078	-0.012	74147	50.0000	45.2	
	3 Benzene	16.091	16.099	-0.008	156079	50.0000	44.7	
	4 Toluene	19.262	19.274	-0.012	143501	50.0000	45.7	
	5 Ethylbenzene	21.847	21.860	-0.013	124717	50.0000	46.4	
	6 m+p-Xylene	21.971	21.983	-0.012	296743	100.000	94.6	
	7 o-Xylene	22.731	22.745	-0.014	127913	50.0000	46.0	
	8 1,2,4-trimethylbenzene	24.831	24.844	-0.013	133054	50.0000	47.1	
	10 Naphthalene	29.092	29.110	-0.018	131965	50.0000	47.6	
M	1 C9-C10 Aromatic				133054	50.0000	47.1	
$	11 2,5-Dibromotoluene (PID)	31.285	31.309	-0.024	95649	50.0000	44.4	


Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10154.D
Date : 26-MAY-2020 09:42
Client ID:
Sample Info: WG278391-4,SN3818
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.067)
-Benzene (16.091)
-Toluene (19.263)
-Ethylbenzene (21.847)
m+p-Xylene (21.971)
-o-Xylene (22.732)
-1,2,4-trimethylbenzene (24.831)
Naphthalene (29.092)
-2,5-Dibromotoluene (PID) (31.286)
\\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10154.D

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring
SDG: SN3818
Lab ID : WG278391-4
Analytical Date: 05/26/20 09:42
Lab File ID : 2NE10154.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
30	C5-C8 Aliphatic	5453	5095	0.100	-6.57112	25.00000	Averaged
40	C9-C12 Aliphatic	5577	4828	0.100	-13.43519	25.00000	Averaged
60	Benzene	7821	7589	0.100	-2.96381	25.00000	Averaged
70	Ethylbenzene	7244	7248	0.100	0.06339	25.00000	Averaged
80	Methyl tert-butylether	4480	4252	0.100	-5.09398	25.00000	Averaged
90	Naphthalene	5274	5340	0.100	1.25971	25.00000	Averaged
100	Toluene	7687	7548	0.100	-1.80563	25.00000	Averaged
110	m+p-Xylene	7595	7550	0.100	-0.59367	25.00000	Averaged
120	o-Xylene	7677	7624	0.100	-0.68650	25.00000	Averaged
200	n-Pentane	4883	4661	0.100	-4.55393	25.00000	Averaged
210	2-Methylpentane	5508	5107	0.100	-7.27580	25.00000	Averaged
220	2,2,4-Trimethylpentane	5968	5516	0.100	-7.57122	25.00000	Averaged
230	n-Nonane	5484	4944	0.100	-9.83831	30.00000	Averaged
240	n-Decane	5155	4275	0.100	-17.07450	25.00000	Averaged
250	n-Butylcyclohexane	5999	5381	0.100	-10.30737	25.00000	Averaged
260	1,2,4-trimethylbenzene	7237	7323	0.100	1.19010	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	1999	1848	0.100	-7.52524	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: 2NE10154.D
Report Date: 01-Jun-2020 10:33

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10154.D
Lab Smp Id: WG278391-4
Inj Date : 26-MAY-2020 09:42
Operator : DL   Inst ID: gc02.i
Smp Info : WG278391-4,SN3818
Misc Info : WG278391,WG277230-4,SN3818-2
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m\VPHFID91.m
Meth Date : 27-May-2020 07:31 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12
Processing Host: V200T3

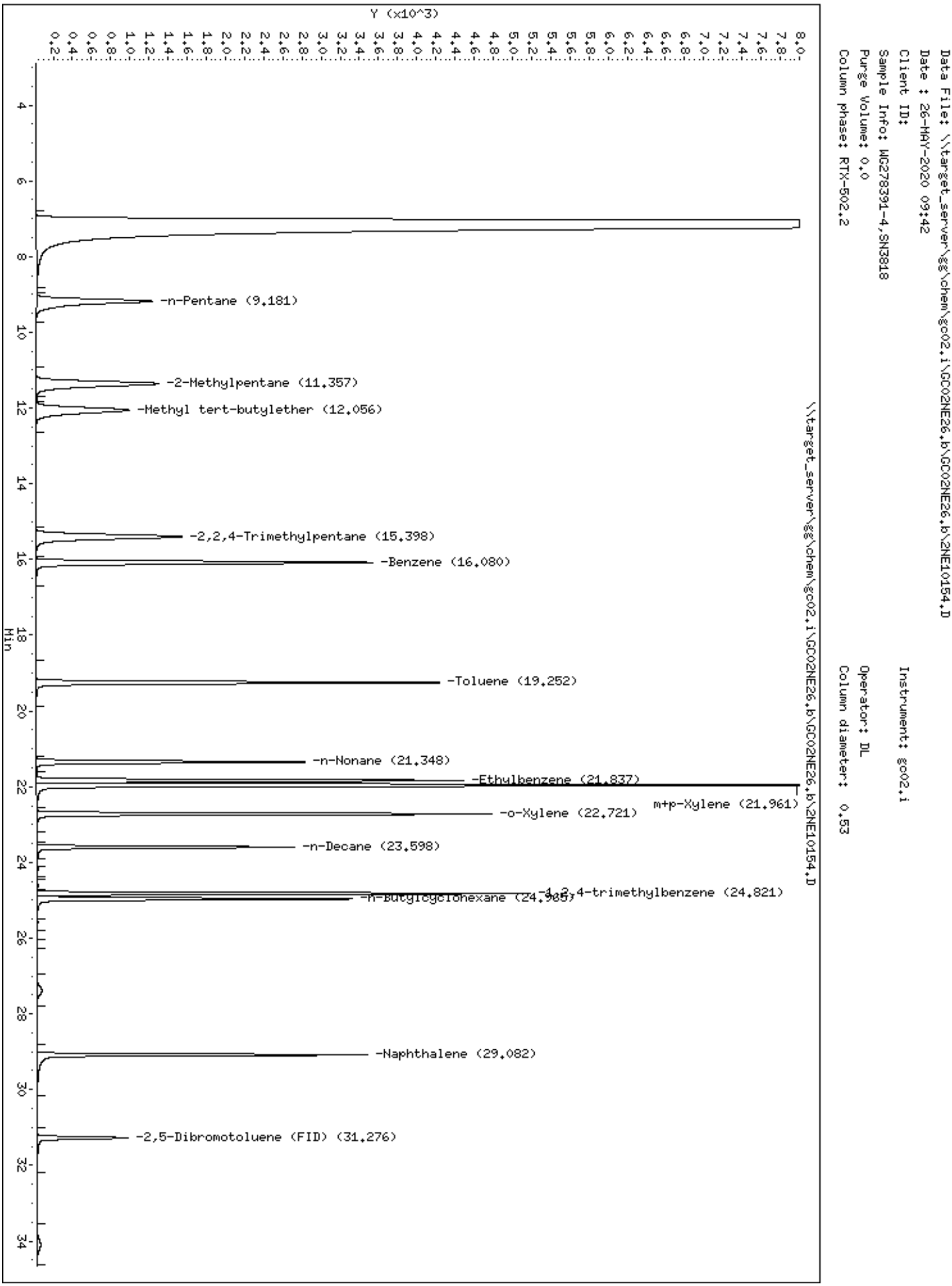
Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
5	n-Pentane	9.181	9.065	0.116	233040	50.0000	47.7	
6	2-Methylpentane	11.357	11.282	0.075	255365	50.0000	46.4	
7	Methyl tert-butylether	12.055	11.992	0.063	212608	50.0000	47.4	
8	2,2,4-Trimethylpentane	15.398	15.386	0.012	275804	50.0000	46.2	
9	Benzene	16.080	16.065	0.015	379461	50.0000	48.5	
11	Toluene	19.252	19.257	-0.005	377411	50.0000	49.1	
12	n-Nonane	21.347	21.361	-0.014	247215	50.0000	45.1	
14	Ethylbenzene	21.837	21.850	-0.013	362418	50.0000	50.0	
15	m+p-Xylene	21.960	21.975	-0.015	754980	100.000	99.4	
16	o-Xylene	22.721	22.736	-0.015	381193	50.0000	49.6	
13	n-Decane	23.597	23.614	-0.017	213758	50.0000	41.5	
18	1,2,4-trimethylbenzene	24.820	24.838	-0.018	366148	50.0000	50.6	
19	n-Butylcyclohexane	24.964	24.982	-0.018	269027	50.0000	44.8	
20	Naphthalene	29.082	29.104	-0.022	267014	50.0000	50.6	
M 1	C5-C8 Aliphatic				764209	150.000	140	
M 2	C9-C12 Aliphatic				482785	100.000	86.3(a)	
$ 21	2,5-Dibromotoluene (FID)	31.275	31.304	-0.029	92419	50.0000	46.2	

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).


Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10154.D
Date : 26-MAY-2020 09:42
Client ID:
Sample Info: WG278391-4,SN3818
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10154.D
Y (x10^3)
Min
-n-Pentane (9.181)
-2-Methylpentane (11.357)
-Methyl tert-butylether (12.056)
-2,2,4-Trimethylpentane (15.398)
-Benzene (16.080)
-Toluene (19.252)
-n-Nonane (21.348)
-Ethylbenzene (21.837)
m+p-Xylene (21.961)
-o-Xylene (22.721)
-n-Decane (23.598)
-1,2,4-trimethylbenzene (24.821)
-n-Butylcyclohexane (24.985)
-Naphthalene (29.082)
-2,5-Dibromotoluene (FID) (31.276)

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring 2
Lab ID : WG278391-5
Lab File ID : 2NE10172.D
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39

SDG: SN3818
Analytical Date: 05/27/20 01:41
Instrument ID: GC02
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	2826	2738	0.100	-3.11247	25.00000	Averaged
20	Benzene	3492	3264	0.100	-6.50930	25.00000	Averaged
30	Ethylbenzene	2689	2608	0.100	-3.00730	25.00000	Averaged
40	Methyl tert-butylether	1642	1543	0.100	-6.01054	25.00000	Averaged
50	Naphthalene	2769	2749	0.100	-0.71443	25.00000	Averaged
60	Toluene	3137	2999	0.100	-4.40036	25.00000	Averaged
70	m+p-Xylene	3137	3068	0.100	-2.20044	25.00000	Averaged
80	o-Xylene	2781	2673	0.100	-3.88864	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	2155	1881	0.100	-12.72065	25.00000	Averaged
180	1,2,4-trimethylbenzene	2826	2738	0.100	-3.11291	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10172.D
Report Date: 01-Jun-2020 10:32

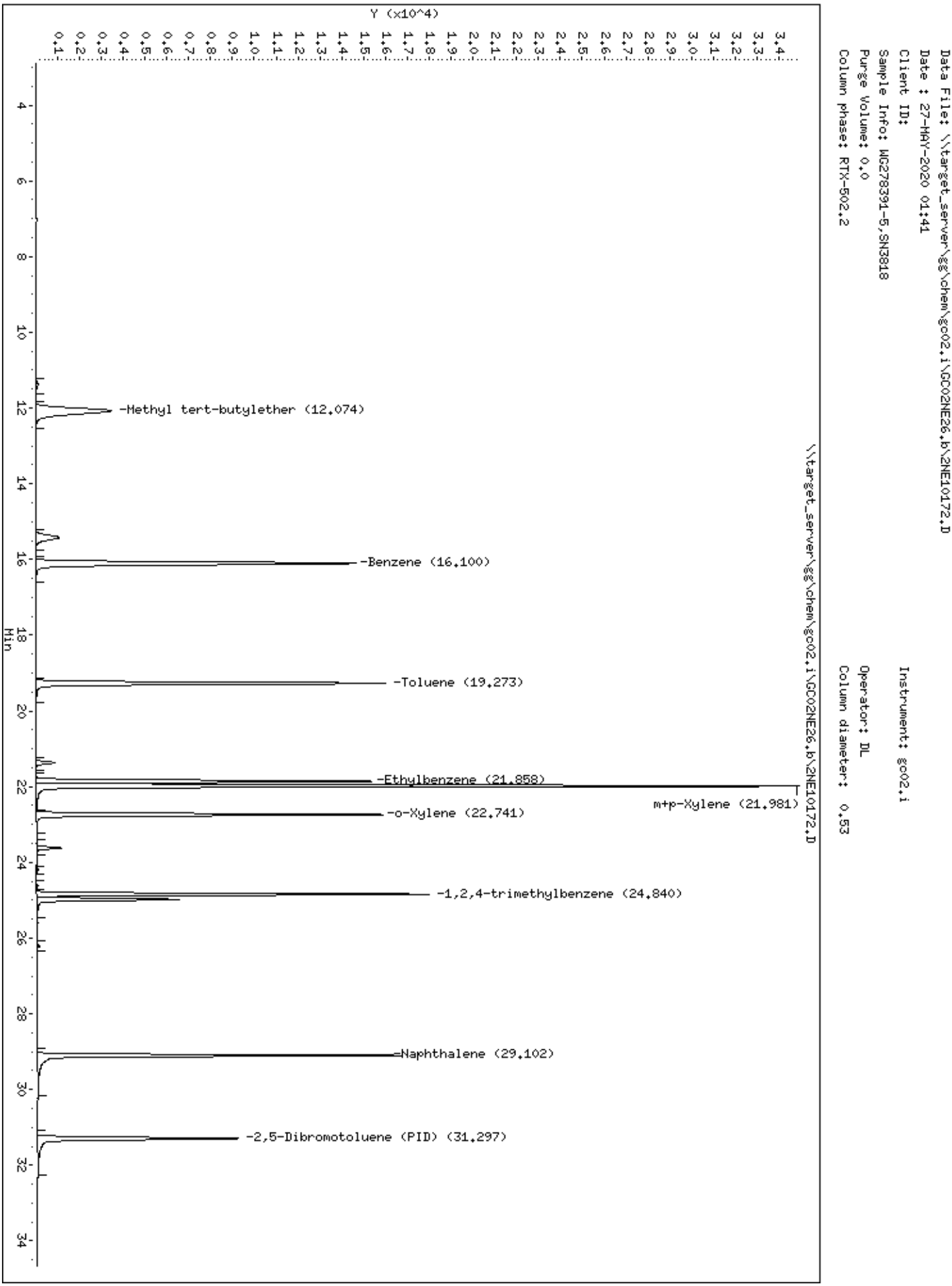
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10172.D
Lab Smp Id: WG278391-5
Inj Date : 27-MAY-2020 01:41
Operator : DL   Inst ID: gc02.i
Smp Info : WG278391-5,SN3818
Misc Info : WG278391,WG277230-4,SN3818-2
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m
Meth Date : 27-May-2020 07:24 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
	2 Methyl tert-butylether	12.073	12.078	-0.005	77173	50.0000	47.0	
	3 Benzene	16.100	16.099	0.001	163213	50.0000	46.7	
	4 Toluene	19.272	19.274	-0.002	149958	50.0000	47.8	
	5 Ethylbenzene	21.857	21.860	-0.003	130419	50.0000	48.5	
	6 m+p-Xylene	21.980	21.983	-0.003	306768	100.000	97.8	
	7 o-Xylene	22.741	22.745	-0.004	133635	50.0000	48.0	
	8 1,2,4-trimethylbenzene	24.839	24.844	-0.005	136882	50.0000	48.4	
	10 Naphthalene	29.101	29.110	-0.009	137470	50.0000	49.6	
M	1 C9-C10 Aromatic				136882	50.0000	48.4	
$	11 2,5-Dibromotoluene (PID)	31.297	31.309	-0.012	94035	50.0000	43.6	


Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10172.D
Date : 27-MAY-2020 01:41
Client ID:
Sample Info: WG278391-5,SN3818
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.074)
-Benzene (16.100)
-Toluene (19.273)
-Ethylbenzene (21.858)
m+p-Xylene (21.981)
-o-Xylene (22.741)
-1,2,4-trimethylbenzene (24.840)
Naphthalene (29.102)
-2,5-Dibromotoluene (PID) (31.297)
\\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10172.D

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM - AOC 32/43A Spring 2
SDG: SN3818
Lab ID : WG278391-5
Analytical Date: 05/27/20 01:41
Lab File ID : 2NE10172.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
30	C5-C8 Aliphatic	5453	5738	0.100	5.21757	25.00000	Averaged
40	C9-C12 Aliphatic	5577	5083	0.100	-8.85765	25.00000	Averaged
60	Benzene	7821	7737	0.100	-1.07480	25.00000	Averaged
70	Ethylbenzene	7244	7386	0.100	1.96571	25.00000	Averaged
80	Methyl tert-butylether	4480	4315	0.100	-3.70258	25.00000	Averaged
90	Naphthalene	5274	5452	0.100	3.37391	25.00000	Averaged
100	Toluene	7687	7687	0.100	0.00053	25.00000	Averaged
110	m+p-Xylene	7595	7666	0.100	0.94210	25.00000	Averaged
120	o-Xylene	7677	7734	0.100	0.75451	25.00000	Averaged
200	n-Pentane	4883	5351	0.100	9.57580	25.00000	Averaged
210	2-Methylpentane	5508	5741	0.100	4.22336	25.00000	Averaged
220	2,2,4-Trimethylpentane	5968	6121	0.100	2.56899	25.00000	Averaged
230	n-Nonane	5484	5153	0.100	-6.03220	30.00000	Averaged
240	n-Decane	5155	4508	0.100	-12.55809	25.00000	Averaged
250	n-Butylcyclohexane	5999	5658	0.100	-5.67716	25.00000	Averaged
260	1,2,4-trimethylbenzene	7237	7382	0.100	2.00344	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	1999	1762	0.100	-11.82283	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: 2NE10172.D
Report Date: 01-Jun-2020 10:33

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10172.D
Lab Smp Id: WG278391-5
Inj Date : 27-MAY-2020 01:41
Operator : DL   Inst ID: gc02.i
Smp Info : WG278391-5,SN3818
Misc Info : WG278391,WG277230-4,SN3818-2
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m\VPHFID91.m
Meth Date : 27-May-2020 07:31 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12
Processing Host: V200T3

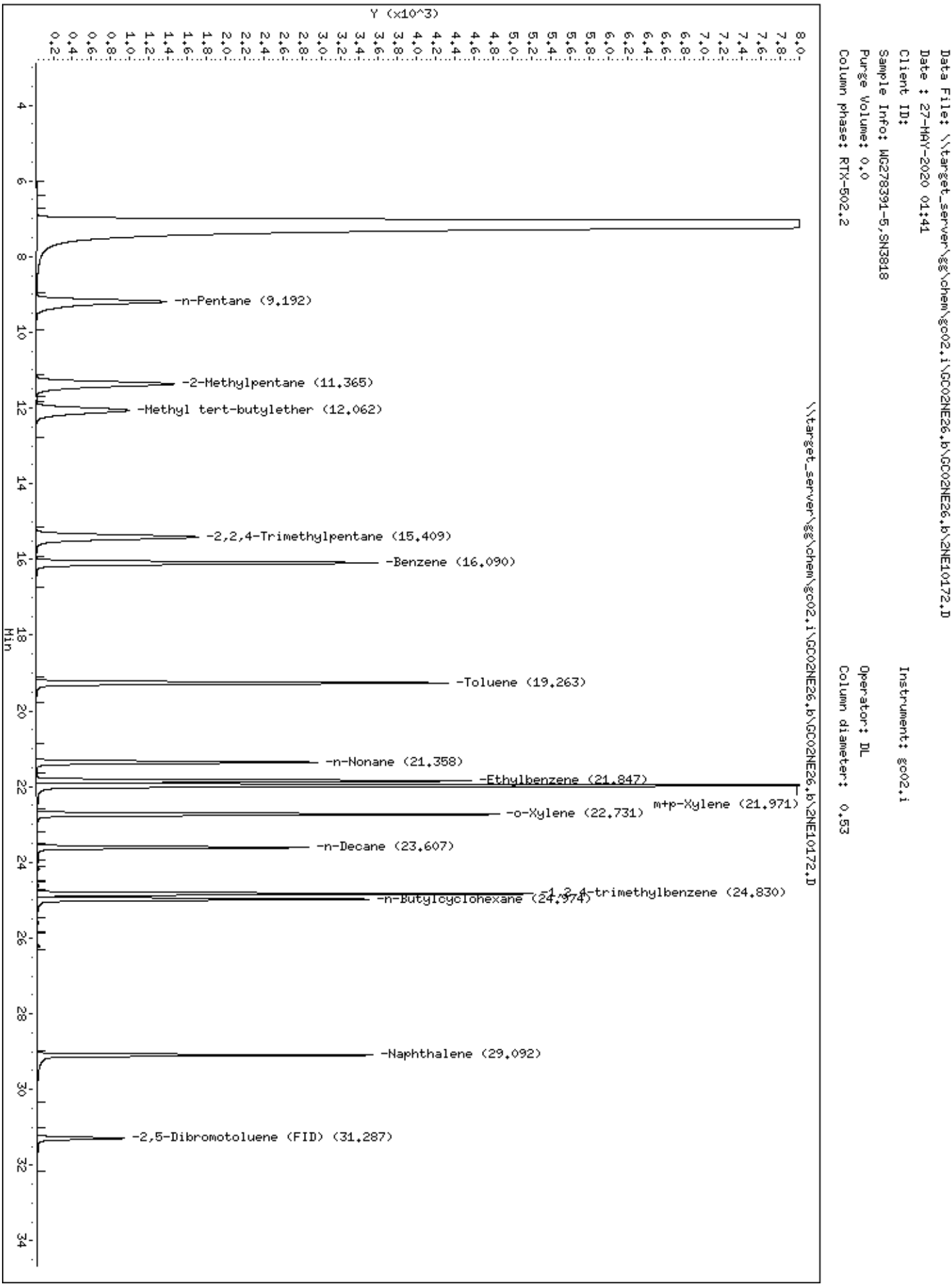
Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
	5 n-Pentane	9.192	9.065	0.127	267539	50.0000	54.8	
	6 2-Methylpentane	11.365	11.282	0.083	287034	50.0000	52.1	
	7 Methyl tert-butylether	12.062	11.992	0.070	215725	50.0000	48.1	
	8 2,2,4-Trimethylpentane	15.409	15.386	0.023	306062	50.0000	51.3	
	9 Benzene	16.089	16.065	0.024	386848	50.0000	49.5	
	11 Toluene	19.262	19.257	0.005	384353	50.0000	50.0	
	12 n-Nonane	21.357	21.361	-0.004	257651	50.0000	47.0	
	14 Ethylbenzene	21.847	21.850	-0.003	369308	50.0000	51.0	
	15 m+p-Xylene	21.970	21.975	-0.005	766644	100.000	101	
	16 o-Xylene	22.730	22.736	-0.006	386724	50.0000	50.4	
	13 n-Decane	23.606	23.614	-0.008	225400	50.0000	43.7	
	18 1,2,4-trimethylbenzene	24.829	24.838	-0.009	369091	50.0000	51.0	
	19 n-Butylcyclohexane	24.973	24.982	-0.009	282915	50.0000	47.2	
	20 Naphthalene	29.091	29.104	-0.013	272589	50.0000	51.7	
M	1 C5-C8 Aliphatic				860635	150.000	158	
M	2 C9-C12 Aliphatic				508315	100.000	90.9(a)	
$	21 2,5-Dibromotoluene (FID)	31.287	31.304	-0.017	88124	50.0000	44.1	

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).


Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10172.D
Date : 27-MAY-2020 01:41
Client ID:
Sample Info: WG278391-5,SN3818
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10172.D
Y (x10^3)
Min
-n-Pentane (9.192)
-2-Methylpentane (11.365)
-Methyl tert-butylether (12.062)
-2,2,4-Trimethylpentane (15.409)
-Benzene (16.090)
-Toluene (19.263)
-n-Nonane (21.358)
-Ethylbenzene (21.847)
m+p-Xylene (21.971)
-o-Xylene (22.731)
-n-Decane (23.607)
-1,2,4-trimethylbenzene (24.830)
-n-Butylcyclohexane (24.974)
-Naphthalene (29.092)
-2,5-Dibromotoluene (FID) (31.287)

Raw QC Data Section

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG278133-1
Client ID: Method Blank Sample
Project:
SDG: SN3818
Lab File ID: 2NE10120.D

Sample Date:
Received Date:
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		71.4	%				
2,5-Dibromotoluene (PID)		72.0	%				

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029
http://www.katahdinlab.com

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10120.D
Report Date: 01-Jun-2020 08:40

Katahdin Analytical Services

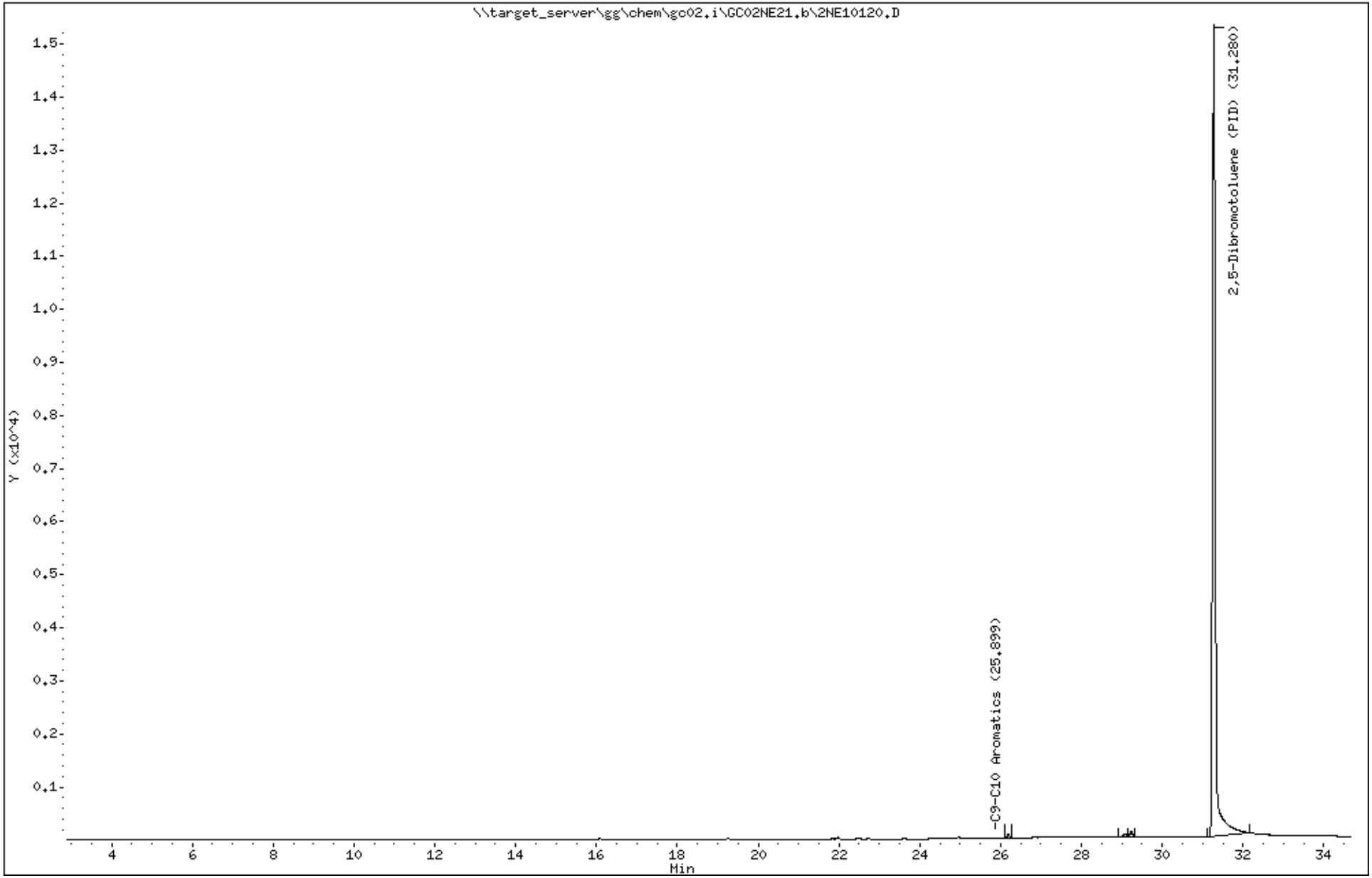
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Lab Smp Id: WG278133-1 Client Smp ID: WG278133-Blank
Inj Date : 21-MAY-2020 10:59
Operator : DL Inst ID: gc02.i
Smp Info : WG278133-1,SN3818
Misc Info : WG278133,WG277230-4,SN3818-1
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 11 2,5-Dibromotoluene (PID)	31.279	31.309	-0.030	155144	71.9991	72.0	

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10120.D
Date : 21-MAY-2020 10:59
Client ID: WG278133-Blank
Instrument: gc02.i
Sample Info: WG278133-1,SN3818
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



Data File: 2NE10120.D
Report Date: 01-Jun-2020 08:49

Katahdin Analytical Services

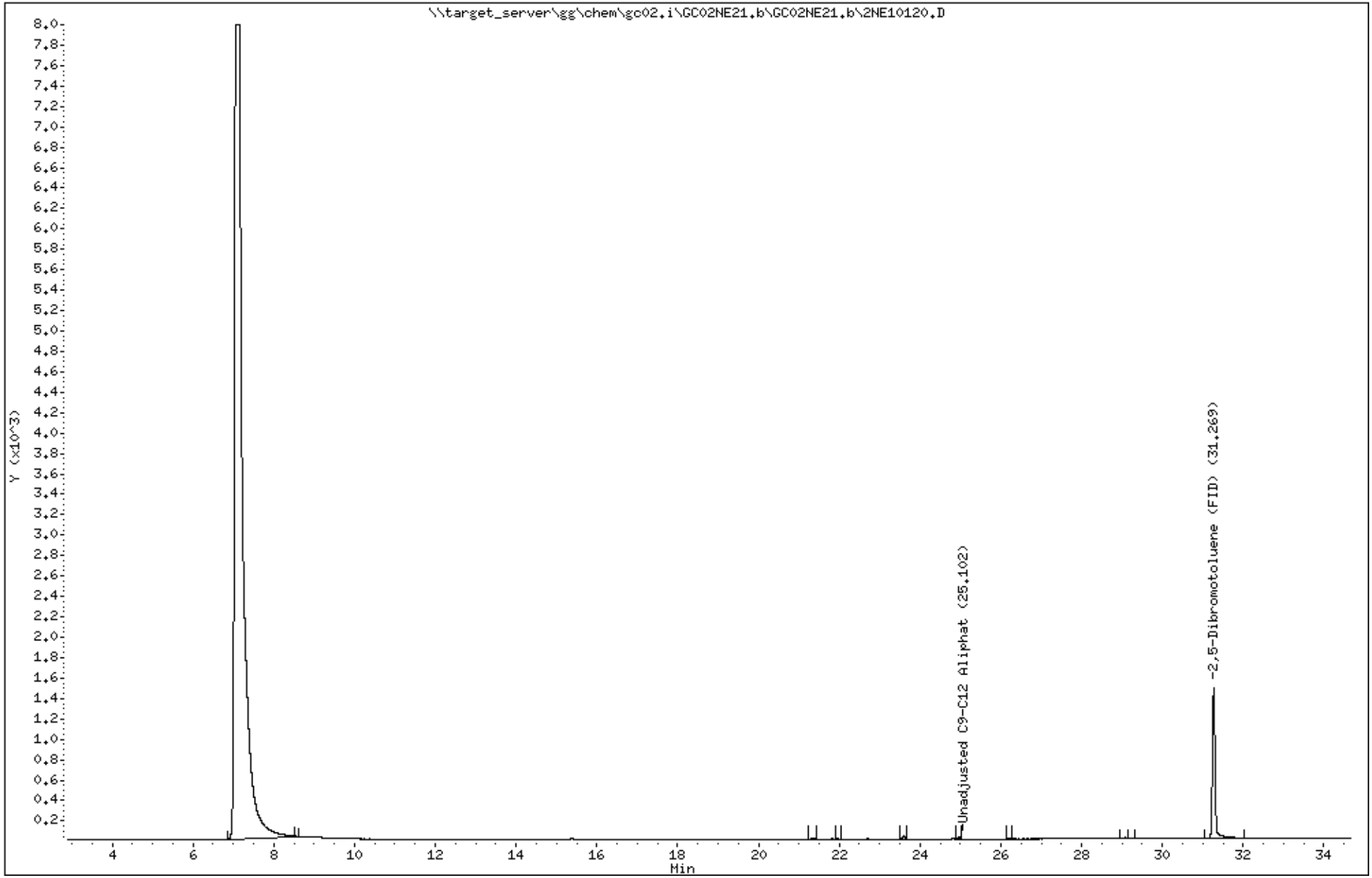
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Lab Smp Id: WG278133-1 Client Smp ID: WG278133-Blank
Inj Date : 21-MAY-2020 10:59
Operator : DL Inst ID: gc02.i
Smp Info : WG278133-1,SN3818
Misc Info : WG278133,WG277230-4,SN3818-1
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 21 2,5-Dibromotoluene (FID)	31.269	31.304	-0.035	142650	71.3680	71.4	

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10120.D
Date : 21-MAY-2020 10:59
Client ID: WG278133-Blank
Instrument: gc02.i
Sample Info: WG278133-1,SN3818
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG278391-1
Client ID: Method Blank Sample
Project:
SDG: SN3818
Lab File ID: 2NE10155.D

Sample Date:
Received Date:
Extract Date: 26-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391

Analysis Date: 26-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		102.	%				
2,5-Dibromotoluene (PID)		96.7	%				

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029
http://www.katahdinlab.com

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10155.D
Report Date: 01-Jun-2020 08:44

Katahdin Analytical Services

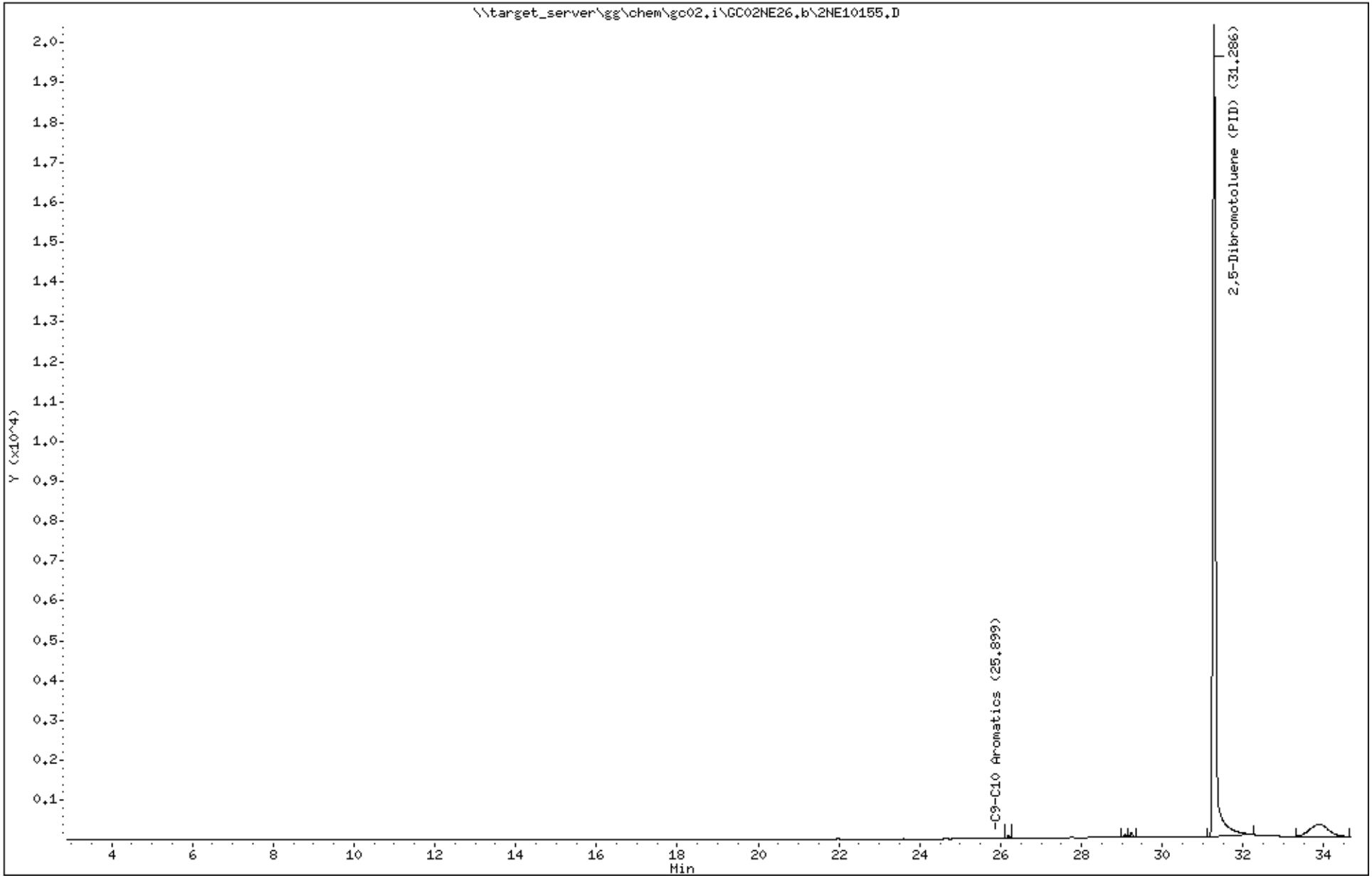
Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10155.D
Lab Smp Id: WG278391-1
Inj Date : 26-MAY-2020 10:43
Operator : DL   Inst ID: gc02.i
Smp Info : WG278391-1,SN3818
Misc Info : WG278391,WG277230-4,SN3818-2
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m
Meth Date : 27-May-2020 07:24 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 11 2,5-Dibromotoluene (PID)	31.285	31.309	-0.024	208453	96.7387	96.7	

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10155.D
Date : 26-MAY-2020 10:43
Client ID:
Instrument: gc02.i
Sample Info: WG278391-1,SN3818
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



06/05/2020
Katahdin Analytical Services 1000115

Data File: 2NE10155.D
Report Date: 01-Jun-2020 08:47

Katahdin Analytical Services

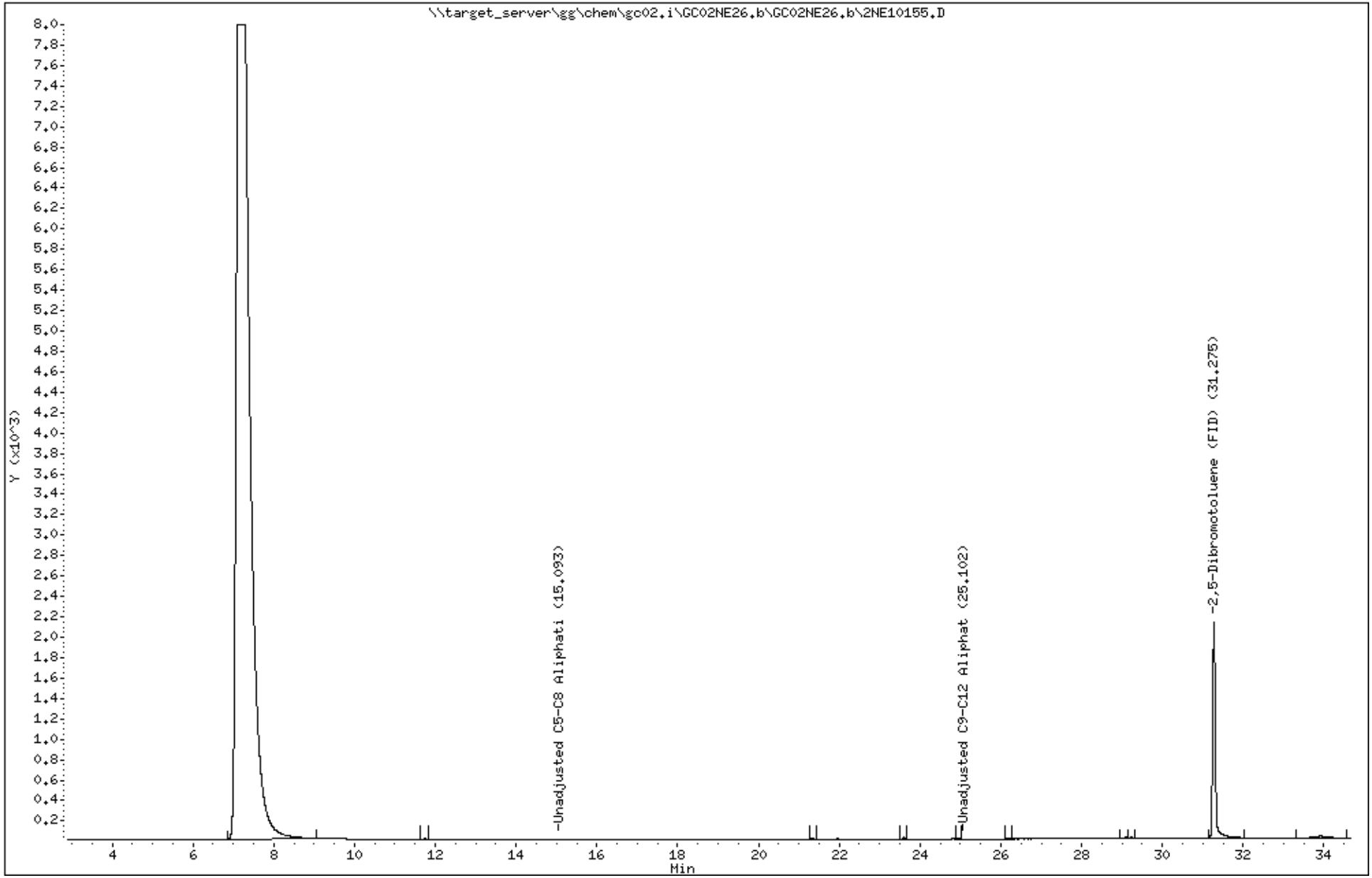
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Lab Smp Id: WG278391-1
Inj Date : 26-MAY-2020 10:43
Operator : DL   Inst ID: gc02.i
Smp Info : WG278391-1,SN3818
Misc Info : WG278391,WG277230-4,SN3818-2
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m\VPHFID91.m
Meth Date : 27-May-2020 07:31 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 21 2,5-Dibromotoluene (FID)	31.275	31.304	-0.029	204884	102.504	102	

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10155.D
Date : 26-MAY-2020 10:43
Client ID:
Instrument: gc02.i
Sample Info: WG278391-1,SN3818
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG278133-2
LCSD ID: WG278133-3
Project:
SDG: SN3818
Report Date: 01-JUN-20
LCS File ID: 2NE10121.D

Received Date:
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133
LCSD File ID: 2NE10122.D

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	269.	89.7	275.	91.7	ug/L	2	25	70-130
C9-C12 Aliphatics	200.	190.	95.0	187.	93.5	ug/L	2	25	70-130
C9-C10 Aromatics	100.	94.3	94.3	95.4	95.4	ug/L	1	25	70-130
Benzene	100.	87.9	87.9	91.1	91.1	ug/L	4	25	70-130
Ethylbenzene	100.	92.2	92.2	94.8	94.8	ug/L	3	25	70-130
Methyl tert-butylether	100.	90.4	90.4	90.4	90.4	ug/L	0	25	70-130
Naphthalene	100.	91.0	91.0	94.0	94.0	ug/L	3	25	70-130
Toluene	100.	89.2	89.2	92.6	92.6	ug/L	4	25	70-130
m+p-Xylenes	200.	183.	91.5	187.	93.5	ug/L	2	25	70-130
o-Xylene	100.	91.6	91.6	93.1	93.1	ug/L	2	25	70-130
2,5-Dibromotoluene (FID)			87.1		91.9				70-130
2,5-Dibromotoluene (PID)			89.4		96.1				70-130

600 Technology Way
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Tel:(207) 874-2400 Fax:(207) 775-4029

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Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10121.D
Report Date: 01-Jun-2020 08:40

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10121.D
Lab Smp Id: WG278133-2 Client Smp ID: WG278133-LCS
Inj Date : 21-MAY-2020 11:39
Operator : DL Inst ID: gc02.i
Smp Info : WG278133-2,SN3818
Misc Info : WG278133,WG277230-4,SN3818-1
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

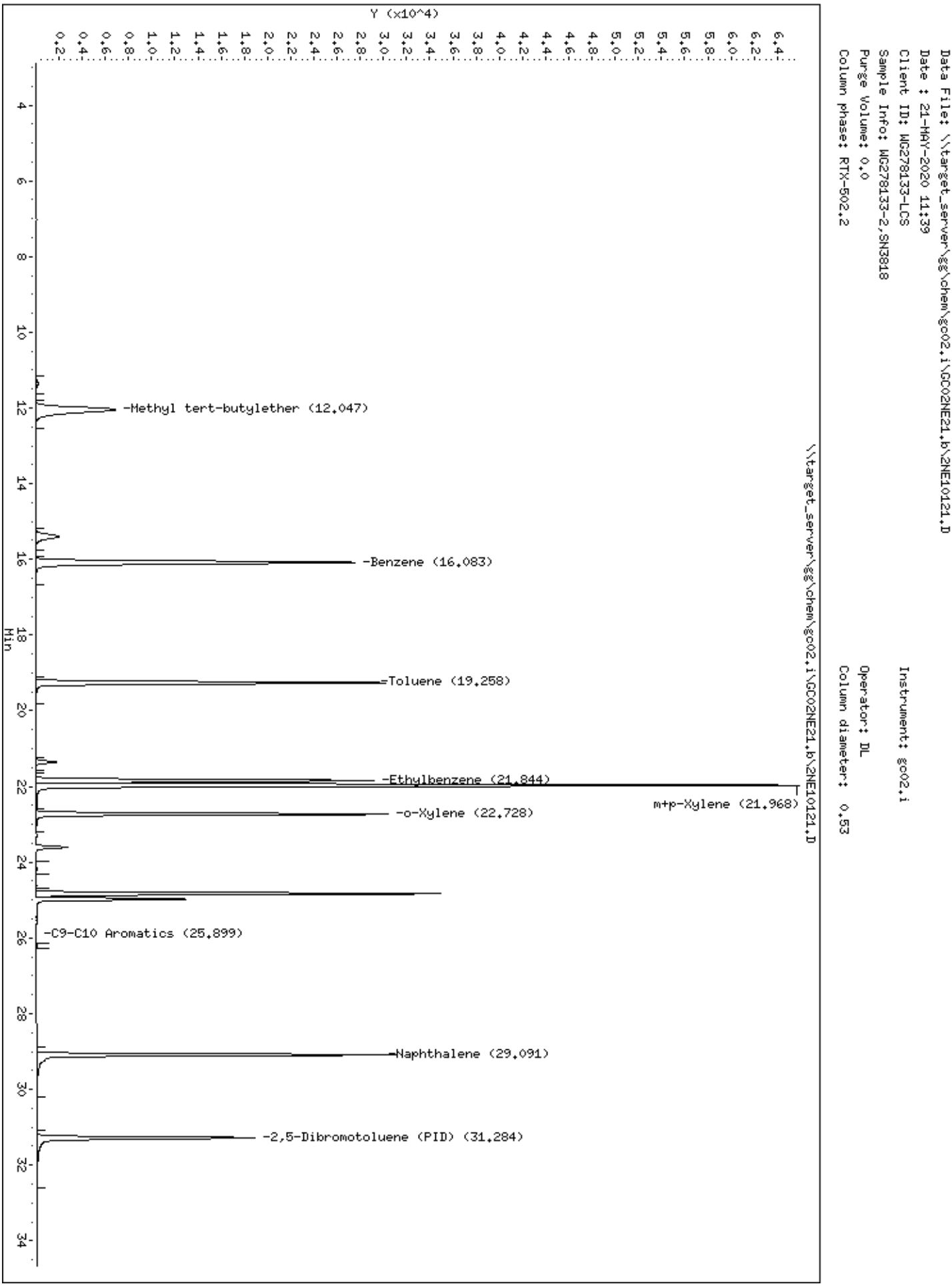
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
2	Methyl tert-butylether	12.046	12.078	-0.032	148440	90.3930	90.4	
3	Benzene	16.083	16.099	-0.016	306968	87.9178	87.9	
4	Toluene	19.257	19.274	-0.017	279754	89.1729	89.2	
5	Ethylbenzene	21.843	21.860	-0.017	248067	92.2438	92.2	
6	m+p-Xylene	21.967	21.983	-0.016	574366	183.111	183	
7	o-Xylene	22.727	22.745	-0.018	254663	91.5778	91.6	
S 9	C9-C10 Aromatics	22.818	-28.980		266585	94.3464	94.3(aM)	M3
10	Naphthalene	29.090	29.110	-0.020	251907	90.9680	91.0	
$ 11	2,5-Dibromotoluene (PID)	31.283	31.309	-0.026	192612	89.3872	89.4	

DL
11:06 am, Jun 01, 2020

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10124.D
Date : 21-MAY-2020 11:39
Client ID: WG278133-LCS
Sample Info: WG278133-2,SN3818
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.047)
-Benzene (16.083)
-Toluene (19.258)
-Ethylbenzene (21.844)
m+p-Xylene (21.968)
-o-Xylene (22.728)
-C9-C10 Aromatics (25.899)
-Naphthalene (29.091)
-2,5-Dibromotoluene (PID) (31.284)
\\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10121.D

Data File: 2NE10121.D
Report Date: 01-Jun-2020 08:49

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10121.D
Lab Smp Id: WG278133-2 Client Smp ID: WG278133-LCS
Inj Date : 21-MAY-2020 11:39
Operator : DL Inst ID: gc02.i
Smp Info : WG278133-2,SN3818
Misc Info : WG278133,WG277230-4,SN3818-1
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

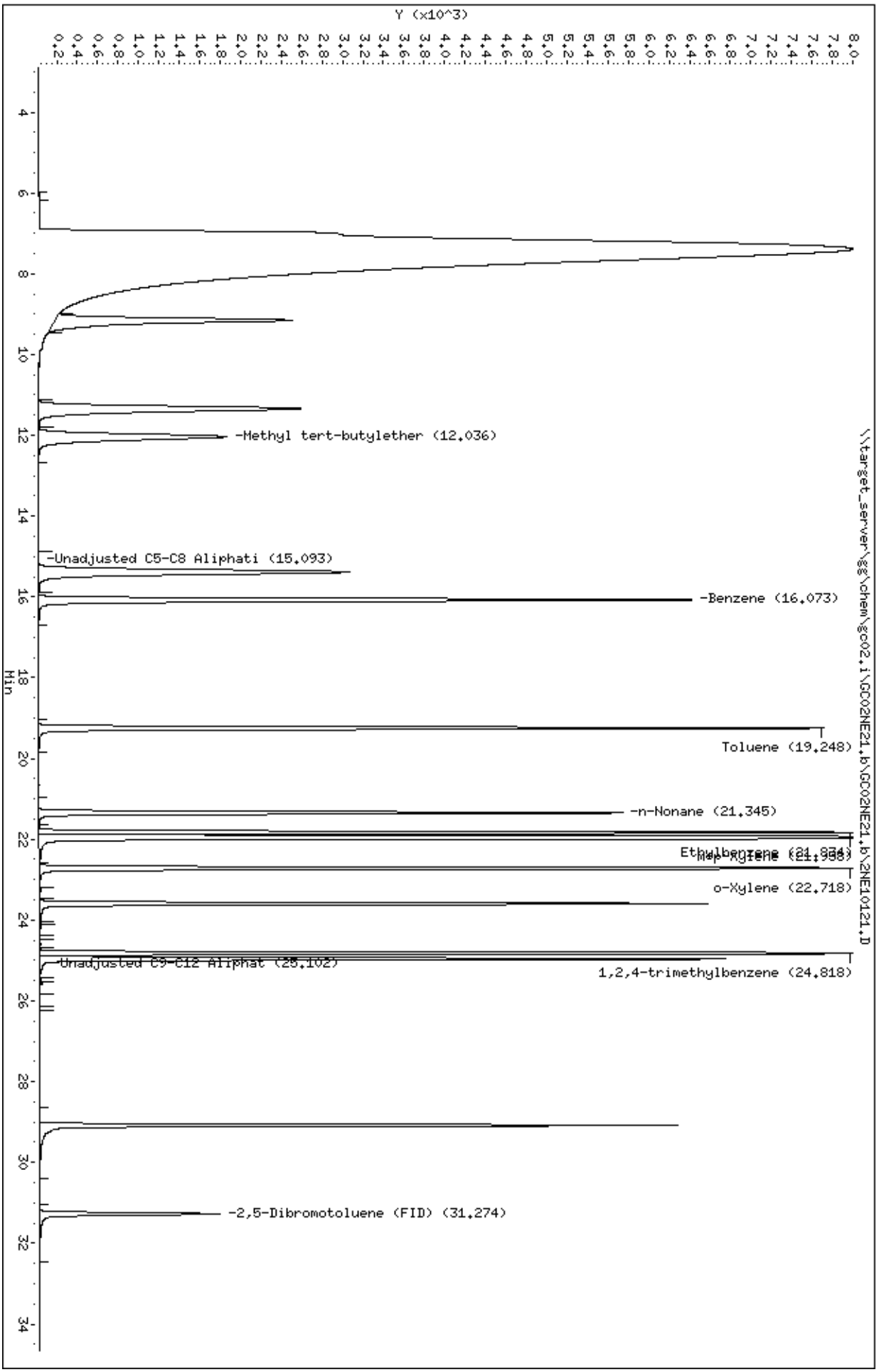
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

			RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE	
	7	Methyl tert-butylether	12.035	11.992	0.043	391378	87.3536	87.4		
	9	Benzene	16.072	16.065	0.007	692326	88.5212	88.5		
	11	Toluene	19.247	19.257	-0.010	685257	89.1447	89.1		
	12	n-Nonane	21.344	21.361	-0.017	498316	90.8703	90.9		
	14	Ethylbenzene	21.833	21.850	-0.017	672453	92.8319	92.8		
	15	m+p-Xylene	21.957	21.975	-0.018	1394615	183.625	184		
	16	o-Xylene	22.717	22.736	-0.019	711276	92.6556	92.6		
	18	1,2,4-trimethylbenzene	24.818	24.838	-0.020	686996	94.9305	94.9		
S	10	Unadjusted C5-C8 Aliphatics	8.953-21.233			1468377	269.276	269(M)	M2	
S	17	Unadjusted C9-C12 Aliphatics	21.234-28.969			1057944	189.692	190(M)	M2	
$	21	2,5-Dibromotoluene (FID)	31.273	31.304	-0.031	174136	87.1205	87.1		

DL
11:06 am, Jun 01, 2020

QC Flag Legend

M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10121.D
Date : 21-MAY-2020 11:39
Client ID: WG278133-LCS
Sample Info: WG278133-2,SN3818
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
-Methyl tert-butylether (12.036)
-Unadjusted C5-C8 Aliphati (15.093)
-Benzene (16.073)
Toluene (19.248)
-n-Nonane (21.345)
Ethylbenzene (21.934)
m&p-Xylene (21.988)
o-Xylene (22.718)
Unadjusted C9-C12 Aliphat (25.102)
1,2,4-trimethylbenzene (24.818)
-2,5-Dibromotoluene (FID) (31.274)
\\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10121.D

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10122.D
Report Date: 01-Jun-2020 08:40

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10122.D
Lab Smp Id: WG278133-3 Client Smp ID: WG278133-LCSD
Inj Date : 21-MAY-2020 12:20
Operator : DL Inst ID: gc02.i
Smp Info : WG278133-3,SN3818
Misc Info : WG278133,WG277230-4,SN3818-1
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

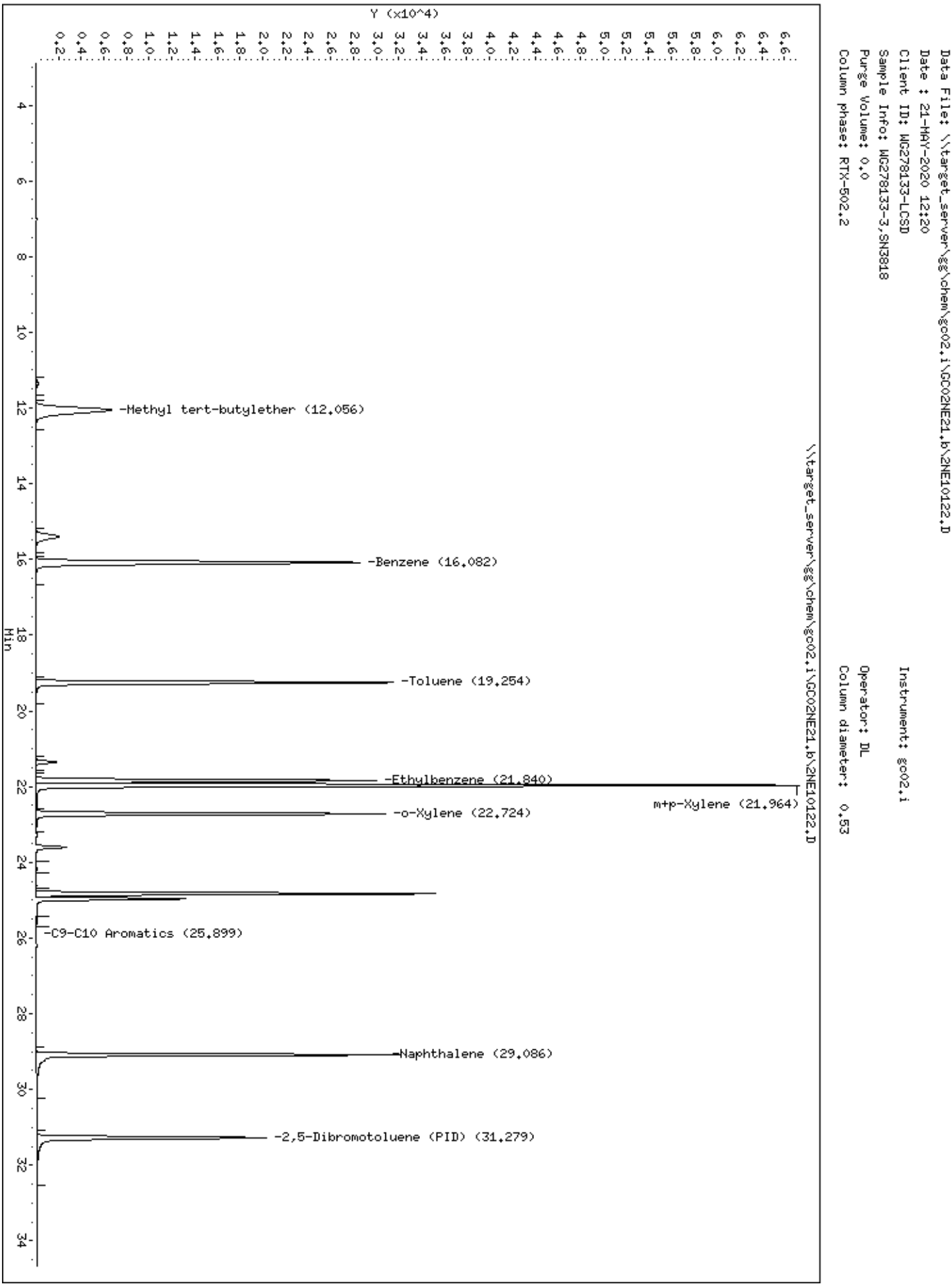
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
2	Methyl tert-butylether	12.055	12.078	-0.023	148463	90.4070	90.4	
3	Benzene	16.082	16.099	-0.017	318221	91.1407	91.1	
4	Toluene	19.254	19.274	-0.020	290580	92.6237	92.6	
5	Ethylbenzene	21.839	21.860	-0.021	255065	94.8460	94.8	
6	m+p-Xylene	21.964	21.983	-0.019	586428	186.957	187	
7	o-Xylene	22.724	22.745	-0.021	258873	93.0918	93.1	
S 9	C9-C10 Aromatics	22.818	-28.980		269593	95.4109	95.4(aM)	M3
10	Naphthalene	29.086	29.110	-0.024	260421	94.0425	94.0	
$ 11	2,5-Dibromotoluene (PID)	31.279	31.309	-0.030	207160	96.1386	96.1	

DL
11:07 am, Jun 01, 2020

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10122.D
Date : 21-MAY-2020 12:20
Client ID: WG278133-LCSD
Sample Info: WG278133-3,SN3818
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.056)
-Benzene (16.082)
-Toluene (19.254)
-Ethylbenzene (21.840)
m+p-Xylene (21.964)
-o-Xylene (22.724)
-C9-C10 Aromatics (25.899)
Naphthalene (29.086)
-2,5-Dibromotoluene (PID) (31.279)
\\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10122.D

Data File: 2NE10122.D
Report Date: 01-Jun-2020 08:49

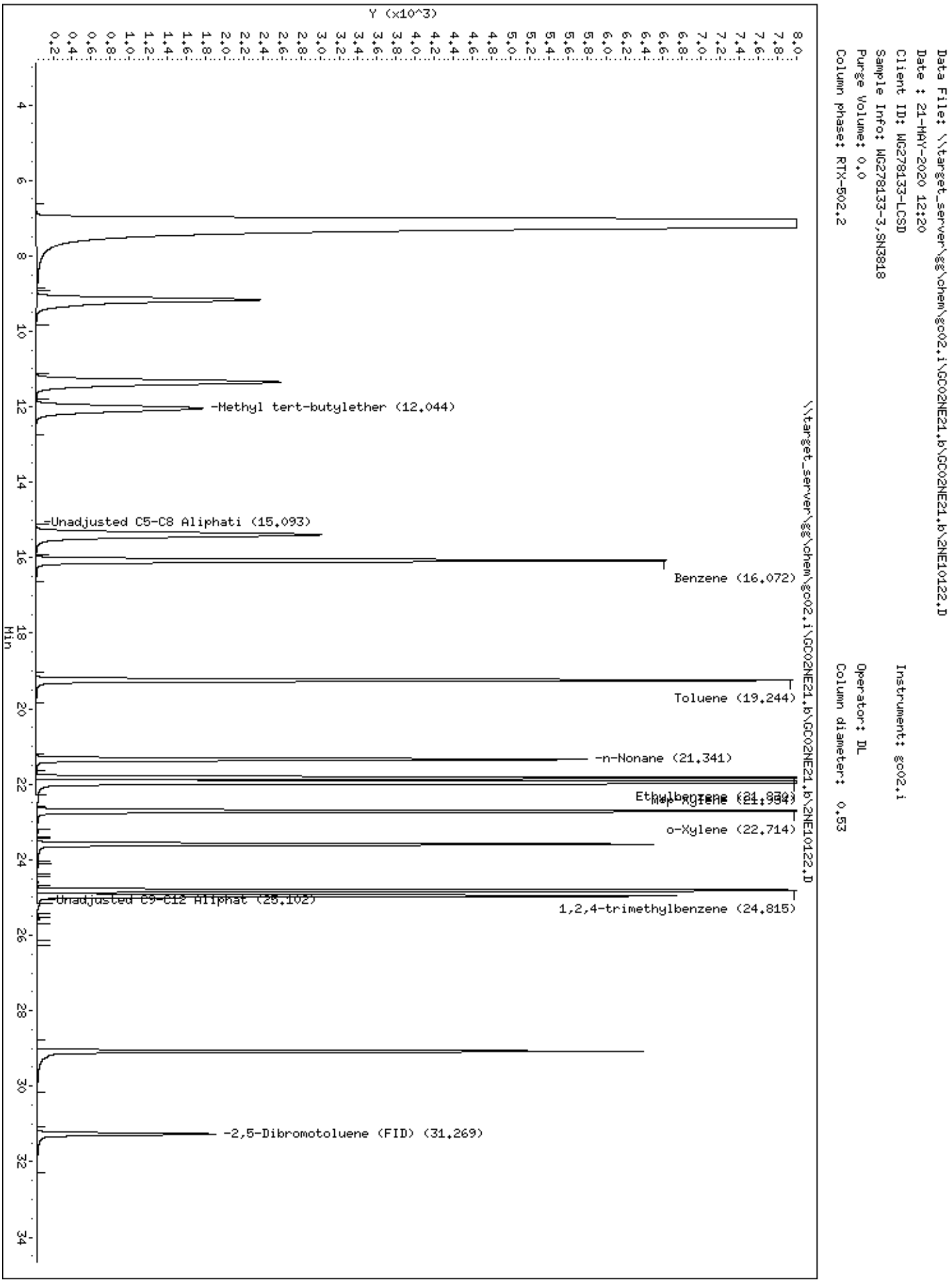
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10122.D
Lab Smp Id: WG278133-3 Client Smp ID: WG278133-LCSD
Inj Date : 21-MAY-2020 12:20
Operator : DL Inst ID: gc02.i
Smp Info : WG278133-3,SN3818
Misc Info : WG278133,WG277230-4,SN3818-1
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
	7	Methyl tert-butylether	12.043	11.992	0.051	385834	86.1162	86.1	
	9	Benzene	16.071	16.065	0.006	709024	90.6562	90.6	
	11	Toluene	19.244	19.257	-0.013	702150	91.3423	91.3	
	12	n-Nonane	21.341	21.361	-0.020	500557	91.2790	91.3	
	14	Ethylbenzene	21.829	21.850	-0.021	684399	94.4811	94.5	
	15	m+p-Xylene	21.954	21.975	-0.021	1401211	184.494	184	
	16	o-Xylene	22.714	22.736	-0.022	714228	93.0401	93.0	
	18	1,2,4-trimethylbenzene	24.814	24.838	-0.024	684529	94.5896	94.6	
S	10	Unadjusted C5-C8 Aliphatics	8.953-21.233			1502007	275.443	275	
S	17	Unadjusted C9-C12 Aliphatics	21.234-28.969			1043390	187.083	187	
$	21	2,5-Dibromotoluene (FID)	31.269	31.304	-0.035	183652	91.8814	91.9	


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10122.D
Date : 21-MAY-2020 12:20
Client ID: WG278133-LCSD
Sample Info: WG278133-3,SN3818
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
-Methyl tert-butylether (12.044)
=Unadjusted C5-C8 Aliphati (15.093)
Benzene (16.072)
Toluene (19.244)
-n-Nonane (21.341)
Ethylbenzene (21.834)
m&p-Xylene (21.994)
o-Xylene (22.714)
-Unadjusted C9-C12 Aliphat (25.102)
1,2,4-trimethylbenzene (24.815)
-2,5-Dibromotoluene (FID) (31.269)
\\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10122.D

Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG278391-2
LCSD ID: WG278391-3RA
Project:
SDG: SN3818
Report Date: 01-JUN-20
LCS File ID: 2NE10156.D

Received Date:
Extract Date: 26-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391
LCSD File ID: 2NE10158.D

Analysis Date: 26-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	286.	95.3	268.	89.3	ug/L	6	25	70-130
C9-C12 Aliphatics	200.	191.	95.5	190.	95.0	ug/L	0	25	70-130
C9-C10 Aromatics	100.	87.3	87.3	88.2	88.2	ug/L	1	25	70-130
Benzene	100.	80.6	80.6	83.0	83.0	ug/L	3	25	70-130
Ethylbenzene	100.	84.4	84.4	86.4	86.4	ug/L	2	25	70-130
Methyl tert-butylether	100.	80.0	80.0	81.3	81.3	ug/L	2	25	70-130
Naphthalene	100.	82.9	82.9	86.8	86.8	ug/L	4	25	70-130
Toluene	100.	81.5	81.5	84.0	84.0	ug/L	3	25	70-130
m+p-Xylenes	200.	169.	84.5	172.	86.0	ug/L	2	25	70-130
o-Xylene	100.	84.5	84.5	85.8	85.8	ug/L	2	25	70-130
2,5-Dibromotoluene (FID)			93.2		95.6				70-130
2,5-Dibromotoluene (PID)			92.6		95.9				70-130

600 Technology Way
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Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10156.D
Report Date: 01-Jun-2020 08:44

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10156.D
Lab Smp Id: WG278391-2 Client Smp ID: WG278391-LCS
Inj Date : 26-MAY-2020 12:14
Operator : DL Inst ID: gc02.i
Smp Info : WG278391-2,SN3818
Misc Info : WG278391,WG277230-4,SN3818-2
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m
Meth Date : 27-May-2020 07:24 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

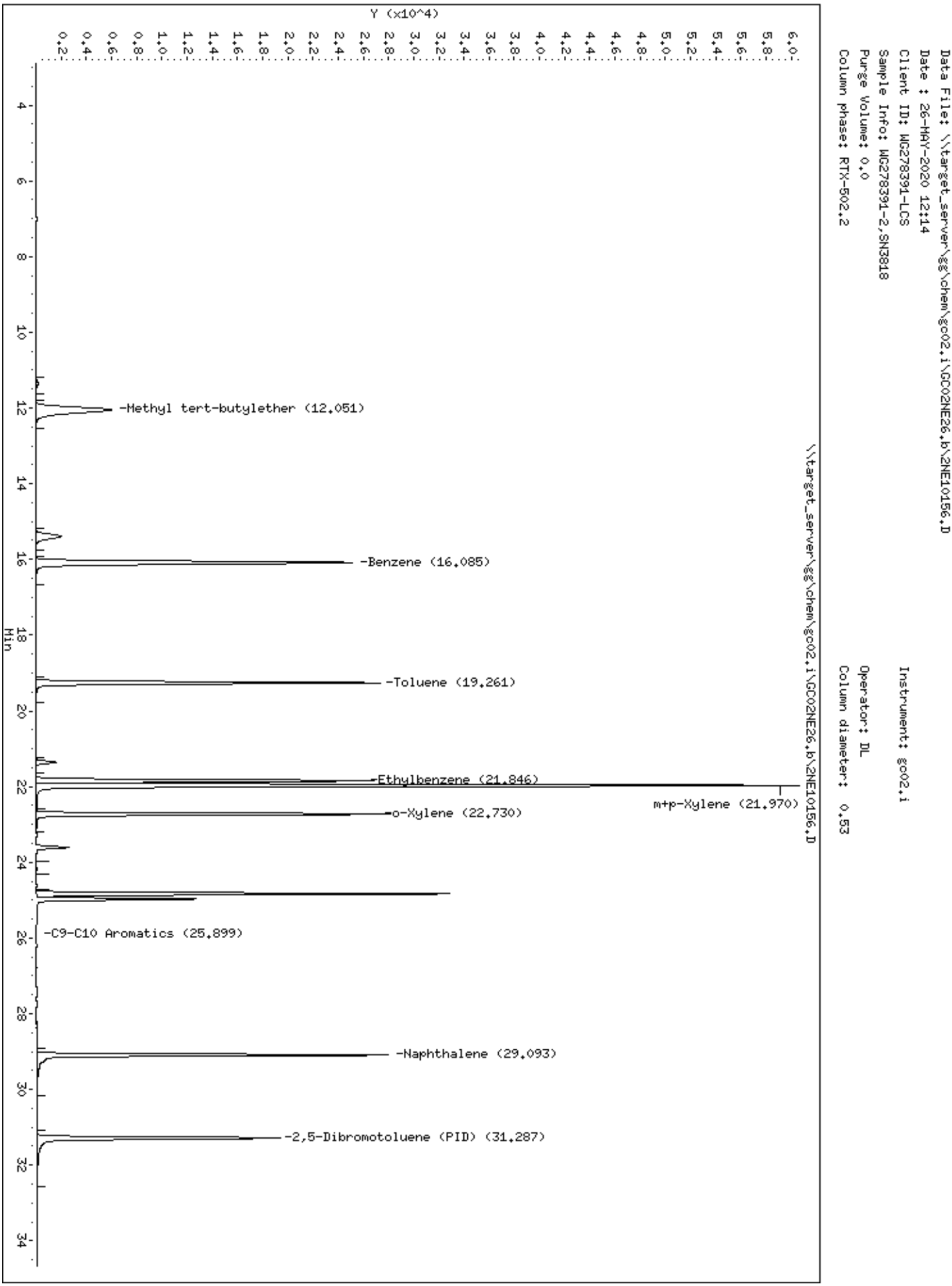
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
2	Methyl tert-butylether	12.051	12.078	-0.027	131309	79.9610	80.0	
3	Benzene	16.084	16.099	-0.015	281369	80.5861	80.6	
4	Toluene	19.260	19.274	-0.014	255610	81.4769	81.5	
5	Ethylbenzene	21.846	21.860	-0.014	226911	84.3769	84.4	
6	m+p-Xylene	21.970	21.983	-0.013	529585	168.835	169	
7	o-Xylene	22.730	22.745	-0.015	235044	84.5228	84.5	
S 9	C9-C10 Aromatics	22.818-28.980			246799	87.3440	87.3(aM)	M3
10	Naphthalene	29.092	29.110	-0.018	229609	82.9158	82.9	
$ 11	2,5-Dibromotoluene (PID)	31.286	31.309	-0.023	199439	92.5555	92.6	

DL
11:07 am, Jun 01, 2020

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10156.D
Date : 26-MAY-2020 12:14
Client ID: WG278391-LCS
Sample Info: WG278391-2,SN3818
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.051)
-Benzene (16.085)
-Toluene (19.261)
-Ethylbenzene (21.846)
m+p-Xylene (21.970)
o-Xylene (22.730)
-C9-C10 Aromatics (25.899)
-Naphthalene (29.093)
-2,5-Dibromotoluene (PID) (31.287)
\\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10156.D

Data File: 2NE10156.D
Report Date: 01-Jun-2020 08:47

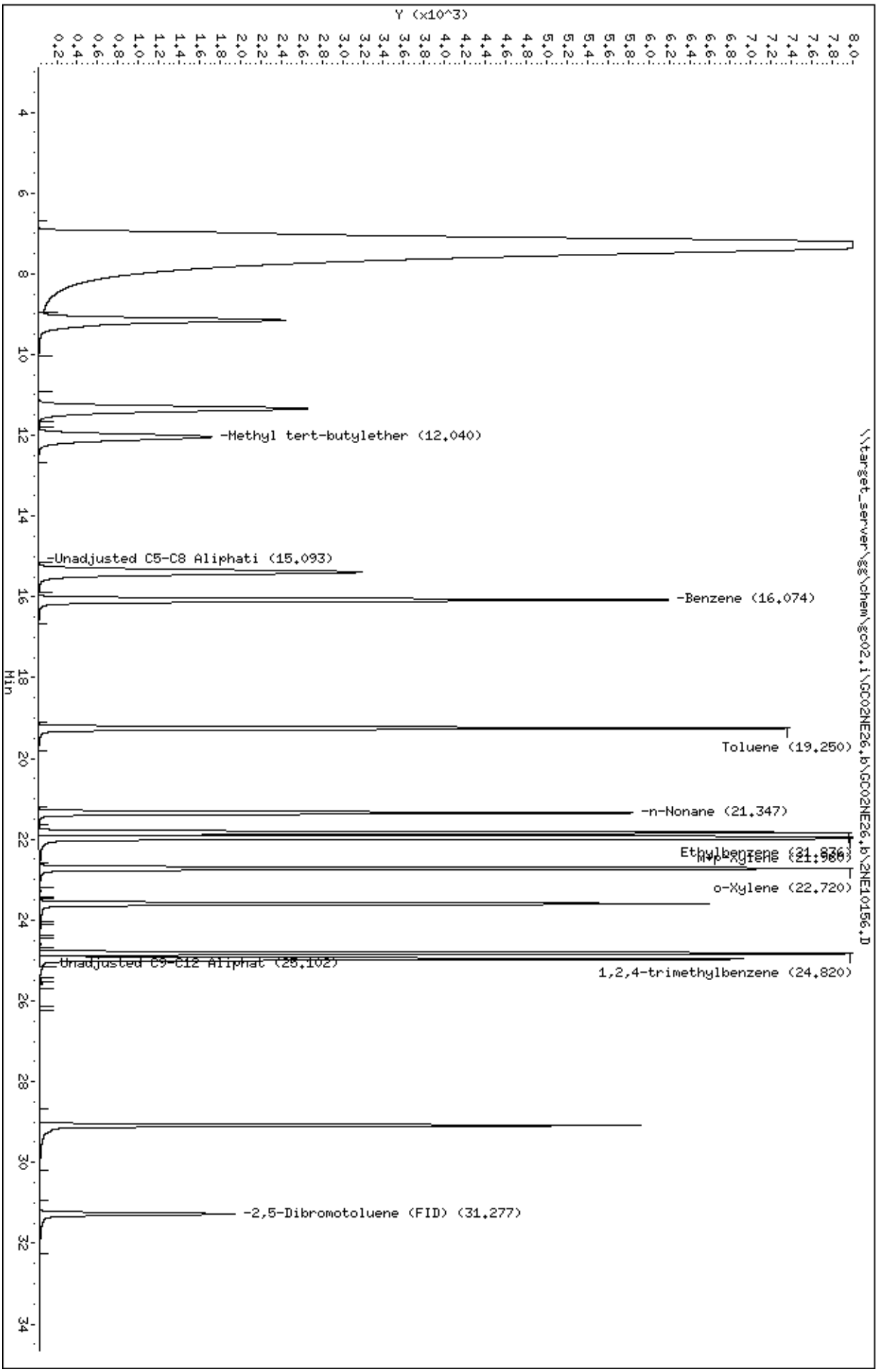
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10156.D
Lab Smp Id: WG278391-2 Client Smp ID: WG278391-LCS
Inj Date : 26-MAY-2020 12:14
Operator : DL Inst ID: gc02.i
Smp Info : WG278391-2,SN3818
Misc Info : WG278391,WG277230-4,SN3818-2
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m\VPHFID91.m
Meth Date : 27-May-2020 07:31 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
	7	Methyl tert-butylether	12.039	11.992	0.047	367391	81.9998	82.0	
	9	Benzene	16.074	16.065	0.009	668315	85.4511	85.4	
	11	Toluene	19.250	19.257	-0.007	657121	85.4845	85.5	
	12	n-Nonane	21.347	21.361	-0.014	507392	92.5254	92.5	
	14	Ethylbenzene	21.836	21.850	-0.014	647081	89.3293	89.3	
	15	m+p-Xylene	21.960	21.975	-0.015	1336881	176.024	176	
	16	o-Xylene	22.720	22.736	-0.016	685045	89.2385	89.2	
	18	1,2,4-trimethylbenzene	24.820	24.838	-0.018	665670	91.9836	92.0	
S	10	Unadjusted C5-C8 Aliphatics	8.953-21.233			1558857	285.868	286	
S	17	Unadjusted C9-C12 Aliphatics	21.234-28.969			1065810	191.103	191	
$	21	2,5-Dibromotoluene (FID)	31.276	31.304	-0.028	186268	93.1902	93.2	


Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10156.D
Date : 26-MAY-2020 12:14
Client ID: WG278391-LCS
Sample Info: WG278391-2,SN3818
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
-Methyl tert-butylether (12.040)
-Unadjusted C5-C8 Aliphati (15.093)
-Benzene (16.074)
Toluene (19.250)
-n-Nonane (21.347)
Ethylbenzene (21.836)
m+p-Xylene (21.966)
o-Xylene (22.720)
Unadjusted C9-C12 Aliphat (25.102)
1,2,4-trimethylbenzene (24.820)
-2,5-Dibromotoluene (FID) (31.277)
\\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10156.D

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10158.D
Report Date: 01-Jun-2020 08:44

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10158.D
Lab Smp Id: WG278391-3RA Client Smp ID: WG278391-LCSD
Inj Date : 26-MAY-2020 14:10
Operator : DL Inst ID: gc02.i
Smp Info : WG278391-3RA,SN3818
Misc Info : WG278391,WG277230-4,SN3818-2
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m
Meth Date : 27-May-2020 07:24 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

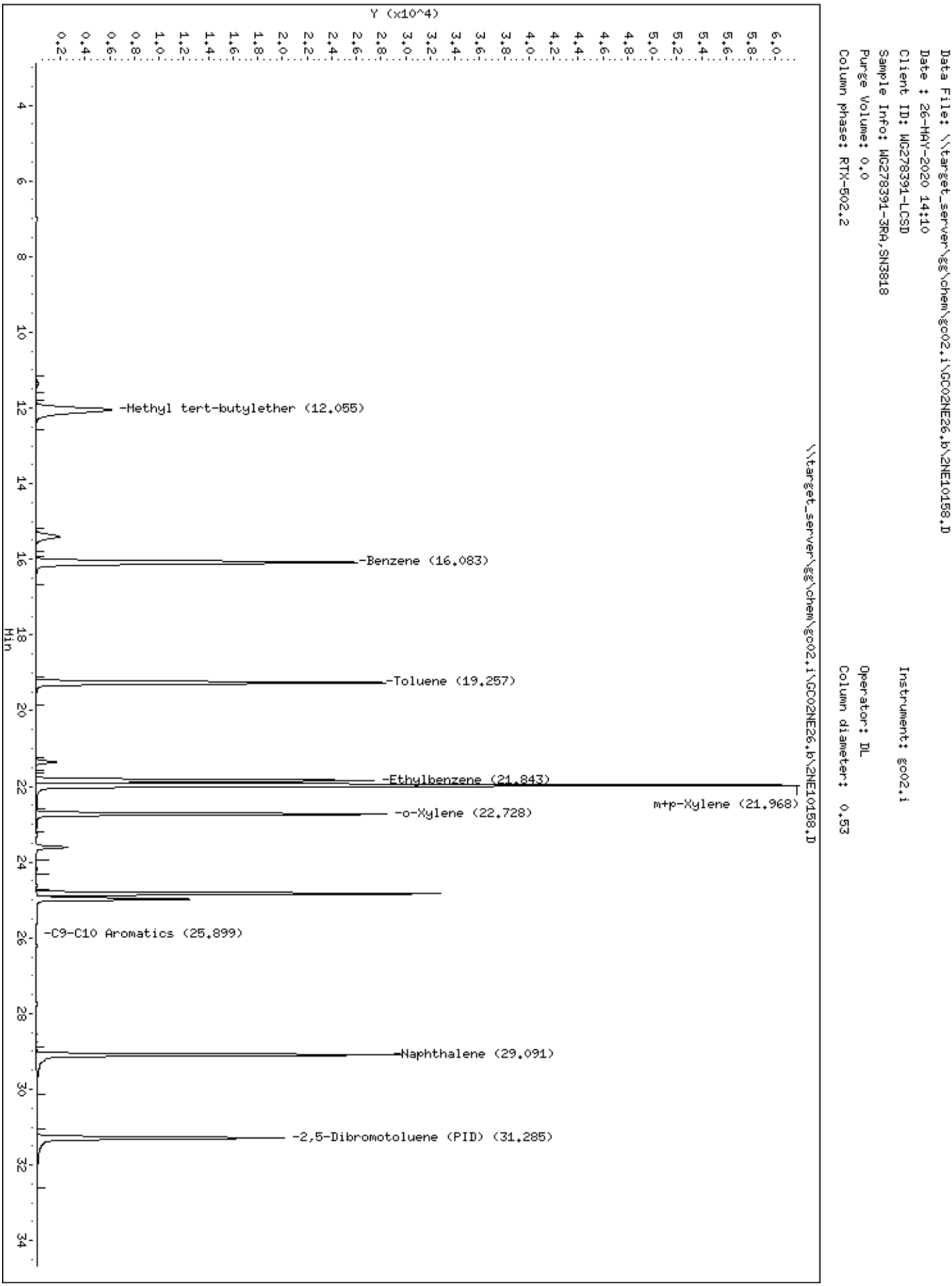
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
2	Methyl tert-butylether	12.055	12.078	-0.023	133462	81.2721	81.3	
3	Benzene	16.082	16.099	-0.017	289989	83.0549	83.0	
4	Toluene	19.257	19.274	-0.017	263509	83.9947	84.0	
5	Ethylbenzene	21.843	21.860	-0.017	232509	86.4586	86.4	
6	m+p-Xylene	21.967	21.983	-0.016	539212	171.904	172	
7	o-Xylene	22.727	22.745	-0.018	238603	85.8026	85.8	
S 9	C9-C10 Aromatics	22.818-28.980			249204	88.1951	88.2(aM)	M3
10	Naphthalene	29.091	29.110	-0.019	240383	86.8064	86.8	
$ 11	2,5-Dibromotoluene (PID)	31.284	31.309	-0.025	206646	95.9001	95.9	

DL
11:07 am, Jun 01, 2020

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10158.D
Date : 26-MAY-2020 14:10
Client ID: WG278391-LCSD
Sample Info: WG278391-3RA,SN3818
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.055)
-Benzene (16.083)
-Toluene (19.257)
-Ethylbenzene (21.843)
m+p-Xylene (21.968)
-o-Xylene (22.728)
-C9-C10 Aromatics (25.899)
Naphthalene (29.091)
-2,5-Dibromotoluene (PID) (31.285)
\\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10158.D

Data File: 2NE10158.D
Report Date: 01-Jun-2020 08:47

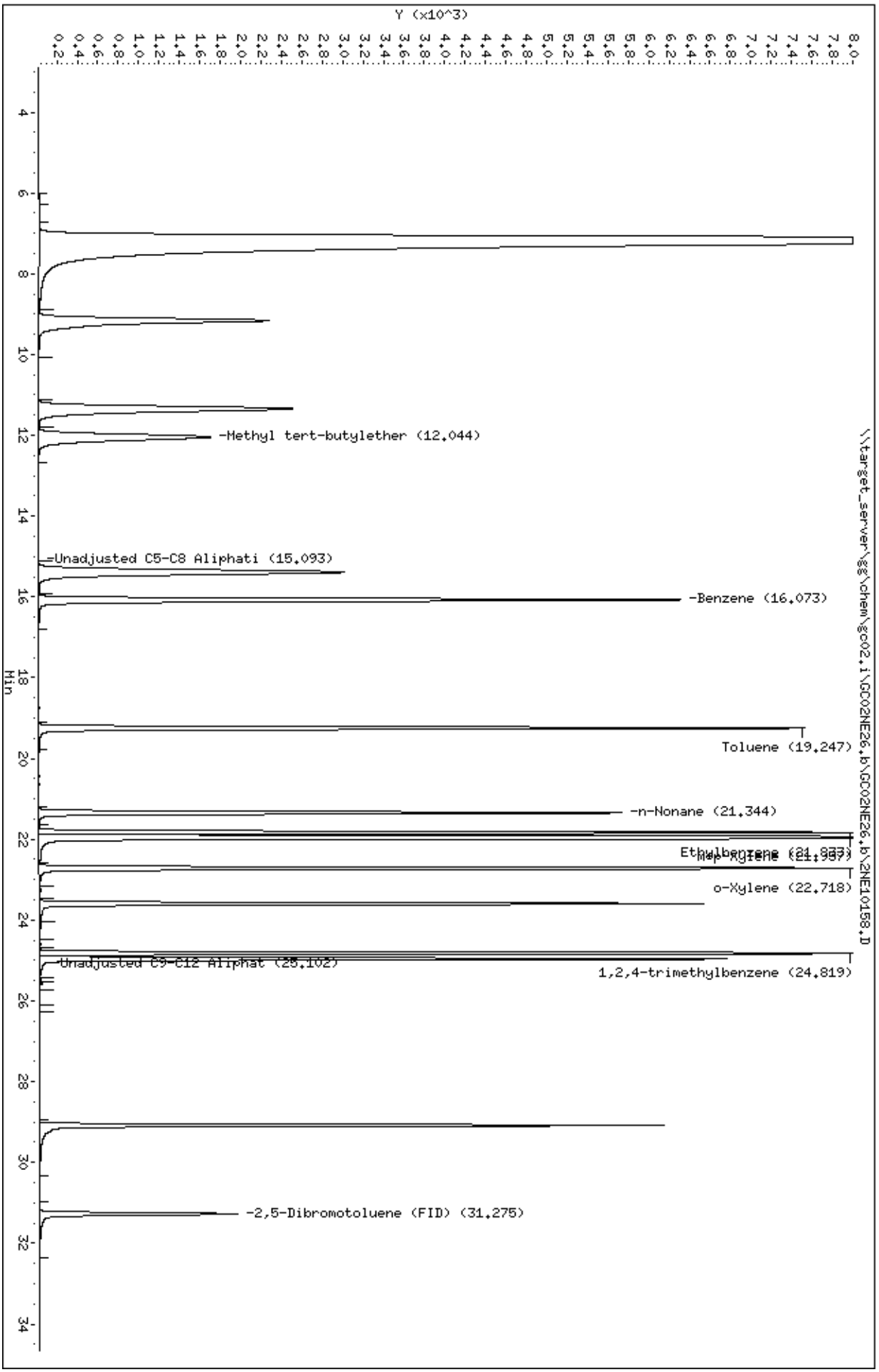
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10158.D
Lab Smp Id: WG278391-3RA Client Smp ID: WG278391-LCSD
Inj Date : 26-MAY-2020 14:10
Operator : DL Inst ID: gc02.i
Smp Info : WG278391-3RA,SN3818
Misc Info : WG278391,WG277230-4,SN3818-2
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m\VPHFID91.m
Meth Date : 27-May-2020 07:31 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)	REVIEW CODE
	Compounds	RT	EXP RT	DLT RT	RESPONSE			
7	Methyl tert-butylether	12.043	11.992	0.051	366218	81.7380	81.7	
9	Benzene	16.072	16.065	0.007	678380	86.7380	86.7	
11	Toluene	19.246	19.257	-0.011	667889	86.8853	86.9	
12	n-Nonane	21.344	21.361	-0.017	498802	90.9589	91.0	
14	Ethylbenzene	21.833	21.850	-0.017	652896	90.1321	90.1	
15	m+p-Xylene	21.957	21.975	-0.018	1355939	178.533	178	
16	o-Xylene	22.717	22.736	-0.019	690123	89.9000	89.9	
18	1,2,4-trimethylbenzene	24.818	24.838	-0.020	665962	92.0239	92.0	
S 10	Unadjusted C5-C8 Aliphatics	8.953-21.233			1463467	268.375	268	
S 17	Unadjusted C9-C12 Aliphatics	21.234-28.969			1059455	189.963	190	
$ 21	2,5-Dibromotoluene (FID)	31.274	31.304	-0.030	191203	95.6592	95.6	


Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10158.D
Date : 26-MAY-2020 14:10
Client ID: WG278391-LCSD
Sample Info: WG278391-3RA,SN3818
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
-Methyl tert-butylether (12.044)
=Unadjusted C5-C8 Aliphati (15.093)
-Benzene (16.073)
Toluene (19.247)
-n-Nonane (21.344)
Ethylbenzene (21.837)
m&p-Xylene (21.997)
o-Xylene (22.718)
Unadjusted C9-C12 Aliphat (25.102)
1,2,4-trimethylbenzene (24.819)
-2,5-Dibromotoluene (FID) (31.275)
\\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10158.D

Logbooks and Supporting Documents

Katahdin Analytical Services

GC Laboratory Instrument Runlog

Instrument: GC02

Method (Circle): (MADEP-VPH-98-1) MEDEP 4.2.17 SW846 8015(M)

Date	Init.	Sample Name	Amt. Purged	SP. #	Result File	Dil.	Y/N	Method	pH	Comments
5-6-20	DL	CV50	5mL	7	2NE10027	1	N	VPHR1UFID90	—	
↓	↓	CV50	↓	8	↓ 28	↓	N	↓	↓	FSVPID
5-7-20	DL	Rinse	5mL	1	2NE10029	1	N	VPHR1UFID9	—	
		ICal50	5mL	2	30		N			
		1	10	3	31		Y			WG-277230-1
		5	50	4	32		Y			↓ -2
		10	100	5	33		N			
		100	100	6	34		Y			WG-277230-5
		300	60	7	35		Y			-6
		50	50	8	36		Y			-4
		↓ 10	100	9	37		Y			-3
↓	↓	IND	50 ↓	10	↓ 38	↓	Y	↓	↓	↓ -7

	Std. Name	Conc.	Std. Code	Std. Code
1	VPH Cal mix	50 ug/ml	GCV 4409	GCV
2	VPH Surr. mix	100 ug/ml	GCV	GCV
3	VPH LCS mix	100 ug/ml	GCV 4413	GCV
4	GRO Cal mix	250 ug/mL Total	GCV	GCV
5	GRO Surr. Mix	50 ug/mL	GCV	GCV
6	GRO LCS mix	250 ug/mL Total	GCV	GCV
7	VPH L	5ug/mL	GCV 4410	
8	VPH H	25ug/mL	GCV 4411	

VPH CC = 50uL Std. 1
VPH LCS = 50uL Std. 3
VPH Samples = 50uL Std. 2

GRO CC = 20uL Std. 4
GRO LCS = 20uL Std. 5 and 6
GRO Samples = 20uL Std. 5

Katahdin Analytical Services
GC Laboratory Instrument Runlog

Instrument: GC02

Method (Circle): (MADEP-VPH-98-1) MEDEP 4.2.17 SW846 8015(M)

Date	Init.	Sample Name	Amt. Purged	SP. #	Result File	Dil.	Y/N	Method	pH	Comments
5-20-20	DL	SN3760-3REB	20mL	10	2NE10114	1	Y	VPHPIDFID91	—	
		-4REB		11	115		Y			
		CV50	5mL	12	116		Y			SS WG278045-5
5-21-20	DL	Rinse	5mL	1	2NE10117	1	N	VPHPIDFID91	—	DL 6-1-20
		CV50		2	118		N			SS WG278045-4
				3	119		Y			
		WG278045-1		4	120		Y			*DL 6-1-20
		-2		5	121		Y			
		-3		6	122		Y			
		SN3818-1A		7	123		Y		12	
		-2A		8	124		N			SS
		-3A		9	125		Y			
		-4A		10	126		Y			C9-C10 overlap FTB C9-C12
		-5A		11	127		Y			
		SN3819-1A		12	128		Y			*DL 5-22-20
		SN3820-1A		13	129		N			SS
		-2A		14	130		N			
		-3A		15	131		N			
		-4A		16	132		N			
		SN3830-1A		17	133		N			
		-2A		18	134		N			
		-3A		19	135		N			
		-4A		20	136		N			
5-22-20		-5A		21	137		N			
		-6A		22	138		N			
		CV50		23	139		Y		—	SS 6 FFD
5-22-20	DL	Rinse	5mL	1	2NE10140	1	N	VPHPIDFID90	—	DL5-22-20*
		CV50		2	141		Y			WG278045-3 DL 6-1-20
		WG278238-1		3	142		N			New SS MIX SS

	Std. Name	Conc.	Std. Code	Std. Code
1	VPH Cal mix	50 ug/ml	GCV 4415	GCV
2	VPH Surr. mix	100 ug/ml	GCV 4418	GCV 4425
3	VPH LCS mix	100 ug/ml	GCV 4417	GCV
4	GRO Cal mix	250 ug/mL Total	GCV	GCV
5	GRO Surr. Mix	50 ug/mL	GCV	GCV
6	GRO LCS mix	250 ug/mL Total	GCV	GCV
7				
8				

VPH CC = 50uL Std. 1
VPH LCS = 50uL Std. 3
VPH Samples = 50uL Std. 2

GRO CC = 20uL Std. 4
GRO LCS = 20uL Std. 5 and 6
GRO Samples = 20uL Std. 5

pH lot # 690803

Katahdin Analytical Services
GC Laboratory Instrument Runlog

Instrument: GC02

Method (Circle): MADEP-VPH-98-1 MEDEP 4.2.17 SW846 8015(M)

Date	Init.	Sample Name	Amt. Purged	SP. #	Result File	Dil.	Y/N	Method	pH	Comments
5-22-20	DL	Mblank	5mL	4	2NE0143	1	Y	VPHPLIFID91	—	
				5	144		N			TSN
				6	145		Y			
		Rinse		7	146		N			
		CV50		8	147		Y			
				9	148		Y			
				10	149		Y			
		mblank		11	150		Y			
				12	151		AF			N DL 5-26-20 SN
				13	152		N			
5-26-20	DL	Rinse	5mL	1	2NE0153	1	N	VPHRIDFID91	—	
		CV50		2	154		Y			New MK MC278391-4
		WG278391-1		3	155		Y			
		-2		4	156		Y			
		-3		5	157		N			SN
		-3RA		6	158		Y			
		SN3820-1RAB		7	159		Y			SN
		-2RAB		8	160		Y			
		-3RAB		9	161		Y			
		-4RAB		10	162		Y			
		SN3830-1RAB		11	163		Y			SN PID
		-2RAB		12	164		Y			130th
		-3RAB		13	165		Y			
		-4RAB		14	166		Y			
		-5RAB		15	167		Y			
		-6RAB		16	168		Y			
		SN3818-2RAB		17	169		Y			PID
5-27-20		-4PLB		18	170	4	Y		L2	DL 5-26-20 SN
		-5PLB		19	171		Y			

	Std. Name	Conc.	Std. Code	Std. Code
1	VPH Cal mix	50 ug/ml	GCV 4415	GCV 4426
2	VPH Surr. mix	100 ug/ml	GCV 4405	GCV
3	VPH LCS mix	100 ug/ml	GCV 4417	GCV
4	GRO Cal mix	250 ug/mL Total	GCV	GCV
5	GRO Surr. Mix	50 ug/mL	GCV	GCV
6	GRO LCS mix	250 ug/mL Total	GCV	GCV
7				
8				

VPH CC = 50uL Std. 1
VPH LCS = 50uL Std. 3
VPH Samples = 50uL Std. 2

GRO CC = 20uL Std. 4
GRO LCS = 20uL Std. 5 and 6
GRO Samples = 20uL Std. 5

PH lot #G08003

Katahdin Analytical Services
GC Laboratory Instrument Runlog

Instrument: GC02

Method (Circle): MADEP-VPH-98-1 MEDEP 4.2.17 SW846 8015(M)

Date	Init.	Sample Name	Amt. Purged	SP. #	Result File	Dil.	Y/N	Method	pH	Comments
5-22-20	TL	CV50	5mL	20	2NE10172	1	Y	VPHGIDFID01	—	WG-278391-5

	Std. Name	Conc.	Std. Code	Std. Code
1	VPH Cal mix	50 ug/ml	GCV 4426	GCV
2	VPH Surr. mix	100 ug/ml	GCV	GCV
3	VPH LCS mix	100 ug/ml	GCV	GCV
4	GRO Cal mix	250 ug/mL Total	GCV	GCV
5	GRO Surr. Mix	50 ug/mL	GCV	GCV
6	GRO LCS mix	250 ug/mL Total	GCV	GCV
7				
8				

VPH CC = 50uL Std. 1
VPH LCS = 50uL Std. 3
VPH Samples = 50uL Std. 2

GRO CC = 20uL Std. 4
GRO LCS = 20uL Std. 5 and 6
GRO Samples = 20uL Std. 5

Shipping and Receiving Documents

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lawhon, Jon K	Carrier Tracking No(s):	COC No: 680-611445.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jon.lawhon@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Katahdin Analytical Services		Accreditations Required (See note): Dept. of Defense ELAP - A2LA; DoD - ANAB		Job #: 680-183916-2
Address: 600 Technology Way, ,	Due Date Requested: 6/1/2020			
City: Scarborough	TAT Requested (days):			
State, Zip: ME, 04074				
Phone:	PO #:			
Email:	WO #:			
Project Name: JV, LTM - AOC 32/43A Spring 2020	Project #: 68023801			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (MA VPH + BTEX)/ MA VPH	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
32M-01-13XBR-SPR20 (680-183916-1)	5/14/20	11:15 Eastern		Water			X	2	
32M-01-14XOB-SPR20 (680-183916-2)	5/14/20	13:40 Eastern		Water			X	2	
32M-01-17XBR-SPR20 (680-183916-3)	5/14/20	11:00 Eastern		Water			X	2	
32M-01-18XBR-SPR20 (680-183916-4)	5/14/20	10:30 Eastern		Water			X	2	
AOC32-DUP01-SPR20 (680-183916-5)	5/14/20	08:00 Eastern		Water			X	2	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Paul Lin	5/18/2020 1359				
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

06/05/2020

eurofins | Environment Testing America



ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-190731-1
Client Project/Site: Fort Devens

For:
Seres Engineering & Services LLC
669 Marina Drive
Suite B7
Charleston, South Carolina 29492

Attn: Nathan R Mullens

Kathryn Smith

Authorized for release by:
11/18/2020 6:56:30 PM

Kathryn Smith, Client Service Manager
(912)250-0275
Kathy.Smith@Eurofinset.com

LINKS

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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Qualifiers

Metals

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

General Chemistry

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens

Job ID: 680-190731-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-190731-1	AAFES-2-FAL20	Water	10/27/20 11:45	10/29/20 09:50	
680-190731-2	AAFES-7-FAL20	Water	10/27/20 12:55	10/29/20 09:50	
680-190731-3	AOC43G-DUP01-FAL20	Water	10/27/20 15:00	10/29/20 09:50	
680-190731-4	XGM-93-02X-FAL20	Water	10/27/20 10:55	10/29/20 09:50	
680-190731-5	XGM-94-04X-FAL20	Water	10/27/20 11:55	10/29/20 09:50	
680-190731-6	XGM-94-06X-FAL20	Water	10/27/20 15:00	10/29/20 09:50	
680-190731-10	AOC43G-TB1-FAL20	Water	10/27/20 00:00	10/29/20 09:50	

Job ID: 680-190731-1

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE
Client: Seres Engineering & Services LLC
Project: Fort Devens

Report Number: 680-190731-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT
The samples were received on 10/29/2020; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.3 C.

METALS (ICP)
Samples AAFES-2-FAL20 (680-190731-1), AAFES-7-FAL20 (680-190731-2), AOC43G-DUP01-FAL20 (680-190731-3), XGM-93-02X-FAL20 (680-190731-4), XGM-94-04X-FAL20 (680-190731-5) and XGM-94-06X-FAL20 (680-190731-6) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 11/04/2020 and analyzed on 11/08/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS
Samples AAFES-2-FAL20 (680-190731-1), AAFES-7-FAL20 (680-190731-2), AOC43G-DUP01-FAL20 (680-190731-3), XGM-93-02X-FAL20 (680-190731-4), XGM-94-04X-FAL20 (680-190731-5) and XGM-94-06X-FAL20 (680-190731-6) were analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 11/04/2020 and analyzed on 11/05/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ALKALINITY
Samples AAFES-2-FAL20 (680-190731-1), AAFES-7-FAL20 (680-190731-2), AOC43G-DUP01-FAL20 (680-190731-3), XGM-93-02X-FAL20 (680-190731-4), XGM-94-04X-FAL20 (680-190731-5) and XGM-94-06X-FAL20 (680-190731-6) were analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 11/06/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Subcontract Work
Method MA VPH + BTEX: This method was subcontracted to Katahdin Analytical Services Inc. The subcontract laboratory certification is different from that of the facility issuing the final report.

Client Sample ID: AAFES-2-FAL20

Lab Sample ID: 680-190731-1

Date Collected: 10/27/20 11:45

Matrix: Water

Date Received: 10/29/20 09:50

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	17000		50	17	ug/L		11/04/20 14:50	11/08/20 01:41	1
Manganese	3200		10	1.0	ug/L		11/04/20 14:50	11/08/20 01:41	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	13		3.0	1.5	ug/L		11/04/20 14:50	11/05/20 15:25	1

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	150		10	3.1	mg/L			11/06/20 01:06	1

Client Sample ID: AAFES-7-FAL20

Lab Sample ID: 680-190731-2

Date Collected: 10/27/20 12:55

Matrix: Water

Date Received: 10/29/20 09:50

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	4800		50	17	ug/L		11/04/20 14:50	11/08/20 01:45	1
Manganese	3400		10	1.0	ug/L		11/04/20 14:50	11/08/20 01:45	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	10		3.0	1.5	ug/L		11/04/20 14:50	11/05/20 15:28	1

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	72		10	3.1	mg/L			11/06/20 01:11	1

Client Sample ID: AOC43G-DUP01-FAL20

Lab Sample ID: 680-190731-3

Date Collected: 10/27/20 15:00

Matrix: Water

Date Received: 10/29/20 09:50

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	2000		50	17	ug/L		11/04/20 14:50	11/08/20 01:50	1
Manganese	2200		10	1.0	ug/L		11/04/20 14:50	11/08/20 01:50	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.7		3.0	1.5	ug/L		11/04/20 14:50	11/05/20 15:31	1

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	130		10	3.1	mg/L			11/06/20 01:17	1

Client Sample ID: XGM-93-02X-FAL20

Lab Sample ID: 680-190731-4

Date Collected: 10/27/20 10:55

Matrix: Water

Date Received: 10/29/20 09:50

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	6400		50	17	ug/L		11/04/20 14:50	11/08/20 01:55	1

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens

Job ID: 680-190731-1

Client Sample ID: XGM-93-02X-FAL20

Lab Sample ID: 680-190731-4

Date Collected: 10/27/20 10:55
Matrix: Water
Date Received: 10/29/20 09:50

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	1200		10	1.0	ug/L		11/04/20 14:50	11/08/20 01:55	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.4		3.0	1.5	ug/L		11/04/20 14:50	11/05/20 15:34	1

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	190		10	3.1	mg/L			11/06/20 01:23	1

Client Sample ID: XGM-94-04X-FAL20

Lab Sample ID: 680-190731-5

Date Collected: 10/27/20 11:55
Matrix: Water
Date Received: 10/29/20 09:50

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	41	J	50	17	ug/L		11/04/20 14:50	11/08/20 01:59	1
Manganese	13		10	1.0	ug/L		11/04/20 14:50	11/08/20 01:59	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		11/04/20 14:50	11/05/20 15:37	1

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	180		10	3.1	mg/L			11/06/20 01:29	1

Client Sample ID: XGM-94-06X-FAL20

Lab Sample ID: 680-190731-6

Date Collected: 10/27/20 15:00
Matrix: Water
Date Received: 10/29/20 09:50

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	1600		50	17	ug/L		11/04/20 14:50	11/08/20 02:13	1
Manganese	1800		10	1.0	ug/L		11/04/20 14:50	11/08/20 02:13	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.6	J	3.0	1.5	ug/L		11/04/20 14:50	11/05/20 15:40	1

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	130		10	3.1	mg/L			11/06/20 01:58	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-642330/1-A
Matrix: Water
Analysis Batch: 642970

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 642330

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	17	U	50	17	ug/L		11/04/20 14:50	11/08/20 01:32	1
Manganese	1.0	U	10	1.0	ug/L		11/04/20 14:50	11/08/20 01:32	1

Lab Sample ID: LCS 680-642330/2-A
Matrix: Water
Analysis Batch: 642970

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 642330

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5000	4780		ug/L		96	87 - 115
Manganese	400	382		ug/L		96	90 - 114

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-642329/1-A
Matrix: Water
Analysis Batch: 642632

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 642329

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		11/04/20 14:50	11/05/20 15:19	1

Lab Sample ID: LCS 680-642329/2-A
Matrix: Water
Analysis Batch: 642632

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 642329

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	96.9		ug/L		97	84 - 116

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-515698/110
Matrix: Water
Analysis Batch: 515698

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	3.1	U	10	3.1	mg/L			11/06/20 01:52	1

Lab Sample ID: MB 280-515698/84
Matrix: Water
Analysis Batch: 515698

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	3.1	U	10	3.1	mg/L			11/05/20 23:26	1

Lab Sample ID: LCS 280-515698/109
Matrix: Water
Analysis Batch: 515698

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	200	196		mg/L		98	89 - 109

Method: SM 2320B - Alkalinity (Continued)

Lab Sample ID: LCS 280-515698/82
Matrix: Water
Analysis Batch: 515698

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	200	193		mg/L		97	89 - 109

Lab Sample ID: 680-190731-6 DU
Matrix: Water
Analysis Batch: 515698

Client Sample ID: XGM-94-06X-FAL20
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	130		131		mg/L		1	10

Metals

Prep Batch: 642329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190731-1	AAFES-2-FAL20	Total/NA	Water	3010A	
680-190731-2	AAFES-7-FAL20	Total/NA	Water	3010A	
680-190731-3	AOC43G-DUP01-FAL20	Total/NA	Water	3010A	
680-190731-4	XGM-93-02X-FAL20	Total/NA	Water	3010A	
680-190731-5	XGM-94-04X-FAL20	Total/NA	Water	3010A	
680-190731-6	XGM-94-06X-FAL20	Total/NA	Water	3010A	
MB 680-642329/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-642329/2-A	Lab Control Sample	Total/NA	Water	3010A	

Prep Batch: 642330

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190731-1	AAFES-2-FAL20	Total/NA	Water	3010A	
680-190731-2	AAFES-7-FAL20	Total/NA	Water	3010A	
680-190731-3	AOC43G-DUP01-FAL20	Total/NA	Water	3010A	
680-190731-4	XGM-93-02X-FAL20	Total/NA	Water	3010A	
680-190731-5	XGM-94-04X-FAL20	Total/NA	Water	3010A	
680-190731-6	XGM-94-06X-FAL20	Total/NA	Water	3010A	
MB 680-642330/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-642330/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 642632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190731-1	AAFES-2-FAL20	Total/NA	Water	6020A	642329
680-190731-2	AAFES-7-FAL20	Total/NA	Water	6020A	642329
680-190731-3	AOC43G-DUP01-FAL20	Total/NA	Water	6020A	642329
680-190731-4	XGM-93-02X-FAL20	Total/NA	Water	6020A	642329
680-190731-5	XGM-94-04X-FAL20	Total/NA	Water	6020A	642329
680-190731-6	XGM-94-06X-FAL20	Total/NA	Water	6020A	642329
MB 680-642329/1-A	Method Blank	Total/NA	Water	6020A	642329
LCS 680-642329/2-A	Lab Control Sample	Total/NA	Water	6020A	642329

Analysis Batch: 642970

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190731-1	AAFES-2-FAL20	Total/NA	Water	6010C	642330
680-190731-2	AAFES-7-FAL20	Total/NA	Water	6010C	642330
680-190731-3	AOC43G-DUP01-FAL20	Total/NA	Water	6010C	642330
680-190731-4	XGM-93-02X-FAL20	Total/NA	Water	6010C	642330
680-190731-5	XGM-94-04X-FAL20	Total/NA	Water	6010C	642330
680-190731-6	XGM-94-06X-FAL20	Total/NA	Water	6010C	642330
MB 680-642330/1-A	Method Blank	Total/NA	Water	6010C	642330
LCS 680-642330/2-A	Lab Control Sample	Total/NA	Water	6010C	642330

General Chemistry

Analysis Batch: 515698

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190731-1	AAFES-2-FAL20	Total/NA	Water	SM 2320B	
680-190731-2	AAFES-7-FAL20	Total/NA	Water	SM 2320B	
680-190731-3	AOC43G-DUP01-FAL20	Total/NA	Water	SM 2320B	
680-190731-4	XGM-93-02X-FAL20	Total/NA	Water	SM 2320B	
680-190731-5	XGM-94-04X-FAL20	Total/NA	Water	SM 2320B	

General Chemistry (Continued)

Analysis Batch: 515698 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190731-6	XGM-94-06X-FAL20	Total/NA	Water	SM 2320B	
MB 280-515698/110	Method Blank	Total/NA	Water	SM 2320B	
MB 280-515698/84	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-515698/109	Lab Control Sample	Total/NA	Water	SM 2320B	
LCS 280-515698/82	Lab Control Sample	Total/NA	Water	SM 2320B	
680-190731-6 DU	XGM-94-06X-FAL20	Total/NA	Water	SM 2320B	

Lab Chronicle

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens

Job ID: 680-190731-1

Client Sample ID: AAFES-2-FAL20

Lab Sample ID: 680-190731-1

Date Collected: 10/27/20 11:45

Matrix: Water

Date Received: 10/29/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	642330	11/04/20 14:50	BJB	TAL SAV
Total/NA	Analysis	6010C		1			642970	11/08/20 01:41	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	642329	11/04/20 14:50	BJB	TAL SAV
Total/NA	Analysis	6020A		1			642632	11/05/20 15:25	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Analysis	SM 2320B		1			515698	11/06/20 01:06	RAF	TAL DEN
	Instrument ID: WC_AT4									

Client Sample ID: AAFES-7-FAL20

Lab Sample ID: 680-190731-2

Date Collected: 10/27/20 12:55

Matrix: Water

Date Received: 10/29/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	642330	11/04/20 14:50	BJB	TAL SAV
Total/NA	Analysis	6010C		1			642970	11/08/20 01:45	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	642329	11/04/20 14:50	BJB	TAL SAV
Total/NA	Analysis	6020A		1			642632	11/05/20 15:28	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Analysis	SM 2320B		1			515698	11/06/20 01:11	RAF	TAL DEN
	Instrument ID: WC_AT4									

Client Sample ID: AOC43G-DUP01-FAL20

Lab Sample ID: 680-190731-3

Date Collected: 10/27/20 15:00

Matrix: Water

Date Received: 10/29/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	642330	11/04/20 14:50	BJB	TAL SAV
Total/NA	Analysis	6010C		1			642970	11/08/20 01:50	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	642329	11/04/20 14:50	BJB	TAL SAV
Total/NA	Analysis	6020A		1			642632	11/05/20 15:31	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Analysis	SM 2320B		1			515698	11/06/20 01:17	RAF	TAL DEN
	Instrument ID: WC_AT4									

Client Sample ID: XGM-93-02X-FAL20

Lab Sample ID: 680-190731-4

Date Collected: 10/27/20 10:55

Matrix: Water

Date Received: 10/29/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	642330	11/04/20 14:50	BJB	TAL SAV
Total/NA	Analysis	6010C		1			642970	11/08/20 01:55	BCB	TAL SAV
	Instrument ID: ICPE									

Lab Chronicle

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens

Job ID: 680-190731-1

Client Sample ID: XGM-93-02X-FAL20

Lab Sample ID: 680-190731-4

Date Collected: 10/27/20 10:55

Matrix: Water

Date Received: 10/29/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	250 mL	642329	11/04/20 14:50	BJB	TAL SAV
Total/NA	Analysis	6020A		1			642632	11/05/20 15:34	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Analysis	SM 2320B		1			515698	11/06/20 01:23	RAF	TAL DEN
	Instrument ID: WC_AT4									

Client Sample ID: XGM-94-04X-FAL20

Lab Sample ID: 680-190731-5

Date Collected: 10/27/20 11:55

Matrix: Water

Date Received: 10/29/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	642330	11/04/20 14:50	BJB	TAL SAV
Total/NA	Analysis	6010C		1			642970	11/08/20 01:59	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	642329	11/04/20 14:50	BJB	TAL SAV
Total/NA	Analysis	6020A		1			642632	11/05/20 15:37	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Analysis	SM 2320B		1			515698	11/06/20 01:29	RAF	TAL DEN
	Instrument ID: WC_AT4									

Client Sample ID: XGM-94-06X-FAL20

Lab Sample ID: 680-190731-6

Date Collected: 10/27/20 15:00

Matrix: Water

Date Received: 10/29/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	642330	11/04/20 14:50	BJB	TAL SAV
Total/NA	Analysis	6010C		1			642970	11/08/20 02:13	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	642329	11/04/20 14:50	BJB	TAL SAV
Total/NA	Analysis	6020A		1			642632	11/05/20 15:40	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Analysis	SM 2320B		1			515698	11/06/20 01:58	RAF	TAL DEN
	Instrument ID: WC_AT4									

Laboratory References:

= Katahdin Analytical Services Inc, 600 Technology Way, Scarborough, ME 04074

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Accreditation/Certification Summary

Client: Seres Engineering & Services LLC
Job ID: 680-190731-1
Project/Site: Fort Devens

Laboratory: Eurofins TestAmerica, Savannah

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2463	09-22-22

Laboratory: Eurofins TestAmerica, Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-21

Method Summary

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens

Job ID: 680-190731-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
SM 2320B	Alkalinity	SM	TAL DEN
MA-VPH	MADEP VPH Volatile Petroleum Hydrocarbon	MA DEP	
3010A	Preparation, Total Metals	SW846	TAL SAV

Protocol References:

MA DEP = Massachusetts Department Of Environmental Protection

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

= Katahdin Analytical Services Inc, 600 Technology Way, Scarborough, ME 04074

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: Fort Devens RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
SN9121-1, 2, 3, 4, 5, 6, 7

Matrices: X Groundwater/Surface Water Soil/Sediment Drinking Water Air Other: _____

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	x Yes No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	x Yes No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	x Yes No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	x Yes No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	x Yes No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	x Yes No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	x Yes No[1]

***Data User Note**: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes x No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	x Yes No[1]

[1]*All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 11/18/2020

TEST AMERICA SAVANNAH
FORT DEVENS
SN9121

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
FORT DEVENS
SN9121

Sample Receipt

The following samples were received on November 03, 2020 and were logged in under Katahdin Analytical Services work order number SN9121 for a hardcopy due date of November 15, 2020.

KATAHDIN Sample No.	TEST AMERICA SAVANNAH Sample Identification
SN9121-1	AAFES-2-FAL20
SN9121-2	AAFES-7-FAL20
SN9121-3	AOC43G-DUP01-FAL20
SN9121-4	XGM-93-02X-FAL20
SN9121-5	XGM-94-04X-FAL20
SN9121-6	XGM-94-06X-FAL20
SN9121-7	AOC43G-TB1-FAL20

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

We certify that the test results provided in this report meet all the requirements of the NELAP standards unless otherwise noted in this narrative or in the Report of Analysis.

We certify that the test results provided in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation L2223.

Analytes which are reported but not listed on our ANAB scope of accreditation will be "^" flagged and the following language will be included in the case narrative for all DoD compliant work: "^" Indicates this analyte is not included on Katahdin Analytical Services DoD-ELAP Scope of Accreditation.

Sample analyses have been performed by the methods as noted herein.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact your Katahdin Analytical Services Project Manager, **Ms. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of Work Order # SN89121 were analyzed in accordance with Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis.

MA VPH Analysis

Samples SN9121-1, 1DL, and 4 were manually integrated for the target analytes toluene, m+p-xylene, o-xylene, ethylbenzene, and/or naphthalene, and/or the C9-C10 aromatic range, and/or the surrogate 2,5-dibromotoluene. The specific reasons for the manual integrations are indicated on the raw data by the manual integration codes (M1-M11). These codes are further explained in the attachment following this narrative.

The closing calibration verification standards (CV's) (files 2NK10093 and 2NK10145) had low responses for the target analyte n-decane and the C9-C12 aliphatic range that resulted in %D's that exceeded the DoD QSM acceptance criteria ±25%.

The independent check standard (file 2NK10066) associated with the initial calibration on 11/05/2020 had high concentrations for the target analyte naphthalene on the PID/FID and a high response for n-decane on the FID. These concentrations exceeded the DoD QSM acceptance limit of ±20% of the expected value from the ICAL.

There were no other protocol deviations or observations noted by the organics laboratory staff.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond
11.18.20

Leslie Dimond
Quality Assurance Officer

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin Analytical Services, LLC. — Sample Receipt Condition Report

Client:	KAS PM: HTM	Sampled By: client
Project:	KIMS Entry By: SCB	Delivered By: Fed Ex
KAS Work Order#: SN9121 - SN9122	KIMS Review By: HTM	Received By: [illegible]
	Labeled By: [illegible]	
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 11/3/20 1045

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	/				
2. Chain of Custody present in cooler?	/				
3. Chain of Custody signed by client?	/				
4. Chain of Custody matches samples?	/				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.					Temp (°C): 0.8 — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	/				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	/				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	/				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				/	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles: **Aqueous:** No bubble larger than a pea?	/				
Soil/Sediment:				/	
Received in airtight container?				/	
Received in methanol?				/	
Methanol covering soil?				/	
D.I. Water - Received within 48 hour HT?				/	
7. Trip Blank present in cooler?	/				
8. Proper sample containers and volume?	/				
9. Samples within hold time upon receipt?	/				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2				/	
Sulfide - >9				/	
Cyanide – pH >12				/	
11. Bottleware Prepped on:					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

SN #121

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

Chain of Custody Record

eurofins | Environment Testing America

11/18/2020

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Smith, Kathryn E	Carrier Tracking No(s):	COC No: 680-631593.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Kathy.Smith@Eurofinset.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Katahdin Analytical Services		Accreditations Required (See note): Dept. of Defense ELAP - A2LA; DoD - ANAB		Job #: 680-190731-1
Address: 600 Technology Way, ,	Due Date Requested: 11/10/2020			
City: Scarborough	TAT Requested (days):			
State, Zip: ME, 04074				
Phone:	PO #:			
Email:	WO #:			
Project Name: Fort Devens	Project #: 68023801			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (MA VPH + BTEX)/ MA VPH	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
AAFES-2-FAL20 (680-190731-1)	10/27/20	11:45 Eastern		Water			X	3	
AAFES-7-FAL20 (680-190731-2)	10/27/20	12:55 Eastern		Water			X	3	
AOC43G-DUP01-FAL20 (680-190731-3)	10/27/20	15:00 Eastern		Water			X	3	
XGM-93-02X-FAL20 (680-190731-4)	10/27/20	10:55 Eastern		Water			X	3	
XGM-94-04X-FAL20 (680-190731-5)	10/27/20	11:55 Eastern		Water			X	3	
XGM-94-06X-FAL20 (680-190731-6)	10/27/20	15:00 Eastern		Water			X	3	
AOC43G-TB1-FAL20 (680-190731-10)	10/27/20	Eastern		Water			X	1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:			
Relinquished by:	Date/Time: 11-02-20 1532	Company	Received by:	Date/Time: 11/3/20 0845	Company	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company	

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

9000000

Katahdin ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Nov. 03, 2020
05:29 PM

Login Number: SN9121

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Quote/Incoming:

Primary Report Address:
Kathryn E Smith
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Kathy.Smith@Eurofinset.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 5.3 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Include LOD on form. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative.
CHECK NO.	:	
CLIENT PO#	:	
CLIENT PROJECT MANAGE	:	Kathy.Smith@Eurofins.com
CONTRACT	:	680-190731, PN:68023801
COOLER TEMPERATURE	:	0.8
DELIVERY SERVICES	:	FedEx
EDD FORMAT	:	ECC-091317-TXT
LOGIN INITIALS	:	JCB
PM	:	HHM
PROJECT NAME	:	Fort Devens
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	SDS needs all forms. Include Level 4 narrative and MCP forms (from Leslie). Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS. Upload EDD to Ft. Devens Database. Email PDF, EDD, and invoice to Jerry. No HC.
SDG ID	:	
SDG STATUS	:	
VERBAL TAT	:	

Login Number: SN9121

Quote/Incoming:

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SN9121-1	AAFES-2-FAL20	27-OCT-20 11:45	03-NOV-20			15-NOV-20	
Matrix	***Product***	***Hold Date (shortest)***	***Bottle Type***	***Bottle Count***		***Comments***	
Aqueous S	MA-VPH	10-NOV-20	40mL Vial+HCl				
SN9121-2	AAFES-7-FAL20	27-OCT-20 12:55	03-NOV-20			15-NOV-20	
Matrix	***Product***	***Hold Date (shortest)***	***Bottle Type***	***Bottle Count***		***Comments***	
Aqueous S	MA-VPH	10-NOV-20	40mL Vial+HCl				
SN9121-3	AOC43G-DUP01-FAL20	27-OCT-20 15:00	03-NOV-20			15-NOV-20	
Matrix	***Product***	***Hold Date (shortest)***	***Bottle Type***	***Bottle Count***		***Comments***	
Aqueous S	MA-VPH	10-NOV-20	40mL Vial+HCl				
SN9121-4	XGM-93-02X-FAL20	27-OCT-20 10:55	03-NOV-20			15-NOV-20	
Matrix	***Product***	***Hold Date (shortest)***	***Bottle Type***	***Bottle Count***		***Comments***	
Aqueous S	MA-VPH	10-NOV-20	40mL Vial+HCl				
SN9121-5	XGM-94-04X-FAL20	27-OCT-20 11:55	03-NOV-20			15-NOV-20	
Matrix	***Product***	***Hold Date (shortest)***	***Bottle Type***	***Bottle Count***		***Comments***	
Aqueous S	MA-VPH	10-NOV-20	40mL Vial+HCl				
SN9121-6	XGM-94-06X-FAL20	27-OCT-20 15:00	03-NOV-20			15-NOV-20	
Matrix	***Product***	***Hold Date (shortest)***	***Bottle Type***	***Bottle Count***		***Comments***	
Aqueous S	MA-VPH	10-NOV-20	40mL Vial+HCl				
SN9121-7	AOC43G-TB1-FAL20	27-OCT-20 00:00	03-NOV-20			15-NOV-20	
Matrix	***Product***	***Hold Date (shortest)***	***Bottle Type***	***Bottle Count***		***Comments***	
Aqueous S	MA-VPH	10-NOV-20	40mL Vial+HCl				

Total Samples: 7 ***Total Analyses: 7***

SAMPLE DATA SUMMARY PACKAGE

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U — Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* — Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D — Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E — Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J — Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J — Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B — Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C — Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L — Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M — Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N — Presumptive evidence of a compound based on a mass spectral library search.

A — Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P — Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN9121-1
Client ID: AAFES-2-FAL20
Project: Fort Devens
SDG: SN9121
Lab File ID: 2NK10083.D

Sample Date: 27-OCT-20
Received Date: 03-NOV-20
Extract Date: 06-NOV-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG289658

Analysis Date: 06-NOV-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 17-NOV-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	E	990	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	E	700	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	E	840	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene		6.6	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether		6.4	ug/L	1	5	5.0	0.31	3.8
Naphthalene		8.6	ug/L	1	5	5.0	1.6	3.8
Toluene	J	2.6	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	J	2.5	ug/L	1	10	10.	0.92	7.5
o-Xylene		5.6	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		82.8	%					
2,5-Dibromotoluene (PID)		85.9	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://www.katahdinlab.com

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN9121-1DL
Client ID: AAFES-2-FAL20
Project: Fort Devens
SDG: SN9121
Lab File ID: 2NK10140.D

Sample Date: 27-OCT-20
Received Date: 03-NOV-20
Extract Date: 09-NOV-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG289816

Analysis Date: 09-NOV-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 17-NOV-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics		480	ug/L	4	100	400	200	300
C9-C12 Aliphatics		450	ug/L	4	100	400	200	300
C9-C10 Aromatics		820	ug/L	4	100	400	200	300
Benzene	U	12	ug/L	4	3	12.	1.2	8.0
Ethylbenzene	J	7.9	ug/L	4	5	20.	1.7	15.
Methyl tert-butylether	J	5.4	ug/L	4	5	20.	1.2	15.
Naphthalene	J	8.7	ug/L	4	5	20.	6.4	15.
Toluene	J	2.7	ug/L	4	5	20.	1.4	15.
m+p-Xylenes	J	4.6	ug/L	4	10	40.	3.7	30.
o-Xylene	J	3.4	ug/L	4	5	20.	1.9	15.
2,5-Dibromotoluene (FID)		101.	%					
2,5-Dibromotoluene (PID)		95.7	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://www.katahdinlab.com

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN9121-2
Client ID: AAFES-7-FAL20
Project: Fort Devens
SDG: SN9121
Lab File ID: 2NK10084.D

Sample Date: 27-OCT-20
Received Date: 03-NOV-20
Extract Date: 06-NOV-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG289658

Analysis Date: 06-NOV-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 17-NOV-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		88.8	%					
2,5-Dibromotoluene (PID)		85.6	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN9121-3
Client ID: AOC43G-DUP01-FAL20
Project: Fort Devens
SDG: SN9121
Lab File ID: 2NK10085.D

Sample Date: 27-OCT-20
Received Date: 03-NOV-20
Extract Date: 06-NOV-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG289658

Analysis Date: 06-NOV-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 17-NOV-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	J	0.90	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	J	0.36	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		93.3	%					
2,5-Dibromotoluene (PID)		88.6	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN9121-4
Client ID: XGM-93-02X-FAL20
Project: Fort Devens
SDG: SN9121
Lab File ID: 2NK10086.D

Sample Date: 27-OCT-20
Received Date: 03-NOV-20
Extract Date: 06-NOV-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG289658

Analysis Date: 06-NOV-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 17-NOV-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics		150	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	J	64	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	J	66	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether		9.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		88.3	%					
2,5-Dibromotoluene (PID)		85.4	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN9121-5
Client ID: XGM-94-04X-FAL20
Project: Fort Devens
SDG: SN9121
Lab File ID: 2NK10087.D

Sample Date: 27-OCT-20
Received Date: 03-NOV-20
Extract Date: 06-NOV-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG289658

Analysis Date: 06-NOV-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 17-NOV-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		97.4	%					
2,5-Dibromotoluene (PID)		93.7	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN9121-6
Client ID: XGM-94-06X-FAL20
Project: Fort Devens
SDG: SN9121
Lab File ID: 2NK10088.D

Sample Date: 27-OCT-20
Received Date: 03-NOV-20
Extract Date: 06-NOV-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG289658

Analysis Date: 06-NOV-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 17-NOV-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	J	0.95	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		96.9	%					
2,5-Dibromotoluene (PID)		92.8	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN9121-7
Client ID: AOC43G-TB1-FAL20
Project: Fort Devens
SDG: SN9121
Lab File ID: 2NK10079.D

Sample Date: 27-OCT-20
Received Date: 03-NOV-20
Extract Date: 06-NOV-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG289658

Analysis Date: 06-NOV-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 17-NOV-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	J	0.71	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		80.9	%					
2,5-Dibromotoluene (PID)		79.5	%					

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Report of Analytical Results

Client:
Lab ID: WG289658-1
Client ID: Method Blank Sample
Project:
SDG: SN9121
Lab File ID: 2NK10075.D

Sample Date:
Received Date:
Extract Date: 06-NOV-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG289658

Analysis Date: 06-NOV-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 17-NOV-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		80.6	%					
2,5-Dibromotoluene (PID)		79.7	%					

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Report of Analytical Results

Client:
Lab ID: WG289816-1
Client ID: Method Blank Sample
Project:
SDG: SN9121
Lab File ID: 2NK10122.D

Sample Date:
Received Date:
Extract Date: 09-NOV-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG289816

Analysis Date: 09-NOV-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 17-NOV-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		98.9	%					
2,5-Dibromotoluene (PID)		94.9	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** Fort Devens **Matrix:** AQ
Lab Code: KAS **SDG:** SN9121

Client Sample ID	Lab Sample ID	Col. ID	DBT-FID	#	DBT-PID	#
AAFES-2-FAL20	SN9121-1	B	82.8		85.9	
AAFES-2-FAL20	SN9121-1DL	B	101.		95.7	
AAFES-7-FAL20	SN9121-2	B	88.8		85.6	
AOC43G-DUP01-FAL20	SN9121-3	B	93.3		88.6	
XGM-93-02X-FAL20	SN9121-4	B	88.3		85.4	
XGM-94-04X-FAL20	SN9121-5	B	97.4		93.7	
XGM-94-06X-FAL20	SN9121-6	B	96.9		92.8	
AOC43G-TB1-FAL20	SN9121-7	B	80.9		79.5	
Method Blank Sample	WG289658-1	B	80.6		79.7	
Laboratory Control S	WG289658-2	B	90.2		88.2	
Laboratory Control S	WG289658-3	B	85.2		83.1	
Method Blank Sample	WG289816-1	B	98.9		94.9	
Laboratory Control S	WG289816-2	B	102.		98.4	
Laboratory Control S	WG289816-3	B	101.		95.2	

		QC Limits
DBT-FID	2,5-DIBROMOTOLUENE (FID)	70-130
DBT-PID	2,5-DIBROMOTOLUENE (PID)	70-130

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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LCS/LCSD Recovery Report

LCS ID: WG289658-2
LCSD ID: WG289658-3
Project:
SDG: SN9121
Report Date: 17-NOV-20
LCS File ID: 2NK10076.D

Received Date:
Extract Date: 06-NOV-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG289658
LCSD File ID: 2NK10077.D

Analysis Date: 06-NOV-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	326.	109.	338.	113.	ug/L	4	25	70-130
C9-C12 Aliphatics	200.	234.	117.	242.	121.	ug/L	3	25	70-130
C9-C10 Aromatics	100.	117.	117.	119.	119.	ug/L	2	25	70-130
Benzene	100.	114.	114.	117.	117.	ug/L	2	25	70-130
Ethylbenzene	100.	116.	116.	119.	119.	ug/L	2	25	70-130
Methyl tert-butylether	100.	112.	112.	118.	118.	ug/L	5	25	70-130
Naphthalene	100.	114.	114.	117.	117.	ug/L	2	25	70-130
Toluene	100.	115.	115.	116.	116.	ug/L	1	25	70-130
m+p-Xylenes	200.	226.	113.	230.	115.	ug/L	2	25	70-130
o-Xylene	100.	115.	115.	118.	118.	ug/L	2	25	70-130
2,5-Dibromotoluene (FID)			90.2		85.2				70-130
2,5-Dibromotoluene (PID)			88.2		83.1				70-130

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LCS/LCSD Recovery Report

LCS ID: WG289816-2
LCSD ID: WG289816-3
Project:
SDG: SN9121
Report Date: 17-NOV-20
LCS File ID: 2NK10123.D

Received Date:
Extract Date: 09-NOV-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG289816
LCSD File ID: 2NK10124.D

Analysis Date: 09-NOV-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	342.	114.	345.	115.	ug/L	1	25	70-130
C9-C12 Aliphatics	200.	239.	120.	238.	119.	ug/L	0	25	70-130
C9-C10 Aromatics	100.	118.	118.	116.	116.	ug/L	2	25	70-130
Benzene	100.	115.	115.	114.	114.	ug/L	1	25	70-130
Ethylbenzene	100.	117.	117.	116.	116.	ug/L	1	25	70-130
Methyl tert-butylether	100.	114.	114.	115.	115.	ug/L	1	25	70-130
Naphthalene	100.	124.	124.	119.	119.	ug/L	4	25	70-130
Toluene	100.	115.	115.	113.	113.	ug/L	2	25	70-130
m+p-Xylenes	200.	227.	114.	224.	112.	ug/L	1	25	70-130
o-Xylene	100.	116.	116.	114.	114.	ug/L	2	25	70-130
2,5-Dibromotoluene (FID)			102.		101.				70-130
2,5-Dibromotoluene (PID)			98.4		95.2				70-130

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens
Lab File ID : 2NK10075.D
Instrument ID : GC02

SDG : SN9121
Lab Sample ID : WG289658-1
Date Analyzed : 06-NOV-20
Time Analyzed : 10:23
Date Extracted : 06-NOV-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG289658-2	2NK10076.	11/06/20	11:03
Laboratory Control S	WG289658-3	2NK10077.	11/06/20	11:43
AOC43G-TB1-FAL20	SN9121-7	2NK10079.	11/06/20	14:08
AAFES-2-FAL20	SN9121-1	2NK10083.	11/06/20	16:51
AAFES-7-FAL20	SN9121-2	2NK10084.	11/06/20	17:32
AOC43G-DUP01-FAL20	SN9121-3	2NK10085.	11/06/20	18:15
XGM-93-02X-FAL20	SN9121-4	2NK10086.	11/06/20	18:58
XGM-94-04X-FAL20	SN9121-5	2NK10087.	11/06/20	19:42
XGM-94-06X-FAL20	SN9121-6	2NK10088.	11/06/20	20:25

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens
Lab File ID : 2NK10122.D
Instrument ID : GC02

SDG : SN9121
Lab Sample ID : WG289816-1
Date Analyzed : 09-NOV-20
Time Analyzed : 10:02
Date Extracted : 09-NOV-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG289816-2	2NK10123.	11/09/20	10:43
Laboratory Control S	WG289816-3	2NK10124.	11/09/20	11:25
AAFES-2-FAL20	SN9121-1DL	2NK10140.	11/09/20	23:36

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Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN9121
Project : Fort Devens **Instrument ID:** GC02
Lab File IDs : 2NK10060.D2NK10061.D2NK10062.D 2NK10059.D2NK10063.D2NK10065.D **Calibration Date(s):** 05-NOV-20 08:58 05-NOV-20 13:31

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C10 Aromatic	4550	4572	4954	5043	5148	4518	AVG		4798		5.88202	25.00000	M (
Methyl tert-butylether	2638	2718	2752	2618	2804	2588	AVG		2686		3.15350	25.00000	O
Benzene	6256	5695	5860	5667	6045	5417	AVG		5823		5.11519	25.00000	O
Toluene	5619	5138	5307	5208	5546	4835	AVG		5275		5.42627	25.00000	O
Ethylbenzene	4742	4420	4652	4635	4880	4282	AVG		4602		4.72461	25.00000	O
m+p-Xylene	5807	5341	5611	5507	5550	4273	AVG		5348		10.2452[illegible]	25.00000	O
o-Xylene	4766	4551	4794	4736	4851	4154	AVG		4642		5.59523	25.00000	O
1,2,4-trimethylbenzene	4550	4572	4954	5043	5148	4518	AVG		4798		5.88202	25.00000	O
Naphthalene	4079	4103	4566	4852	4764	4282	AVG		4441		7.53063	25.00000	O
2,5-Dibromotoluene (PID)	6435	4128	4419	4850	4472	2960	AVG		4544		24.8417[illegible]	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN9121
Project : Fort Devens **Instrument ID:** GC02
Lab File IDs : 2NK10060.D2NK10061.D2NK10062.D 2NK10059.D2NK10063.D2NK10065.D **Calibration Date(s):** 05-NOV-20 08:58 05-NOV-20 13:31

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C5-C8 Aliphatic	5352	4430	4410	4565	4741	4404	AVG		4650		7.90300	25.00000	M (
C9-C12 Aliphatic	5017	3888	3807	3861	4434	5299	AVG		4384		14.7536(	25.00000	M (
n-Pentane	4657	3920	3842	4202	4382	3836	AVG		4140		8.07800	25.00000	O
2-Methylpentane	5705	4578	4609	4671	4846	4473	AVG		4813		9.42804	25.00000	O
Methyl tert-butylether	4219	3809	3748	3563	3622	3480	AVG		3740		7.04303	25.00000	O
2,2,4-Trimethylpentane	5695	4792	4781	4823	4995	4901	AVG		4998		7.02084	25.00000	O
Benzene	7301	6537	6675	6394	6557	6175	AVG		6607		5.76466	25.00000	O
Toluene	7086	6359	6430	6307	6490	6068	AVG		6457		5.27940	25.00000	O
n-Nonane	4638	3904	3958	4028	4345	5034	AVG		4318		10.3622	25.00000	O
n-Decane	4107	3347	3296	3531	4401	5372	AVG		4009		19.9404	25.00000	O
Ethylbenzene	6614	5970	6230	6165	6296	5962	AVG		6206		3.89203	25.00000	O
m+p-Xylene	6937	6197	6393	6262	6366	6052	AVG		6368		4.78410	25.00000	O
o-Xylene	6846	6375	6482	6336	6417	6161	AVG		6436		3.54273	25.00000	O
1,2,4-trimethylbenzene	6123	5937	6244	6304	6356	6142	AVG		6184		2.44413	25.00000	O
n-Butylcyclohexane	5926	4429	4319	4190	4466	5226	AVG		4759		14.2241	25.00000	O
Naphthalene	3391	3878	4227	4423	4344	4287	AVG		4091		9.56652	25.00000	O
2,5-Dibromotoluene (FID)	2452	1817	1966	2122	2046	1833	AVG		2039		11.4879	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens
SDG: SN9121
Lab ID : WG289658-4
Analytical Date: 11/06/20 09:08
Lab File ID : 2NK10074.D
Instrument ID: GC02
Initial Calibration Date(s): 11/05/20 08:58 11/05/20 13:31
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	4798	4886	0.100	1.84269	25.00000	Averaged
20	Benzene	5823	5560	0.100	-4.52955	25.00000	Averaged
30	Ethylbenzene	4602	4501	0.100	-2.18497	25.00000	Averaged
40	Methyl tert-butylether	2686	2580	0.100	-3.95793	25.00000	Averaged
50	Naphthalene	4441	4637	0.100	4.41785	25.00000	Averaged
60	Toluene	5275	5075	0.100	-3.80616	25.00000	Averaged
70	m+p-Xylene	5348	5324	0.100	-0.44836	25.00000	Averaged
80	o-Xylene	4642	4581	0.100	-1.31154	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	4544	4811	0.100	5.86269	25.00000	Averaged
180	1,2,4-trimethylbenzene	4798	4886	0.100	1.84269	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens
Lab ID : WG289658-4
Lab File ID : 2NK10074.D
Initial Calibration Date(s): 11/05/20 08:58 11/05/20 13:31

SDG: SN9121
Analytical Date: 11/06/20 09:08
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
30	C5-C8 Aliphatic	4650	4402	0.100	-5.34296	25.00000	Averaged
40	C9-C12 Aliphatic	4384	3767	0.100	-14.08475	25.00000	Averaged
60	Benzene	6607	6290	0.100	-4.78595	25.00000	Averaged
70	Ethylbenzene	6206	6017	0.100	-3.04843	25.00000	Averaged
80	Methyl tert-butylether	3740	3529	0.100	-5.64341	25.00000	Averaged
90	Naphthalene	4091	4232	0.100	3.43522	25.00000	Averaged
100	Toluene	6457	6156	0.100	-4.65643	25.00000	Averaged
110	m+p-Xylene	6368	6114	0.100	-3.98863	25.00000	Averaged
120	o-Xylene	6436	6195	0.100	-3.74107	25.00000	Averaged
200	n-Pentane	4140	4066	0.100	-1.78621	25.00000	Averaged
210	2-Methylpentane	4813	4467	0.100	-7.20623	25.00000	Averaged
220	2,2,4-Trimethylpentane	4998	4673	0.100	-6.49458	25.00000	Averaged
230	n-Nonane	4318	3927	0.100	-9.05304	30.00000	Averaged
240	n-Decane	4009	3443	0.100	-14.11501	25.00000	Averaged
250	n-Butylcyclohexane	4759	4090	0.100	-14.05927	25.00000	Averaged
260	1,2,4-trimethylbenzene	6184	6142	0.100	-0.69347	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	2039	2117	0.100	3.81571	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens
SDG: SN9121
Lab ID : WG289658-5
Analytical Date: 11/06/20 23:59
Lab File ID : 2NK10093.D
Instrument ID: GC02
Initial Calibration Date(s): 11/05/20 08:58 11/05/20 13:31
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	4798	5064	0.100	5.54680	25.00000	Averaged
20	Benzene	5823	5882	0.100	1.00440	25.00000	Averaged
30	Ethylbenzene	4602	4740	0.100	3.00518	25.00000	Averaged
40	Methyl tert-butylether	2686	2732	0.100	1.70969	25.00000	Averaged
50	Naphthalene	4441	4891	0.100	10.13052	25.00000	Averaged
60	Toluene	5275	5359	0.100	1.58483	25.00000	Averaged
70	m+p-Xylene	5348	5511	0.100	3.05333	25.00000	Averaged
80	o-Xylene	4642	4780	0.100	2.98367	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	4544	4867	0.100	7.11396	25.00000	Averaged
180	1,2,4-trimethylbenzene	4798	5064	0.100	5.54666	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens
Lab ID : WG289658-5
Lab File ID : 2NK10093.D
Initial Calibration Date(s): 11/05/20 08:58 11/05/20 13:31

SDG: SN9121
Analytical Date: 11/06/20 23:59
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
30	C5-C8 Aliphatic	4650	4147	0.100	-10.82351	25.00000	Averaged	
40	C9-C12 Aliphatic	4384	3255	0.100	-25.75442	25.00000	Averaged	<-
60	Benzene	6607	6482	0.100	-1.89251	25.00000	Averaged	
70	Ethylbenzene	6206	6172	0.100	-0.55741	25.00000	Averaged	
80	Methyl tert-butylether	3740	3632	0.100	-2.89818	25.00000	Averaged	
90	Naphthalene	4091	4394	0.100	7.40493	25.00000	Averaged	
100	Toluene	6457	6350	0.100	-1.65170	25.00000	Averaged	
110	m+p-Xylene	6368	6251	0.100	-1.83372	25.00000	Averaged	
120	o-Xylene	6436	6336	0.100	-1.56179	25.00000	Averaged	
200	n-Pentane	4140	3894	0.100	-5.93083	25.00000	Averaged	
210	2-Methylpentane	4813	4226	0.100	-12.20265	25.00000	Averaged	
220	2,2,4-Trimethylpentane	4998	4321	0.100	-13.54854	25.00000	Averaged	
230	n-Nonane	4318	3381	0.100	-21.68735	30.00000	Averaged	
240	n-Decane	4009	2921	0.100	-27.12622	25.00000	Averaged	<-
250	n-Butylcyclohexane	4759	3589	0.100	-24.59906	25.00000	Averaged	
260	1,2,4-trimethylbenzene	6184	6255	0.100	1.13726	25.00000	Averaged	
21	2,5-Dibromotoluene (FID)	2039	2092	0.100	2.59866	25.00000	Averaged	

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens
Lab ID : WG289816-6
Lab File ID : 2NK10121.D
Initial Calibration Date(s): 11/05/20 08:58 11/05/20 13:31

SDG: SN9121
Analytical Date: 11/09/20 08:56
Instrument ID: GC02
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	4798	4775	0.100	-0.46398	25.00000	Averaged
20	Benzene	5823	5422	0.100	-6.89692	25.00000	Averaged
30	Ethylbenzene	4602	4417	0.100	-4.02469	25.00000	Averaged
40	Methyl tert-butylether	2686	2520	0.100	-6.19431	25.00000	Averaged
50	Naphthalene	4441	4415	0.100	-0.58598	25.00000	Averaged
60	Toluene	5275	4965	0.100	-5.87839	25.00000	Averaged
70	m+p-Xylene	5348	5244	0.100	-1.95173	25.00000	Averaged
80	o-Xylene	4642	4518	0.100	-2.66744	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	4544	4541	0.100	-0.06884	25.00000	Averaged
180	1,2,4-trimethylbenzene	4798	4775	0.100	-0.46432	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens
Lab ID : WG289816-6
Lab File ID : 2NK10121.D
Initial Calibration Date(s): 11/05/20 08:58 11/05/20 13:31

SDG: SN9121
Analytical Date: 11/09/20 08:56
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
30	C5-C8 Aliphatic	4650	4261	0.100	-8.36562	25.00000	Averaged
40	C9-C12 Aliphatic	4384	3658	0.100	-16.55608	25.00000	Averaged
60	Benzene	6607	6122	0.100	-7.33883	25.00000	Averaged
70	Ethylbenzene	6206	5894	0.100	-5.03577	25.00000	Averaged
80	Methyl tert-butylether	3740	3427	0.100	-8.36993	25.00000	Averaged
90	Naphthalene	4091	4051	0.100	-0.99593	25.00000	Averaged
100	Toluene	6457	6033	0.100	-6.55498	25.00000	Averaged
110	m+p-Xylene	6368	5986	0.100	-5.99310	25.00000	Averaged
120	o-Xylene	6436	6084	0.100	-5.47753	25.00000	Averaged
200	n-Pentane	4140	3874	0.100	-6.42022	25.00000	Averaged
210	2-Methylpentane	4813	4341	0.100	-9.80645	25.00000	Averaged
220	2,2,4-Trimethylpentane	4998	4568	0.100	-8.58992	25.00000	Averaged
230	n-Nonane	4318	3839	0.100	-11.08642	30.00000	Averaged
240	n-Decane	4009	3314	0.100	-17.33538	25.00000	Averaged
250	n-Butylcyclohexane	4759	4003	0.100	-15.89980	25.00000	Averaged
260	1,2,4-trimethylbenzene	6184	6008	0.100	-2.85730	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	2039	2011	0.100	-1.40847	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens
SDG: SN9121
Lab ID : WG289816-7
Analytical Date: 11/10/20 03:11
Lab File ID : 2NK10145.D
Instrument ID: GC02
Initial Calibration Date(s): 11/05/20 08:58 11/05/20 13:31
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	4798	5006	0.100	4.34043	25.00000	Averaged
20	Benzene	5823	5793	0.100	-0.51707	25.00000	Averaged
30	Ethylbenzene	4602	4675	0.100	1.58791	25.00000	Averaged
40	Methyl tert-butylether	2686	2671	0.100	-0.57210	25.00000	Averaged
50	Naphthalene	4441	4859	0.100	9.42167	25.00000	Averaged
60	Toluene	5275	5297	0.100	0.41640	25.00000	Averaged
70	m+p-Xylene	5348	5477	0.100	2.42094	25.00000	Averaged
80	o-Xylene	4642	4760	0.100	2.53558	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	4544	4749	0.100	4.51283	25.00000	Averaged
180	1,2,4-trimethylbenzene	4798	5006	0.100	4.34021	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens
Lab ID : WG289816-7
Lab File ID : 2NK10145.D
Initial Calibration Date(s): 11/05/20 08:58 11/05/20 13:31

SDG: SN9121
Analytical Date: 11/10/20 03:11
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
30	C5-C8 Aliphatic	4650	4183	0.100	-10.05051	25.00000	Averaged	
40	C9-C12 Aliphatic	4384	3237	0.100	-26.17660	25.00000	Averaged	<-
60	Benzene	6607	6422	0.100	-2.78828	25.00000	Averaged	
70	Ethylbenzene	6206	6123	0.100	-1.35015	25.00000	Averaged	
80	Methyl tert-butylether	3740	3604	0.100	-3.64999	25.00000	Averaged	
90	Naphthalene	4091	4432	0.100	8.31022	25.00000	Averaged	
100	Toluene	6457	6317	0.100	-2.15476	25.00000	Averaged	
110	m+p-Xylene	6368	6231	0.100	-2.14073	25.00000	Averaged	
120	o-Xylene	6436	6349	0.100	-1.35142	25.00000	Averaged	
200	n-Pentane	4140	3825	0.100	-7.61544	25.00000	Averaged	
210	2-Methylpentane	4813	4275	0.100	-11.18758	25.00000	Averaged	
220	2,2,4-Trimethylpentane	4998	4449	0.100	-10.97299	25.00000	Averaged	
230	n-Nonane	4318	3338	0.100	-22.68320	30.00000	Averaged	
240	n-Decane	4009	2874	0.100	-28.31908	25.00000	Averaged	<-
250	n-Butylcyclohexane	4759	3599	0.100	-24.37256	25.00000	Averaged	
260	1,2,4-trimethylbenzene	6184	6245	0.100	0.97686	25.00000	Averaged	
21	2,5-Dibromotoluene (FID)	2039	2076	0.100	1.77193	25.00000	Averaged	

*** = Compound out of QC criteria**

Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services
SDG : SN9121
Project : Fort Devens
Instrument ID : GC02

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG289628-4	11/05/20	08:58		31.06
Initial Calibration	WG289628-4	11/05/20	08:58	31.049	
Initial Calibration	WG289628-1	11/05/20	09:40		31.058
Initial Calibration	WG289628-1	11/05/20	09:40	31.044	
Initial Calibration	WG289628-2	11/05/20	10:21		31.058
Initial Calibration	WG289628-2	11/05/20	10:21	31.048	
Initial Calibration	WG289628-3	11/05/20	11:03		31.058
Initial Calibration	WG289628-3	11/05/20	11:03	31.047	
Initial Calibration	WG289628-5	11/05/20	11:44		31.053
Initial Calibration	WG289628-5	11/05/20	11:44	31.044	
Initial Calibration	WG289628-6	11/05/20	13:31		31.065
Initial Calibration	WG289628-6	11/05/20	13:31	31.054	
Independent Source	WG289628-7	11/05/20	14:42	31.054	31.064
Continuing Calibrati	WG289658-4	11/06/20	09:08	31.053	31.063
Method Blank Sample	WG289658-1	11/06/20	10:23	31.055	31.066
Laboratory Control S	WG289658-2	11/06/20	11:03	31.055	31.064
Laboratory Control S	WG289658-3	11/06/20	11:43	31.057	31.066
AOC43G-TB1-FAL20	SN9121-7	11/06/20	14:08	31.058	31.069
AAFES-2-FAL20	SN9121-1	11/06/20	16:51	31.056	31.067
AAFES-7-FAL20	SN9121-2	11/06/20	17:32	31.058	31.069
AOC43G-DUP01-FAL20	SN9121-3	11/06/20	18:15	31.064	31.074
XGM-93-02X-FAL20	SN9121-4	11/06/20	18:58	31.062	31.076
XGM-94-04X-FAL20	SN9121-5	11/06/20	19:42	31.063	31.073
XGM-94-06X-FAL20	SN9121-6	11/06/20	20:25	31.062	31.072
Continuing Calibrati	WG289658-5	11/06/20	23:59	31.064	31.074
Continuing Calibrati	WG289816-6	11/09/20	08:56	31.048	31.059
Method Blank Sample	WG289816-1	11/09/20	10:02	31.049	31.058
Laboratory Control S	WG289816-2	11/09/20	10:43	31.049	31.057
Laboratory Control S	WG289816-3	11/09/20	11:25	31.049	31.058
AAFES-2-FAL20	SN9121-1DL	11/09/20	23:36	31.057	31.066
Continuing Calibrati	WG289816-7	11/10/20	03:11	31.06	31.07

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CHAIN-OF-CUSTODY RECORD

Seres-Arcadis JV
Nathan Mullens
669 Marina Drive, Suite B7, Charleston, SC 29492
(843) 478.0336, jennifer.singer@arcadis.com

COC # Boston #215

Project Name: Former Fort Devens, Long Term Monitoring	Laboratory: Eurofins Environment Testing TestAmerica, Savannah, GA	Event: Seres-Arcadis JV, Long Term Monitoring, AOC 43G, Fall 2020
Project Number: DEVENS-LTM	Contact:	
WBS Code:	Ship to:	

Comments:
A2320B (A) = Alkalinity
MADEPVP (A) = VPH with targets

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
4	3x 40mL glass VOA Vials, HCl, pH < 2; Cool < 6degC
9	1x 250mL, plastic, HNO3, pH < 2; Cool < 6degC
46	1x 250mL, plastic, Cool < 6degC

Event: Seres-Arcadis JV, Long Term Monitoring, AOC 43G, Fall 2020

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: A2320B (A)	MADEPVP (A)	SW6010C - Fe Mn	SW6020A - As	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Cooler	Comments
						46	4	9	9						
1	AAFES-2-FAL20	WG	10-27-20	1145	DC	X	X	X	X	AAFES-2	N1	16.20	33.30		
2	AAFES-7-FAL20	WG	10-27-20	1255	NB	X	X	X	X	AAFES-7	N1	4.50	14.50		
3	AOC43G-DUP01-FAL20	WG	10-27-20	1500	DC	X	X	X	X	XGM-94-06X	FD1	17.00	27.00		
4	XGM-93-02X-FAL20	WG	10-27-20	1055	NB	X	X	X	X	XGM-93-02X	N1	28.00	38.00		
5	XGM-94-04X-FAL20	WG	10-27-20	1155	NB	X	X	X	X	XGM-94-04X	N1	18.20	30.50		
6	XGM-94-06X-FAL20	WG	10-27-20	1500	DC	X	X	X	X	XGM-94-06X	N1	17.00	27.00		
7	XGM-94-07X-FAL20	WG	10-27-20	1600	CR	X	X	X	X	XGM-94-07X	N1	17.00	29.60		
8	XGM-94-08X-FAL20	WG	10-27-20	1430	CR	X	X	X	X	XGM-94-08X	N1	23.50	36.10		
9	XGM-97-12X-FAL20	WG	10-27-20	1155	CR	X	X	X	X	XGM-97-12X	N1	24.00	34.00		

Turnaround Time: Standard

* CR

AOC43 Trip Blank for VOC's

680-190731 Chain of Custody

Relinquished by: Diane Duggan
Date 10-28-20
Time 16:45
Received by:
AOC43G_eCOC

Date 10/28/20 16:45
Time
Shipping Date:
Received by Laboratory
Condition:

TA
10-29-20 950
2.0/2.3

10/29/20 17:00

11/18/2020

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Smith, Kathryn E	Carrier Tracking No(s):	COC No: 680-631604.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Kathy.Smith@Eurofinset.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): Dept. of Defense ELAP - A2LA; DoD - ANAB		Job #: 680-190731-1
Address: 4955 Yarrow Street, ,	Due Date Requested: 11/10/2020			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: Fort Devens	Project #: 68023801			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2320B/ Alkalinity	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
AAFES-2-FAL20 (680-190731-1)	10/27/20	11:45 Eastern		Water			X	1	
AAFES-7-FAL20 (680-190731-2)	10/27/20	12:55 Eastern		Water			X	1	
AOC43G-DUP01-FAL20 (680-190731-3)	10/27/20	15:00 Eastern		Water			X	1	
XGM-93-02X-FAL20 (680-190731-4)	10/27/20	10:55 Eastern		Water			X	1	
XGM-94-04X-FAL20 (680-190731-5)	10/27/20	11:55 Eastern		Water			X	1	
XGM-94-06X-FAL20 (680-190731-6)	10/27/20	15:00 Eastern		Water			X	1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	11-02-20	1611	Laurence Harvey	11-3-20 9:15	EURO/TA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.0, 0.8 IR#11-0.3 RP 11/3

Ver: 01/16/2019

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ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-190888-1
Client Project/Site: Fort Devens

For:
Seres Engineering & Services LLC
669 Marina Drive
Suite B7
Charleston, South Carolina 29492

Attn: Nathan R Mullens

Kathryn Smith

Authorized for release by:
11/18/2020 6:54:05 PM

Kathryn Smith, Client Service Manager
(912)250-0275
Kathy.Smith@Eurofinset.com

LINKS

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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Qualifiers

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
U	Undetected at the Limit of Detection.

General Chemistry

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens

Job ID: 680-190888-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-190888-1	XGM-94-07X-FAL20	Water	10/27/20 16:00	10/31/20 10:05	
680-190888-2	XGM-94-08X-FAL20	Water	10/27/20 14:30	10/31/20 10:05	
680-190888-3	XGM-97-12X-FAL20	Water	10/27/20 11:55	10/31/20 10:05	

Job ID: 680-190888-1

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE
Client: Seres Engineering & Services LLC
Project: Fort Devens

Report Number: 680-190888-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT

The samples were received on 10/31/2020; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 5.7 C.

METALS (ICP)

Samples XGM-94-07X-FAL20 (680-190888-1), XGM-94-08X-FAL20 (680-190888-2) and XGM-97-12X-FAL20 (680-190888-3) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 11/04/2020 and analyzed on 11/06/2020.

Manganese recovered high for the MS of sample XGM-94-07X-FAL20MS (680-190888-1) in batch 680-642672.

Manganese recovered low for the MSD of sample XGM-94-07X-FAL20MSD (680-190888-1) in batch 680-642672.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS

Samples XGM-94-07X-FAL20 (680-190888-1), XGM-94-08X-FAL20 (680-190888-2) and XGM-97-12X-FAL20 (680-190888-3) were analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 11/04/2020 and analyzed on 11/05/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ALKALINITY

Samples XGM-94-07X-FAL20 (680-190888-1), XGM-94-08X-FAL20 (680-190888-2) and XGM-97-12X-FAL20 (680-190888-3) were analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 11/06/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens

Job ID: 680-190888-1

Client Sample ID: XGM-94-07X-FAL20

Lab Sample ID: 680-190888-1
Date Collected: 10/27/20 16:00
Matrix: Water
Date Received: 10/31/20 10:05

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	12000		50	17	ug/L		11/04/20 17:05	11/06/20 03:59	1
Manganese	4500	J	10	1.0	ug/L		11/04/20 17:05	11/06/20 03:59	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.7		3.0	1.5	ug/L		11/04/20 17:07	11/05/20 19:45	1

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	95		10	3.1	mg/L			11/06/20 02:08	1

Client Sample ID: XGM-94-08X-FAL20

Lab Sample ID: 680-190888-2
Date Collected: 10/27/20 14:30
Matrix: Water
Date Received: 10/31/20 10:05

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	11000		50	17	ug/L		11/04/20 17:05	11/06/20 04:32	1
Manganese	7100		10	1.0	ug/L		11/04/20 17:05	11/06/20 04:32	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	16		3.0	1.5	ug/L		11/04/20 17:07	11/05/20 20:03	1

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	140		10	3.1	mg/L			11/06/20 02:14	1

Client Sample ID: XGM-97-12X-FAL20

Lab Sample ID: 680-190888-3
Date Collected: 10/27/20 11:55
Matrix: Water
Date Received: 10/31/20 10:05

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	18000		50	17	ug/L		11/04/20 17:05	11/06/20 04:37	1
Manganese	1300		10	1.0	ug/L		11/04/20 17:05	11/06/20 04:37	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	21		3.0	1.5	ug/L		11/04/20 17:07	11/05/20 20:06	1

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	130		10	3.1	mg/L			11/06/20 02:19	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-642363/1-A
Matrix: Water
Analysis Batch: 642672

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 642363

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	17	U	50	17	ug/L		11/04/20 17:05	11/06/20 03:50	1
Manganese	1.0	U	10	1.0	ug/L		11/04/20 17:05	11/06/20 03:50	1

Lab Sample ID: LCS 680-642363/2-A
Matrix: Water
Analysis Batch: 642672

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 642363

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5000	4710		ug/L		94	87 - 115
Manganese	400	384		ug/L		96	90 - 114

Lab Sample ID: 680-190888-1 MS
Matrix: Water
Analysis Batch: 642672

Client Sample ID: XGM-94-07X-FAL20
Prep Type: Total/NA
Prep Batch: 642363

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	12000		5000	17000		ug/L		110	87 - 115
Manganese	4500	J	400	5030	4	ug/L		137	90 - 114

Lab Sample ID: 680-190888-1 MSD
Matrix: Water
Analysis Batch: 642672

Client Sample ID: XGM-94-07X-FAL20
Prep Type: Total/NA
Prep Batch: 642363

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	12000		5000	16400		ug/L		99	87 - 115	3	20
Manganese	4500	J	400	4830	4	ug/L		87	90 - 114	4	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-642364/1-A
Matrix: Water
Analysis Batch: 642635

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 642364

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		11/04/20 17:07	11/05/20 19:38	1

Lab Sample ID: LCS 680-642364/2-A
Matrix: Water
Analysis Batch: 642635

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 642364

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	101		ug/L		101	84 - 116

Lab Sample ID: 680-190888-1 MS
Matrix: Water
Analysis Batch: 642635

Client Sample ID: XGM-94-07X-FAL20
Prep Type: Total/NA
Prep Batch: 642364

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	6.7		100	113		ug/L		107	84 - 116

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 680-190888-1 MSD
Matrix: Water
Analysis Batch: 642635

Client Sample ID: XGM-94-07X-FAL20
Prep Type: Total/NA
Prep Batch: 642364

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	6.7		100	109		ug/L		103	84 - 116	4	20

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-515698/110
Matrix: Water
Analysis Batch: 515698

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	3.1	U	10	3.1	mg/L			11/06/20 01:52	1

Lab Sample ID: LCS 280-515698/109
Matrix: Water
Analysis Batch: 515698

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Alkalinity			200	196		mg/L		98	89 - 109		

Metals

Prep Batch: 642363

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190888-1	XGM-94-07X-FAL20	Total/NA	Water	3010A	
680-190888-2	XGM-94-08X-FAL20	Total/NA	Water	3010A	
680-190888-3	XGM-97-12X-FAL20	Total/NA	Water	3010A	
MB 680-642363/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-642363/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-190888-1 MS	XGM-94-07X-FAL20	Total/NA	Water	3010A	
680-190888-1 MSD	XGM-94-07X-FAL20	Total/NA	Water	3010A	

Prep Batch: 642364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190888-1	XGM-94-07X-FAL20	Total/NA	Water	3010A	
680-190888-2	XGM-94-08X-FAL20	Total/NA	Water	3010A	
680-190888-3	XGM-97-12X-FAL20	Total/NA	Water	3010A	
MB 680-642364/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-642364/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-190888-1 MS	XGM-94-07X-FAL20	Total/NA	Water	3010A	
680-190888-1 MSD	XGM-94-07X-FAL20	Total/NA	Water	3010A	

Analysis Batch: 642635

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190888-1	XGM-94-07X-FAL20	Total/NA	Water	6020A	642364
680-190888-2	XGM-94-08X-FAL20	Total/NA	Water	6020A	642364
680-190888-3	XGM-97-12X-FAL20	Total/NA	Water	6020A	642364
MB 680-642364/1-A	Method Blank	Total/NA	Water	6020A	642364
LCS 680-642364/2-A	Lab Control Sample	Total/NA	Water	6020A	642364
680-190888-1 MS	XGM-94-07X-FAL20	Total/NA	Water	6020A	642364
680-190888-1 MSD	XGM-94-07X-FAL20	Total/NA	Water	6020A	642364

Analysis Batch: 642672

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190888-1	XGM-94-07X-FAL20	Total/NA	Water	6010C	642363
680-190888-2	XGM-94-08X-FAL20	Total/NA	Water	6010C	642363
680-190888-3	XGM-97-12X-FAL20	Total/NA	Water	6010C	642363
MB 680-642363/1-A	Method Blank	Total/NA	Water	6010C	642363
LCS 680-642363/2-A	Lab Control Sample	Total/NA	Water	6010C	642363
680-190888-1 MS	XGM-94-07X-FAL20	Total/NA	Water	6010C	642363
680-190888-1 MSD	XGM-94-07X-FAL20	Total/NA	Water	6010C	642363

General Chemistry

Analysis Batch: 515698

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190888-1	XGM-94-07X-FAL20	Total/NA	Water	SM 2320B	
680-190888-2	XGM-94-08X-FAL20	Total/NA	Water	SM 2320B	
680-190888-3	XGM-97-12X-FAL20	Total/NA	Water	SM 2320B	
MB 280-515698/110	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-515698/109	Lab Control Sample	Total/NA	Water	SM 2320B	

Lab Chronicle

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens

Job ID: 680-190888-1

Client Sample ID: XGM-94-07X-FAL20

Lab Sample ID: 680-190888-1
Date Collected: 10/27/20 16:00
Matrix: Water
Date Received: 10/31/20 10:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	642363	11/04/20 17:05	BCB	TAL SAV
Total/NA	Analysis	6010C		1			642672	11/06/20 03:59	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	642364	11/04/20 17:07	BCB	TAL SAV
Total/NA	Analysis	6020A		1			642635	11/05/20 19:45	BWR	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Analysis	SM 2320B		1			515698	11/06/20 02:08	RAF	TAL DEN
	Instrument ID: WC_AT4									

Client Sample ID: XGM-94-08X-FAL20

Lab Sample ID: 680-190888-2
Date Collected: 10/27/20 14:30
Matrix: Water
Date Received: 10/31/20 10:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	642363	11/04/20 17:05	BCB	TAL SAV
Total/NA	Analysis	6010C		1			642672	11/06/20 04:32	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	642364	11/04/20 17:07	BCB	TAL SAV
Total/NA	Analysis	6020A		1			642635	11/05/20 20:03	BWR	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Analysis	SM 2320B		1			515698	11/06/20 02:14	RAF	TAL DEN
	Instrument ID: WC_AT4									

Client Sample ID: XGM-97-12X-FAL20

Lab Sample ID: 680-190888-3
Date Collected: 10/27/20 11:55
Matrix: Water
Date Received: 10/31/20 10:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	642363	11/04/20 17:05	BCB	TAL SAV
Total/NA	Analysis	6010C		1			642672	11/06/20 04:37	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	642364	11/04/20 17:07	BCB	TAL SAV
Total/NA	Analysis	6020A		1			642635	11/05/20 20:06	BWR	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Analysis	SM 2320B		1			515698	11/06/20 02:19	RAF	TAL DEN
	Instrument ID: WC_AT4									

Laboratory References:

= Katahdin Analytical Services Inc, 600 Technology Way, Scarborough, ME 04074

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Accreditation/Certification Summary

Client: Seres Engineering & Services LLC
Job ID: 680-190888-1
Project/Site: Fort Devens

Laboratory: Eurofins TestAmerica, Savannah

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2463	09-22-22

Laboratory: Eurofins TestAmerica, Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-21

Method Summary

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens

Job ID: 680-190888-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
SM 2320B	Alkalinity	SM	TAL DEN
MA-VPH	MADEP VPH Volatile Petroleum Hydrocarbon	MA DEP	
3010A	Preparation, Total Metals	SW846	TAL SAV

Protocol References:

MA DEP = Massachusetts Department Of Environmental Protection

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

= Katahdin Analytical Services Inc, 600 Technology Way, Scarborough, ME 04074

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC.	Project #:
Project Location: Fort Devens	RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):

Matrices: x Groundwater/Surface Water Soil/Sediment Drinking Water Air Other: _____

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A x	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	x Yes No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	x Yes No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	x Yes No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	x Yes No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	x Yes No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	x Yes No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	x Yes No[1]

***Data User Note**: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes x No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	x Yes No[1]

[1]*All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 11/18/2020

TEST AMERICA SAVANNAH
FORT DEVENS
SN9122

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
FORT DEVENS
SN9122

Sample Receipt

The following samples were received on November 03, 2020 and were logged in under Katahdin Analytical Services work order number SN9122 for a hardcopy due date of November 15, 2020.

KATAHDIN	TEST AMERICA SAVANNAH
Sample No.	Sample Identification
SN9122-1	XGM-94-07X-FAL20
SN9122-2	XGM-94-08X-FAL20
SN9122-3	XGM-97-12X-FAL20

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

We certify that the test results provided in this report meet all the requirements of the NELAP standards unless otherwise noted in this narrative or in the Report of Analysis.

We certify that the test results provided in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation L2223.

Analytes which are reported but not listed on our ANAB scope of accreditation will be "^" flagged and the following language will be included in the case narrative for all DoD compliant work: "^" Indicates this analyte is not included on Katahdin Analytical Services DoD-ELAP Scope of Accreditation.

Sample analyses have been performed by the methods as noted herein.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact your Katahdin Analytical Services Project Manager, **Ms. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of Work Order # SN9122 were analyzed in accordance with Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis.

MA VPH Analysis

Sample SN9122-3 was manually integrated for the target analytes o-xylene, ethylbenzene and naphthalene, the C9-C10 aromatic range, and the surrogate 2,5-dibromotoluene. The specific reasons for the manual integrations are indicated on the raw data by the manual integration codes (M1-M11). These codes are further explained in the attachment following this narrative.

The closing calibration verification standard (CV) (file 2NK10093) had low responses for the target analyte n-decane and the C9-C12 aliphatic range that resulted in %D's that exceded the DoD QSM acceptance criteria ±25%.

The independent check standard (file 2NK10066) associated with the initial calibration on 11/05/2020 had high concentrations for the target analyte naphthalene on the PID/FID and a high response for n-decane on the FID. These concentrations exceeded the DoD QSM acceptance limit of ±20% of the expected value from the ICAL.

There were no other protocol deviations or observations noted by the organics laboratory staff.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond
11.18.20

Leslie Dimond
Quality Assurance Officer

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin Analytical Services, LLC. — Sample Receipt Condition Report

Client:	KAS PM: HTM	Sampled By: client
Project:	KIMS Entry By: SCB	Delivered By: Fed Ex
KAS Work Order#: SN9121 - SN9122	KIMS Review By: HTM	Received By: [illegible]
	Labeled By: [illegible]	
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 11/3/20 1045

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	/				
2. Chain of Custody present in cooler?	/				
3. Chain of Custody signed by client?	/				
4. Chain of Custody matches samples?	/				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.					Temp (°C): 0.8 — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	/				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	/				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	/				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				/	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles: **Aqueous:** No bubble larger than a pea?	/				
Soil/Sediment:					
Received in airtight container?				/	
Received in methanol?				/	
Methanol covering soil?				/	
D.I. Water - Received within 48 hour HT?				/	
7. Trip Blank present in cooler?	/				
8. Proper sample containers and volume?	/				
9. Samples within hold time upon receipt?	/				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2				/	
Sulfide - >9				/	
Cyanide – pH >12				/	
11. Bottleware Prepped on:					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

SN9122

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Smith, Kathryn E	Carrier Tracking No(s):	COC No: 680-631593.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Kathy.Smith@Eurofinset.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Katahdin Analytical Services		Accreditations Required (See note): Dept. of Defense ELAP - A2LA; DoD - ANAB		Job #: 680-190888-1
Address: 600 Technology Way, ,	Due Date Requested: 11/11/2020			
City: Scarborough	TAT Requested (days):			
State, Zip: ME, 04074				
Phone:	PO #:			
Email:	WO #:			
Project Name: Fort Devens	Project #: 68023801			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (MA VPH + BTEX)/ MA VPH	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
XGM-94-07X-FAL20 (680-190888-1)	10/27/20	16:00 Eastern		Water			X	3	
XGM-94-08X-FAL20 (680-190888-2)	10/27/20	14:30 Eastern		Water			X	3	
XGM-97-12X-FAL20 (680-190888-3)	10/27/20	11:55 Eastern		Water			X	3	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	11-02-20	1532	[signature]	11/3/20 1045	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

11/18/2020006

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Nov. 03, 2020
05:29 PM

Login Number: SN9122

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Quote/Incoming:

Primary Report Address:
Kathryn E Smith
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Kathy.Smith@Eurofinset.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 5.3 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Include LOD on form. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative.
CHECK NO.	:	
CLIENT PO#	:	
CLIENT PROJECT MANAGE	:	Kathy.Smith@Eurofins.com
CONTRACT	:	680-190888, PN: 68023801
COOLER TEMPERATURE	:	0.8
DELIVERY SERVICES	:	FedEx
EDD FORMAT	:	ECC-091317-TXT
LOGIN INITIALS	:	JCB
PM	:	HHM
PROJECT NAME	:	Fort Devens
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	SDS needs all forms. Include Level 4 narrative and MCP forms (from Leslie). Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS. Upload EDD to Ft. Devens Database. Email PDF, EDD, and invoice to Jerry. No HC.
SDG ID	:	
SDG STATUS	:	
VERBAL TAT	:	

Login Number: SN9122

Quote/Incoming:

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SN9122-1	XGM-94-07X-FAL20	27-OCT-20 16:00	03-NOV-20			15-NOV-20	

Matrix		*Product*	*Hold Date (shortest)*	*Bottle Type*	*Bottle Count*	*Comments*
Aqueous	S	MA-VPH	10-NOV-20	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SN9122-2	XGM-94-08X-FAL20	27-OCT-20 14:30	03-NOV-20			15-NOV-20	

Matrix		*Product*	*Hold Date (shortest)*	*Bottle Type*	*Bottle Count*	*Comments*
Aqueous	S	MA-VPH	10-NOV-20	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SN9122-3	XGM-97-12X-FAL20	27-OCT-20 11:55	03-NOV-20			15-NOV-20	

Matrix		*Product*	*Hold Date (shortest)*	*Bottle Type*	*Bottle Count*	*Comments*
Aqueous	S	MA-VPH	10-NOV-20	40mL Vial+HCl		

Total Samples: 3 ***Total Analyses: 3***

SAMPLE DATA SUMMARY PACKAGE

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U — Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* — Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D — Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E — Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J — Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J — Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B — Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C — Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L — Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M — Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N — Presumptive evidence of a compound based on a mass spectral library search.

A — Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P — Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN9122-1
Client ID: XGM-94-07X-FAL20
Project: Fort Devens
SDG: SN9122
Lab File ID: 2NK10089.D

Sample Date: 27-OCT-20
Received Date: 03-NOV-20
Extract Date: 06-NOV-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG289658

Analysis Date: 06-NOV-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 17-NOV-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		98.0	%					
2,5-Dibromotoluene (PID)		94.8	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029
http://www.katahdinlab.com

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN9122-2
Client ID: XGM-94-08X-FAL20
Project: Fort Devens
SDG: SN9122
Lab File ID: 2NK10090.D

Sample Date: 27-OCT-20
Received Date: 03-NOV-20
Extract Date: 06-NOV-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG289658

Analysis Date: 06-NOV-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 17-NOV-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		90.2	%					
2,5-Dibromotoluene (PID)		88.1	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029
http://www.katahdinlab.com

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN9122-3
Client ID: XGM-97-12X-FAL20
Project: Fort Devens
SDG: SN9122
Lab File ID: 2NK10091.D

Sample Date: 27-OCT-20
Received Date: 03-NOV-20
Extract Date: 06-NOV-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG289658

Analysis Date: 06-NOV-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 17-NOV-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics		110	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics		210	ug/L	1	100	100	50.	75.
C9-C10 Aromatics		300	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	J	1.4	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	J	2.4	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	J	0.68	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		96.2	%					
2,5-Dibromotoluene (PID)		94.0	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

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Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG289658-1
Client ID: Method Blank Sample
Project:
SDG: SN9122
Lab File ID: 2NK10075.D

Sample Date:
Received Date:
Extract Date: 06-NOV-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG289658

Analysis Date: 06-NOV-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 17-NOV-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		80.6	%					
2,5-Dibromotoluene (PID)		79.7	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** Fort Devens **Matrix:** AQ
Lab Code: KAS **SDG:** SN9122

Client Sample ID	Lab Sample ID	Col. ID	DBT-FID	#	DBT-PID	#
XGM-94-07X-FAL20	SN9122-1	B	98.0		94.8	
XGM-94-08X-FAL20	SN9122-2	B	90.2		88.1	
XGM-97-12X-FAL20	SN9122-3	B	96.2		94.0	
Method Blank Sample	WG289658-1	B	80.6		79.7	
Laboratory Control S	WG289658-2	B	90.2		88.2	
Laboratory Control S	WG289658-3	B	85.2		83.1	

		QC Limits
DBT-FID	2,5-DIBROMOTOLUENE (FID)	70-130
DBT-PID	2,5-DIBROMOTOLUENE (PID)	70-130

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG289658-2
LCSD ID: WG289658-3
Project:
SDG: SN9122
Report Date: 17-NOV-20
LCS File ID: 2NK10076.D

Received Date:
Extract Date: 06-NOV-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG289658
LCSD File ID: 2NK10077.D

Analysis Date: 06-NOV-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	326.	109.	338.	113.	ug/L	4	25	70-130
C9-C12 Aliphatics	200.	234.	117.	242.	121.	ug/L	3	25	70-130
C9-C10 Aromatics	100.	117.	117.	119.	119.	ug/L	2	25	70-130
Benzene	100.	114.	114.	117.	117.	ug/L	2	25	70-130
Ethylbenzene	100.	116.	116.	119.	119.	ug/L	2	25	70-130
Methyl tert-butylether	100.	112.	112.	118.	118.	ug/L	5	25	70-130
Naphthalene	100.	114.	114.	117.	117.	ug/L	2	25	70-130
Toluene	100.	115.	115.	116.	116.	ug/L	1	25	70-130
m+p-Xylenes	200.	226.	113.	230.	115.	ug/L	2	25	70-130
o-Xylene	100.	115.	115.	118.	118.	ug/L	2	25	70-130
2,5-Dibromotoluene (FID)			90.2		85.2				70-130
2,5-Dibromotoluene (PID)			88.2		83.1				70-130

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens
Lab File ID : 2NK10075.D
Instrument ID : GC02

SDG : SN9122
Lab Sample ID : WG289658-1
Date Analyzed : 06-NOV-20
Time Analyzed : 10:23
Date Extracted : 06-NOV-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG289658-2	2NK10076.	11/06/20	11:03
Laboratory Control S	WG289658-3	2NK10077.	11/06/20	11:43
XGM-94-07X-FAL20	SN9122-1	2NK10089.	11/06/20	21:08
XGM-94-08X-FAL20	SN9122-2	2NK10090.	11/06/20	21:50
XGM-97-12X-FAL20	SN9122-3	2NK10091.	11/06/20	22:33

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Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN9122
Project : Fort Devens **Instrument ID:** GC02
Lab File IDs : 2NK10060.D2NK10061.D2NK10062.D 2NK10059.D2NK10063.D2NK10065.D **Calibration Date(s):** 05-NOV-20 08:58 05-NOV-20 13:31

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C10 Aromatic	4550	4572	4954	5043	5148	4518	AVG		4798		5.88202	25.00000	M (
Methyl tert-butylether	2638	2718	2752	2618	2804	2588	AVG		2686		3.15350	25.00000	O
Benzene	6256	5695	5860	5667	6045	5417	AVG		5823		5.11519	25.00000	O
Toluene	5619	5138	5307	5208	5546	4835	AVG		5275		5.42627	25.00000	O
Ethylbenzene	4742	4420	4652	4635	4880	4282	AVG		4602		4.72461	25.00000	O
m+p-Xylene	5807	5341	5611	5507	5550	4273	AVG		5348		10.2452	25.00000	O
o-Xylene	4766	4551	4794	4736	4851	4154	AVG		4642		5.59523	25.00000	O
1,2,4-trimethylbenzene	4550	4572	4954	5043	5148	4518	AVG		4798		5.88202	25.00000	O
Naphthalene	4079	4103	4566	4852	4764	4282	AVG		4441		7.53063	25.00000	O
2,5-Dibromotoluene (PID)	6435	4128	4419	4850	4472	2960	AVG		4544		24.8417	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN9122
Project : Fort Devens **Instrument ID:** GC02
Lab File IDs : 2NK10060.D2NK10061.D2NK10062.D 2NK10059.D2NK10063.D2NK10065.D **Calibration Date(s):** 05-NOV-20 08:58 05-NOV-20 13:31

	Level 1 1.0000	Level 2 5.0000	Level 3 10.0000	Level 4 50.0000	Level 5 100.0000	Level 6 300.0000	Crv New	b	m1	m2	%RSD	Max %RSD	
C5-C8 Aliphatic	5352	4430	4410	4565	4741	4404	AVG		4650		7.90300	25.00000	M (
C9-C12 Aliphatic	5017	3888	3807	3861	4434	5299	AVG		4384		14.7536(	25.00000	M (
n-Pentane	4657	3920	3842	4202	4382	3836	AVG		4140		8.07800	25.00000	O
2-Methylpentane	5705	4578	4609	4671	4846	4473	AVG		4813		9.42804	25.00000	O
Methyl tert-butylether	4219	3809	3748	3563	3622	3480	AVG		3740		7.04303	25.00000	O
2,2,4-Trimethylpentane	5695	4792	4781	4823	4995	4901	AVG		4998		7.02084	25.00000	O
Benzene	7301	6537	6675	6394	6557	6175	AVG		6607		5.76466	25.00000	O
Toluene	7086	6359	6430	6307	6490	6068	AVG		6457		5.27940	25.00000	O
n-Nonane	4638	3904	3958	4028	4345	5034	AVG		4318		10.3622	25.00000	O
n-Decane	4107	3347	3296	3531	4401	5372	AVG		4009		19.9404	25.00000	O
Ethylbenzene	6614	5970	6230	6165	6296	5962	AVG		6206		3.89203	25.00000	O
m+p-Xylene	6937	6197	6393	6262	6366	6052	AVG		6368		4.78410	25.00000	O
o-Xylene	6846	6375	6482	6336	6417	6161	AVG		6436		3.54273	25.00000	O
1,2,4-trimethylbenzene	6123	5937	6244	6304	6356	6142	AVG		6184		2.44413	25.00000	O
n-Butylcyclohexane	5926	4429	4319	4190	4466	5226	AVG		4759		14.2241	25.00000	O
Naphthalene	3391	3878	4227	4423	4344	4287	AVG		4091		9.56652	25.00000	O
2,5-Dibromotoluene (FID)	2452	1817	1966	2122	2046	1833	AVG		2039		11.4879	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens
Lab ID : WG289658-4
Lab File ID : 2NK10074.D
Initial Calibration Date(s): 11/05/20 08:58 11/05/20 13:31

SDG: SN9122
Analytical Date: 11/06/20 09:08
Instrument ID: GC02
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	4798	4886	0.100	1.84269	25.00000	Averaged
20	Benzene	5823	5560	0.100	-4.52955	25.00000	Averaged
30	Ethylbenzene	4602	4501	0.100	-2.18497	25.00000	Averaged
40	Methyl tert-butylether	2686	2580	0.100	-3.95793	25.00000	Averaged
50	Naphthalene	4441	4637	0.100	4.41785	25.00000	Averaged
60	Toluene	5275	5075	0.100	-3.80616	25.00000	Averaged
70	m+p-Xylene	5348	5324	0.100	-0.44836	25.00000	Averaged
80	o-Xylene	4642	4581	0.100	-1.31154	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	4544	4811	0.100	5.86269	25.00000	Averaged
180	1,2,4-trimethylbenzene	4798	4886	0.100	1.84269	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens
Lab ID : WG289658-4
Lab File ID : 2NK10074.D
Initial Calibration Date(s): 11/05/20 08:58 11/05/20 13:31

SDG: SN9122
Analytical Date: 11/06/20 09:08
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
30	C5-C8 Aliphatic	4650	4402	0.100	-5.34296	25.00000	Averaged
40	C9-C12 Aliphatic	4384	3767	0.100	-14.08475	25.00000	Averaged
60	Benzene	6607	6290	0.100	-4.78595	25.00000	Averaged
70	Ethylbenzene	6206	6017	0.100	-3.04843	25.00000	Averaged
80	Methyl tert-butylether	3740	3529	0.100	-5.64341	25.00000	Averaged
90	Naphthalene	4091	4232	0.100	3.43522	25.00000	Averaged
100	Toluene	6457	6156	0.100	-4.65643	25.00000	Averaged
110	m+p-Xylene	6368	6114	0.100	-3.98863	25.00000	Averaged
120	o-Xylene	6436	6195	0.100	-3.74107	25.00000	Averaged
200	n-Pentane	4140	4066	0.100	-1.78621	25.00000	Averaged
210	2-Methylpentane	4813	4467	0.100	-7.20623	25.00000	Averaged
220	2,2,4-Trimethylpentane	4998	4673	0.100	-6.49458	25.00000	Averaged
230	n-Nonane	4318	3927	0.100	-9.05304	30.00000	Averaged
240	n-Decane	4009	3443	0.100	-14.11501	25.00000	Averaged
250	n-Butylcyclohexane	4759	4090	0.100	-14.05927	25.00000	Averaged
260	1,2,4-trimethylbenzene	6184	6142	0.100	-0.69347	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	2039	2117	0.100	3.81571	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens
SDG: SN9122
Lab ID : WG289658-5
Analytical Date: 11/06/20 23:59
Lab File ID : 2NK10093.D
Instrument ID: GC02
Initial Calibration Date(s): 11/05/20 08:58 11/05/20 13:31
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	4798	5064	0.100	5.54680	25.00000	Averaged
20	Benzene	5823	5882	0.100	1.00440	25.00000	Averaged
30	Ethylbenzene	4602	4740	0.100	3.00518	25.00000	Averaged
40	Methyl tert-butylether	2686	2732	0.100	1.70969	25.00000	Averaged
50	Naphthalene	4441	4891	0.100	10.13052	25.00000	Averaged
60	Toluene	5275	5359	0.100	1.58483	25.00000	Averaged
70	m+p-Xylene	5348	5511	0.100	3.05333	25.00000	Averaged
80	o-Xylene	4642	4780	0.100	2.98367	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	4544	4867	0.100	7.11396	25.00000	Averaged
180	1,2,4-trimethylbenzene	4798	5064	0.100	5.54666	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens
Lab ID : WG289658-5
Lab File ID : 2NK10093.D
Initial Calibration Date(s): 11/05/20 08:58 11/05/20 13:31

SDG: SN9122
Analytical Date: 11/06/20 23:59
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
30	C5-C8 Aliphatic	4650	4147	0.100	-10.82351	25.00000	Averaged	
40	C9-C12 Aliphatic	4384	3255	0.100	-25.75442	25.00000	Averaged	<-
60	Benzene	6607	6482	0.100	-1.89251	25.00000	Averaged	
70	Ethylbenzene	6206	6172	0.100	-0.55741	25.00000	Averaged	
80	Methyl tert-butylether	3740	3632	0.100	-2.89818	25.00000	Averaged	
90	Naphthalene	4091	4394	0.100	7.40493	25.00000	Averaged	
100	Toluene	6457	6350	0.100	-1.65170	25.00000	Averaged	
110	m+p-Xylene	6368	6251	0.100	-1.83372	25.00000	Averaged	
120	o-Xylene	6436	6336	0.100	-1.56179	25.00000	Averaged	
200	n-Pentane	4140	3894	0.100	-5.93083	25.00000	Averaged	
210	2-Methylpentane	4813	4226	0.100	-12.20265	25.00000	Averaged	
220	2,2,4-Trimethylpentane	4998	4321	0.100	-13.54854	25.00000	Averaged	
230	n-Nonane	4318	3381	0.100	-21.68735	30.00000	Averaged	
240	n-Decane	4009	2921	0.100	-27.12622	25.00000	Averaged	<-
250	n-Butylcyclohexane	4759	3589	0.100	-24.59906	25.00000	Averaged	
260	1,2,4-trimethylbenzene	6184	6255	0.100	1.13726	25.00000	Averaged	
21	2,5-Dibromotoluene (FID)	2039	2092	0.100	2.59866	25.00000	Averaged	

*** = Compound out of QC criteria**

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Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services
Project : Fort Devens
Instrument ID : GC02

SDG : SN9122

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG289628-4	11/05/20	08:58		31.06
Initial Calibration	WG289628-4	11/05/20	08:58	31.049	
Initial Calibration	WG289628-1	11/05/20	09:40		31.058
Initial Calibration	WG289628-1	11/05/20	09:40	31.044	
Initial Calibration	WG289628-2	11/05/20	10:21		31.058
Initial Calibration	WG289628-2	11/05/20	10:21	31.048	
Initial Calibration	WG289628-3	11/05/20	11:03		31.058
Initial Calibration	WG289628-3	11/05/20	11:03	31.047	
Initial Calibration	WG289628-5	11/05/20	11:44		31.053
Initial Calibration	WG289628-5	11/05/20	11:44	31.044	
Initial Calibration	WG289628-6	11/05/20	13:31		31.065
Initial Calibration	WG289628-6	11/05/20	13:31	31.054	
Independent Source	WG289628-7	11/05/20	14:42	31.054	31.064
Continuing Calibrati	WG289658-4	11/06/20	09:08	31.053	31.063
Method Blank Sample	WG289658-1	11/06/20	10:23	31.055	31.066
Laboratory Control S	WG289658-2	11/06/20	11:03	31.055	31.064
Laboratory Control S	WG289658-3	11/06/20	11:43	31.057	31.066
XGM-94-07X-FAL20	SN9122-1	11/06/20	21:08	31.063	31.073
XGM-94-08X-FAL20	SN9122-2	11/06/20	21:50	31.062	31.073
XGM-97-12X-FAL20	SN9122-3	11/06/20	22:33	31.062	31.072
Continuing Calibrati	WG289658-5	11/06/20	23:59	31.064	31.074

CHAIN-OF-CUSTODY RECORD

Seres-Arcadis JV
Nathan Mullens
669 Marina Drive, Suite B7, Charleston, SC 29492
(843) 478.0336, jennifer.singer@arcadis.com

COC # Boston #215

Project Name: Former Fort Devens, Long Term Monitoring	Laboratory: Eurofins Environment Testing TestAmerica, Savannah, GA	Event: Seres-Arcadis JV, Long Term Monitoring, AOC 43G, Fall 2020
Project Number: DEVENS-LTM	Contact:	
WBS Code:	Ship to:	

Comments:
A2320B (A) = Alkalinity
MADEPVP (A) = VPH with targets

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
4	3x 40mL glass VOA Vials, HCl, pH < 2; Cool < 6degC
9	1x 250mL, plastic, HNO3, pH < 2; Cool < 6degC
46	1x 250mL, plastic, Cool < 6degC

Event: Seres-Arcadis JV, Long Term Monitoring, AOC 43G, Fall 2020

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: A2320B (A)	MADEPVP (A)	SW6010C - Fe Mn	SW6020A - As	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Cooler	Comments
						46	4	9	9						
1	AAFES-2-FAL20	WG	10-27-20	1145	DC	X	X	X	X	AAFES-2	N1	16.20	33.30		
2	AAFES-7-FAL20	WG	10-27-20	1255	NB	X	X	X	X	AAFES-7	N1	4.50	14.50		
3	AOC43G-DUP01-FAL20	WG	10-27-20	1500	DC	X	X	X	X	XGM-94-06X	FD1	17.00	27.00		
4	XGM-93-02X-FAL20	WG	10-27-20	1055	NB	X	X	X	X	XGM-93-02X	N1	28.00	38.00		
5	XGM-94-04X-FAL20	WG	10-27-20	1155	NB	X	X	X	X	XGM-94-04X	N1	18.20	30.50		
6	XGM-94-06X-FAL20	WG	10-27-20	1500	DC	X	X	X	X	XGM-94-06X	N1	17.00	27.00		
7	XGM-94-07X-FAL20	WG	10-27-20	1600	CR	X	X	X	X	XGM-94-07X	N1	17.00	29.60		
8	XGM-94-08X-FAL20	WG	10-27-20	1430	CR	X	X	X	X	XGM-94-08X	N1	23.50	36.10		
9	XGM-97-12X-FAL20	WG	10-27-20	1155	CR	X	X	X	X	XGM-97-12X	N1	24.00	34.00		

Turnaround Time: Standard *

CR.

AOC43 Trip Blank for VOCs

680-190888 Chain of Custody

Relinquished by: [illegible]
Date 10-28-20
Time 16:45
Received by:
AOC43G_eCOC

Date 10/27/20
Time 16:45
Shipping Date:
Received by Laboratory: [illegible]
Condition:

DM TA
10.31-20 1005
5.4/5.7

10/27/20 17:00

11/18/2020

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Smith, Kathryn E	Carrier Tracking No(s):	COC No: 680-631604.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Kathy.Smith@Eurofinset.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): Dept. of Defense ELAP - A2LA; DoD - ANAB		Job #: 680-190888-1
Address: 4955 Yarrow Street,	Due Date Requested: 11/11/2020			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: Fort Devens	Project #: 68023801			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2320B/ Alkalinity	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
XGM-94-07X-FAL20 (680-190888-1)	10/27/20	16:00 Eastern		Water			X	1	
XGM-94-08X-FAL20 (680-190888-2)	10/27/20	14:30 Eastern		Water			X	1	
XGM-97-12X-FAL20 (680-190888-3)	10/27/20	11:55 Eastern		Water			X	1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	11-02-20	TAL	Laurence Chang	11-3-20 9:15	EURO ITA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.0, 0.8 IR#11-03 RP 11/3

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Seres Engineering & Services LLC

Job Number: 680-190888-1

Login Number: 190888
List Number: 1
Creator: Sims, Robert D

List Source: Eurofins TestAmerica, Savannah

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Seres Engineering & Services LLC

Job Number: 680-190888-1

Login Number: 190888
List Number: 2
Creator: Pottruff, Reed W

List Source: Eurofins TestAmerica, Denver
List Creation: 11/03/20 10:03 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-183899-1
Client Project/Site: JV, LTM, AOC 57 Spring 2020

For:
Seres Engineering & Services LLC
669 Marina Drive
Suite B7
Charleston, South Carolina 29492

Attn: Nathan R Mullens

Kathryn Smith

Authorized for release by:
5/27/2020 5:58:34 PM

Kathryn Smith, Client Service Manager
(912)250-0275
kathy.smith@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Definitions/Glossary

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM, AOC 57 Spring 2020

Job ID: 680-183899-1

Qualifiers

Metals

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM, AOC 57 Spring 2020

Job ID: 680-183899-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-183899-1	57-SW-1-SPR20	Water	05/13/20 15:50	05/15/20 09:20	
680-183899-2	57M-95-03X-SPR20	Water	05/13/20 13:45	05/15/20 09:20	
680-183899-3	57M-96-11X-SPR20	Water	05/13/20 14:40	05/15/20 09:20	
680-183899-4	AOC57-DUP01-SPR20	Water	05/13/20 12:00	05/15/20 09:20	

Job ID: 680-183899-1

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE
Client: Seres Engineering & Services LLC
Project: JV, LTM, AOC 57 Spring 2020

Report Number: 680-183899-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT
The samples were received on 05/15/2020; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 1.8 C.

METALS (ICP) - DISSOLVED
Samples 57-SW-1-SPR20 (680-183899-1), 57M-95-03X-SPR20 (680-183899-2), 57M-96-11X-SPR20 (680-183899-3) and AOC57-DUP01-SPR20 (680-183899-4) were analyzed for Metals (ICP) - Dissolved in accordance with EPA SW-846 Method 6010C. The samples were prepared on 05/18/2020 and analyzed on 05/20/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS (ICP)
Samples 57-SW-1-SPR20 (680-183899-1), 57M-95-03X-SPR20 (680-183899-2), 57M-96-11X-SPR20 (680-183899-3) and AOC57-DUP01-SPR20 (680-183899-4) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 05/21/2020 and analyzed on 05/22/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS (ICPMS) - DISSOLVED
Samples 57-SW-1-SPR20 (680-183899-1), 57M-95-03X-SPR20 (680-183899-2), 57M-96-11X-SPR20 (680-183899-3) and AOC57-DUP01-SPR20 (680-183899-4) were analyzed for Metals (ICPMS) - Dissolved in accordance with EPA SW-846 Method 6020A. The samples were prepared on 05/18/2020 and analyzed on 05/19/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS
Samples 57-SW-1-SPR20 (680-183899-1), 57M-95-03X-SPR20 (680-183899-2), 57M-96-11X-SPR20 (680-183899-3) and AOC57-DUP01-SPR20 (680-183899-4) were analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 05/21/2020 and analyzed on 05/26/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM, AOC 57 Spring 2020

Job ID: 680-183899-1

Client Sample ID: 57-SW-1-SPR20

Lab Sample ID: 680-183899-1

Date Collected: 05/13/20 15:50
Matrix: Water
Date Received: 05/15/20 09:20

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	5500		50	17	ug/L		05/21/20 14:14	05/22/20 18:00	1
Manganese	210		10	1.0	ug/L		05/21/20 14:14	05/22/20 18:00	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	490		50	17	ug/L		05/18/20 12:09	05/20/20 02:16	1
Manganese	150		10	1.0	ug/L		05/18/20 12:09	05/20/20 02:16	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	16		3.0	1.5	ug/L		05/21/20 14:14	05/26/20 13:38	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.3		3.0	1.5	ug/L		05/18/20 12:09	05/19/20 17:08	1

Client Sample ID: 57M-95-03X-SPR20

Lab Sample ID: 680-183899-2

Date Collected: 05/13/20 13:45
Matrix: Water
Date Received: 05/15/20 09:20

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	2200		50	17	ug/L		05/21/20 14:14	05/22/20 17:55	1
Manganese	59		10	1.0	ug/L		05/21/20 14:14	05/22/20 17:55	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	1700		50	17	ug/L		05/18/20 12:09	05/20/20 02:21	1
Manganese	53		10	1.0	ug/L		05/18/20 12:09	05/20/20 02:21	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	42		3.0	1.5	ug/L		05/21/20 14:14	05/26/20 13:36	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	34		3.0	1.5	ug/L		05/18/20 12:09	05/19/20 17:11	1

Client Sample ID: 57M-96-11X-SPR20

Lab Sample ID: 680-183899-3

Date Collected: 05/13/20 14:40
Matrix: Water
Date Received: 05/15/20 09:20

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	42000		50	17	ug/L		05/21/20 14:14	05/22/20 17:41	1
Manganese	3300		10	1.0	ug/L		05/21/20 14:14	05/22/20 17:41	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	30000		50	17	ug/L		05/18/20 12:09	05/20/20 02:11	1
Manganese	3300		10	1.0	ug/L		05/18/20 12:09	05/20/20 02:11	1

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM, AOC 57 Spring 2020

Job ID: 680-183899-1

Client Sample ID: 57M-96-11X-SPR20

Lab Sample ID: 680-183899-3

Date Collected: 05/13/20 14:40

Matrix: Water

Date Received: 05/15/20 09:20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	300		3.0	1.5	ug/L		05/21/20 14:14	05/26/20 13:13	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	110		3.0	1.5	ug/L		05/18/20 12:09	05/19/20 17:05	1

Client Sample ID: AOC57-DUP01-SPR20

Lab Sample ID: 680-183899-4

Date Collected: 05/13/20 12:00

Matrix: Water

Date Received: 05/15/20 09:20

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	48000		50	17	ug/L		05/21/20 14:14	05/22/20 17:51	1
Manganese	3300		10	1.0	ug/L		05/21/20 14:14	05/22/20 17:51	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	29000		50	17	ug/L		05/18/20 12:09	05/20/20 02:07	1
Manganese	3100		10	1.0	ug/L		05/18/20 12:09	05/20/20 02:07	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	430		3.0	1.5	ug/L		05/21/20 14:14	05/26/20 13:33	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	120		3.0	1.5	ug/L		05/18/20 12:09	05/19/20 16:57	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-619578/1-A
Matrix: Water
Analysis Batch: 619792

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 619578

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	17	U	50	17	ug/L		05/21/20 14:14	05/22/20 17:00	1
Manganese	1.0	U	10	1.0	ug/L		05/21/20 14:14	05/22/20 17:00	1

Lab Sample ID: LCS 680-619578/2-A
Matrix: Water
Analysis Batch: 619792

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 619578

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5010	4940		ug/L		99	87 - 115
Manganese	400	397		ug/L		99	90 - 114

Lab Sample ID: MB 680-619068/1-A
Matrix: Water
Analysis Batch: 619358

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 619068

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	17	U	50	17	ug/L		05/18/20 12:09	05/20/20 00:20	1
Manganese	1.0	U	10	1.0	ug/L		05/18/20 12:09	05/20/20 00:20	1

Lab Sample ID: LCS 680-619068/2-A
Matrix: Water
Analysis Batch: 619358

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 619068

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5010	4770		ug/L		95	87 - 115
Manganese	400	395		ug/L		99	90 - 114

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-619577/1-A
Matrix: Water
Analysis Batch: 620003

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 619577

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		05/21/20 14:14	05/26/20 12:26	1

Lab Sample ID: LCS 680-619577/2-A
Matrix: Water
Analysis Batch: 620003

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 619577

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	101		ug/L		101	84 - 116

Lab Sample ID: MB 680-619067/1-A
Matrix: Water
Analysis Batch: 619332

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 619067

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		05/18/20 12:09	05/19/20 15:59	1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 680-619067/2-A
Matrix: Water
Analysis Batch: 619332

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 619067

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	109		ug/L		109	84 - 116

Metals

Prep Batch: 619067

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183899-1	57-SW-1-SPR20	Dissolved	Water	3005A	
680-183899-2	57M-95-03X-SPR20	Dissolved	Water	3005A	
680-183899-3	57M-96-11X-SPR20	Dissolved	Water	3005A	
680-183899-4	AOC57-DUP01-SPR20	Dissolved	Water	3005A	
MB 680-619067/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-619067/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 619068

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183899-1	57-SW-1-SPR20	Dissolved	Water	3005A	
680-183899-2	57M-95-03X-SPR20	Dissolved	Water	3005A	
680-183899-3	57M-96-11X-SPR20	Dissolved	Water	3005A	
680-183899-4	AOC57-DUP01-SPR20	Dissolved	Water	3005A	
MB 680-619068/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-619068/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 619332

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183899-1	57-SW-1-SPR20	Dissolved	Water	6020A	619067
680-183899-2	57M-95-03X-SPR20	Dissolved	Water	6020A	619067
680-183899-3	57M-96-11X-SPR20	Dissolved	Water	6020A	619067
680-183899-4	AOC57-DUP01-SPR20	Dissolved	Water	6020A	619067
MB 680-619067/1-A	Method Blank	Total Recoverable	Water	6020A	619067
LCS 680-619067/2-A	Lab Control Sample	Total Recoverable	Water	6020A	619067

Analysis Batch: 619358

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183899-1	57-SW-1-SPR20	Dissolved	Water	6010C	619068
680-183899-2	57M-95-03X-SPR20	Dissolved	Water	6010C	619068
680-183899-3	57M-96-11X-SPR20	Dissolved	Water	6010C	619068
680-183899-4	AOC57-DUP01-SPR20	Dissolved	Water	6010C	619068
MB 680-619068/1-A	Method Blank	Total Recoverable	Water	6010C	619068
LCS 680-619068/2-A	Lab Control Sample	Total Recoverable	Water	6010C	619068

Prep Batch: 619577

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183899-1	57-SW-1-SPR20	Total/NA	Water	3010A	
680-183899-2	57M-95-03X-SPR20	Total/NA	Water	3010A	
680-183899-3	57M-96-11X-SPR20	Total/NA	Water	3010A	
680-183899-4	AOC57-DUP01-SPR20	Total/NA	Water	3010A	
MB 680-619577/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-619577/2-A	Lab Control Sample	Total/NA	Water	3010A	

Prep Batch: 619578

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183899-1	57-SW-1-SPR20	Total/NA	Water	3010A	
680-183899-2	57M-95-03X-SPR20	Total/NA	Water	3010A	
680-183899-3	57M-96-11X-SPR20	Total/NA	Water	3010A	
680-183899-4	AOC57-DUP01-SPR20	Total/NA	Water	3010A	
MB 680-619578/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-619578/2-A	Lab Control Sample	Total/NA	Water	3010A	

QC Association Summary

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM, AOC 57 Spring 2020

Job ID: 680-183899-1

Metals

Analysis Batch: 619792

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183899-1	57-SW-1-SPR20	Total/NA	Water	6010C	619578
680-183899-2	57M-95-03X-SPR20	Total/NA	Water	6010C	619578
680-183899-3	57M-96-11X-SPR20	Total/NA	Water	6010C	619578
680-183899-4	AOC57-DUP01-SPR20	Total/NA	Water	6010C	619578
MB 680-619578/1-A	Method Blank	Total/NA	Water	6010C	619578
LCS 680-619578/2-A	Lab Control Sample	Total/NA	Water	6010C	619578

Analysis Batch: 620003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183899-1	57-SW-1-SPR20	Total/NA	Water	6020A	619577
680-183899-2	57M-95-03X-SPR20	Total/NA	Water	6020A	619577
680-183899-3	57M-96-11X-SPR20	Total/NA	Water	6020A	619577
680-183899-4	AOC57-DUP01-SPR20	Total/NA	Water	6020A	619577
MB 680-619577/1-A	Method Blank	Total/NA	Water	6020A	619577
LCS 680-619577/2-A	Lab Control Sample	Total/NA	Water	6020A	619577

Lab Chronicle

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM, AOC 57 Spring 2020

Job ID: 680-183899-1

Client Sample ID: 57-SW-1-SPR20

Lab Sample ID: 680-183899-1

Date Collected: 05/13/20 15:50

Matrix: Water

Date Received: 05/15/20 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	619068	05/18/20 12:09	AJR	TAL SAV
Dissolved	Analysis	6010C		1			619358	05/20/20 02:16	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	619578	05/21/20 14:14	AJR	TAL SAV
Total/NA	Analysis	6010C		1			619792	05/22/20 18:00	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	619067	05/18/20 12:09	AJR	TAL SAV
Dissolved	Analysis	6020A		1			619332	05/19/20 17:08	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	3010A			50 mL	250 mL	619577	05/21/20 14:14	AJR	TAL SAV
Total/NA	Analysis	6020A		1			620003	05/26/20 13:38	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: 57M-95-03X-SPR20

Lab Sample ID: 680-183899-2

Date Collected: 05/13/20 13:45

Matrix: Water

Date Received: 05/15/20 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	619068	05/18/20 12:09	AJR	TAL SAV
Dissolved	Analysis	6010C		1			619358	05/20/20 02:21	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	619578	05/21/20 14:14	AJR	TAL SAV
Total/NA	Analysis	6010C		1			619792	05/22/20 17:55	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	619067	05/18/20 12:09	AJR	TAL SAV
Dissolved	Analysis	6020A		1			619332	05/19/20 17:11	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	3010A			50 mL	250 mL	619577	05/21/20 14:14	AJR	TAL SAV
Total/NA	Analysis	6020A		1			620003	05/26/20 13:36	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: 57M-96-11X-SPR20

Lab Sample ID: 680-183899-3

Date Collected: 05/13/20 14:40

Matrix: Water

Date Received: 05/15/20 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	619068	05/18/20 12:09	AJR	TAL SAV
Dissolved	Analysis	6010C		1			619358	05/20/20 02:11	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	619578	05/21/20 14:14	AJR	TAL SAV
Total/NA	Analysis	6010C		1			619792	05/22/20 17:41	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	619067	05/18/20 12:09	AJR	TAL SAV
Dissolved	Analysis	6020A		1			619332	05/19/20 17:05	BJB	TAL SAV
	Instrument ID: ICPMSD									

Lab Chronicle

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM, AOC 57 Spring 2020

Job ID: 680-183899-1

Client Sample ID: 57M-96-11X-SPR20

Lab Sample ID: 680-183899-3

Date Collected: 05/13/20 14:40

Matrix: Water

Date Received: 05/15/20 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	250 mL	619577	05/21/20 14:14	AJR	TAL SAV
Total/NA	Analysis	6020A		1			620003	05/26/20 13:13	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: AOC57-DUP01-SPR20

Lab Sample ID: 680-183899-4

Date Collected: 05/13/20 12:00

Matrix: Water

Date Received: 05/15/20 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	619068	05/18/20 12:09	AJR	TAL SAV
Dissolved	Analysis	6010C		1			619358	05/20/20 02:07	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	50 mL	619578	05/21/20 14:14	AJR	TAL SAV
Total/NA	Analysis	6010C		1			619792	05/22/20 17:51	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	619067	05/18/20 12:09	AJR	TAL SAV
Dissolved	Analysis	6020A		1			619332	05/19/20 16:57	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	3010A			50 mL	250 mL	619577	05/21/20 14:14	AJR	TAL SAV
Total/NA	Analysis	6020A		1			620003	05/26/20 13:33	BJB	TAL SAV
	Instrument ID: ICPMSD									

Laboratory References:

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Accreditation/Certification Summary

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM, AOC 57 Spring 2020

Job ID: 680-183899-1

Laboratory: Eurofins TestAmerica, Savannah

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2463	09-22-22

Method Summary

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM, AOC 57 Spring 2020

Job ID: 680-183899-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL SAV
3010A	Preparation, Total Metals	SW846	TAL SAV

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

CHAIN-OF-CUSTODY RECORD

Seres-Arcadis JV
Corey Caulkins
Arcadis U.S., Inc. 410 North 44th Street, Suite 1000 Phoenix, AZ 85008 United States

COC # AOC57_5.12.2

ARCADIS

Project Name: Long Term Monitoring	Laboratory: Eurofins Environment Testing TestAmerica, Savannah, GA	Event: JV, Long Term Monitoring, AOC 57, Spring 2020
Project Number: DEVNS-LTM	POC: Jon Lawhon; 912-250-0283; jon.lawhon@testamericainc.com	
WBS Code:	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:
SW6010C/FLDFLT (B) = Fe Mn
SW6020A/FLDFLT (B) = As

Equipment:

Code	Matrix
WG	Ground Water
WS	Surface Water

Code	Container/Preservative
9	1x 250mL, plastic, HNO3, pH < 2, Cool < 6degC

						Analytical Test Method	SW6010C - Fe Mn	SW6010C/FLDFLT (B)	SW6020A - As	SW6020A/FLDFLT (B)										
	Event: JV, Long Term Monitoring, AOC 57, Spring 2020						9	9	9	9										
	Sample ID	Matrix	Date	Time	Samp Init.											Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Cooler	Comments
1	57-SW1-SPR20	WS	5/13/2020	15:50	DC/DB/GO		X	X	X	X						57-SW1	N1	0.00	0.00		
2	57M-95-03X-SPR20	WG	5/13/2020	13:45	DC/DB/GO		X	X	X	X						57M-95-03X	N1	7.00	17.00		
3	57M-96-11X-SPR20	WG	5/13/2020	14:40	DC/DB/GO		X	X	X	X						57M-96-11X	N1	2.00	12.00		
4	AOC57-DUP01-SPR20	WG	5/13/2020	12:00	DC/DB/GO		X	X	X	X						57M-96-11X	FD1	2.00	12.00		
5																					
6																					
7																					
8																					
9																					

Turnaround Time: NA

680-183899-01 Chain of Custody

Relinquished by: *(Signature)*
Date
Time
Received by: *(Signature)*
Devens eCOCs Spring 2020

Date
Time
Shipping Date:
Received by Laboratory: ***(Signature, Date, Time)*** & conditio
DM 5-15-20 / 0920 1.4 / t 8

5/27/2020

Login Sample Receipt Checklist

Client: Seres Engineering & Services LLC

Job Number: 680-183899-1

Login Number: 183899

List Source: Eurofins TestAmerica, Savannah

List Number: 1

Creator: Mooken, Darmal

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing America



ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-190497-1
Client Project/Site: Fort Devens-LTM

For:
Seres Engineering & Services LLC
669 Marina Drive
Suite B7
Charleston, South Carolina 29492

Attn: Nathan R Mullens

Kathryn Smith

Authorized for release by:
12/14/2020 6:22:39 PM

Kathryn Smith, Client Service Manager
(912)250-0275
Kathy.Smith@Eurofinset.com

LINKS

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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Definitions/Glossary

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens-LTM

Job ID: 680-190497-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens-LTM

Job ID: 680-190497-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-190497-1	69W-94-13-FAL20	Water	10/23/20 09:50	10/24/20 09:50	
680-190497-2	69W-94-14-FAL20	Water	10/23/20 12:25	10/24/20 09:50	
680-190497-3	69WP-08-01-FAL20	Water	10/23/20 09:45	10/24/20 09:50	
680-190497-4	69WP-13-01-FAL20	Water	10/23/20 11:00	10/24/20 09:50	
680-190497-5	AOC69W-DUP01-FAL20	Water	10/22/20 15:50	10/24/20 09:50	
680-190497-6	ZWM-01-25X-FAL20	Water	10/22/20 15:00	10/24/20 09:50	
680-190497-7	ZWM-95-15X-FAL20	Water	10/22/20 13:25	10/24/20 09:50	
680-190497-8	ZWM-95-18X-FAL20	Water	10/22/20 15:50	10/24/20 09:50	
680-190497-9	ZWM-99-22X-FAL20	Water	10/22/20 16:35	10/24/20 09:50	
680-190497-10	ZWM-99-23X-FAL20	Water	10/23/20 12:35	10/24/20 09:50	
680-190497-11	ZWM-99-24X-FAL20	Water	10/23/20 11:05	10/24/20 09:50	

Job ID: 680-190497-1

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE
Client: Seres Engineering & Services LLC
Project: Fort Devens-LTM

Report Number: 680-190497-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT

The samples were received on 10/24/2020; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 6 coolers at receipt time were 0.5º C, 2.1º C, 2.4º C, 2.7º C, 3.3º C and 4.9º C.

METALS (ICP) - DISSOLVED

Samples 69W-94-13-FAL20 (680-190497-1), 69W-94-14-FAL20 (680-190497-2), 69WP-08-01-FAL20 (680-190497-3), 69WP-13-01-FAL20 (680-190497-4), AOC69W-DUP01-FAL20 (680-190497-5), ZWM-01-25X-FAL20 (680-190497-6), ZWM-95-15X-FAL20 (680-190497-7), ZWM-95-18X-FAL20 (680-190497-8), ZWM-99-22X-FAL20 (680-190497-9), ZWM-99-23X-FAL20 (680-190497-10) and ZWM-99-24X-FAL20 (680-190497-11) were analyzed for Metals (ICP) - Dissolved in accordance with EPA SW-846 Method 6010C. The samples were prepared on 10/26/2020 and analyzed on 10/27/2020.

Manganese was detected in method blank MB 680-640742/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Iron recovered low for the MS/MSD of sample 69WP-13-01-FAL20 (680-190497-4) in batch 680-640897.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS (ICPMS) - DISSOLVED

Samples 69W-94-13-FAL20 (680-190497-1), 69W-94-14-FAL20 (680-190497-2), 69WP-08-01-FAL20 (680-190497-3), 69WP-13-01-FAL20 (680-190497-4), AOC69W-DUP01-FAL20 (680-190497-5), ZWM-01-25X-FAL20 (680-190497-6), ZWM-95-15X-FAL20 (680-190497-7), ZWM-95-18X-FAL20 (680-190497-8), ZWM-99-22X-FAL20 (680-190497-9), ZWM-99-23X-FAL20 (680-190497-10) and ZWM-99-24X-FAL20 (680-190497-11) were analyzed for Metals (ICPMS) - Dissolved in accordance with EPA SW-846 Method 6020A. The samples were prepared on 10/26/2020 and analyzed on 10/26/2020 and 10/27/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens-LTM

Job ID: 680-190497-1

Client Sample ID: 69W-94-13-FAL20

Lab Sample ID: 680-190497-1

Date Collected: 10/23/20 09:50
Matrix: Water
Date Received: 10/24/20 09:50

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	3300		50	17	ug/L		10/26/20 11:32	10/27/20 02:36	1
Manganese	970		10	1.0	ug/L		10/26/20 11:32	10/27/20 02:36	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	32		3.0	1.5	ug/L		10/26/20 11:32	10/26/20 23:53	1

Client Sample ID: 69W-94-14-FAL20

Lab Sample ID: 680-190497-2

Date Collected: 10/23/20 12:25
Matrix: Water
Date Received: 10/24/20 09:50

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	17	U	50	17	ug/L		10/26/20 11:32	10/27/20 03:07	1
Manganese	19		10	1.0	ug/L		10/26/20 11:32	10/27/20 03:07	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		10/26/20 11:32	10/27/20 00:14	1

Client Sample ID: 69WP-08-01-FAL20

Lab Sample ID: 680-190497-3

Date Collected: 10/23/20 09:45
Matrix: Water
Date Received: 10/24/20 09:50

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	5900		50	17	ug/L		10/26/20 11:32	10/27/20 03:20	1
Manganese	360		10	1.0	ug/L		10/26/20 11:32	10/27/20 03:20	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		10/26/20 11:32	10/27/20 15:12	1

Client Sample ID: 69WP-13-01-FAL20

Lab Sample ID: 680-190497-4

Date Collected: 10/23/20 11:00
Matrix: Water
Date Received: 10/24/20 09:50

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	17000	J	50	17	ug/L		10/26/20 11:32	10/27/20 02:14	1
Manganese	240		10	1.0	ug/L		10/26/20 11:32	10/27/20 02:14	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		10/26/20 11:32	10/26/20 23:38	1

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens-LTM

Job ID: 680-190497-1

Client Sample ID: AOC69W-DUP01-FAL20

Lab Sample ID: 680-190497-5

Date Collected: 10/22/20 15:50
Matrix: Water
Date Received: 10/24/20 09:50

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	17	U	50	17	ug/L		10/26/20 11:32	10/27/20 03:02	1
Manganese	**13**		10	1.0	ug/L		10/26/20 11:32	10/27/20 03:02	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		10/26/20 11:32	10/27/20 15:02	1

Client Sample ID: ZWM-01-25X-FAL20

Lab Sample ID: 680-190497-6

Date Collected: 10/22/20 15:00
Matrix: Water
Date Received: 10/24/20 09:50

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**200**		50	17	ug/L		10/26/20 11:32	10/27/20 02:45	1
Manganese	**1700**		10	1.0	ug/L		10/26/20 11:32	10/27/20 02:45	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**2.9**	**J**	3.0	1.5	ug/L		10/26/20 11:32	10/26/20 23:59	1

Client Sample ID: ZWM-95-15X-FAL20

Lab Sample ID: 680-190497-7

Date Collected: 10/22/20 13:25
Matrix: Water
Date Received: 10/24/20 09:50

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**5000**		50	17	ug/L		10/26/20 11:32	10/27/20 03:24	1
Manganese	**360**		10	1.0	ug/L		10/26/20 11:32	10/27/20 03:24	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**7.0**		3.0	1.5	ug/L		10/26/20 11:32	10/27/20 00:27	1

Client Sample ID: ZWM-95-18X-FAL20

Lab Sample ID: 680-190497-8

Date Collected: 10/22/20 15:50
Matrix: Water
Date Received: 10/24/20 09:50

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	17	U	50	17	ug/L		10/26/20 11:32	10/27/20 03:11	1
Manganese	**14**		10	1.0	ug/L		10/26/20 11:32	10/27/20 03:11	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		10/26/20 11:32	10/27/20 00:17	1

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens-LTM

Job ID: 680-190497-1

Client Sample ID: ZWM-99-22X-FAL20

Lab Sample ID: 680-190497-9

Date Collected: 10/22/20 16:35
Matrix: Water
Date Received: 10/24/20 09:50

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	13000		50	17	ug/L		10/26/20 11:32	10/27/20 02:58	1
Manganese	910		10	1.0	ug/L		10/26/20 11:32	10/27/20 02:58	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	130		3.0	1.5	ug/L		10/26/20 11:32	10/27/20 00:08	1

Client Sample ID: ZWM-99-23X-FAL20

Lab Sample ID: 680-190497-10

Date Collected: 10/23/20 12:35
Matrix: Water
Date Received: 10/24/20 09:50

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	470		50	17	ug/L		10/26/20 11:32	10/27/20 02:40	1
Manganese	110		10	1.0	ug/L		10/26/20 11:32	10/27/20 02:40	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.3		3.0	1.5	ug/L		10/26/20 11:32	10/26/20 23:56	1

Client Sample ID: ZWM-99-24X-FAL20

Lab Sample ID: 680-190497-11

Date Collected: 10/23/20 11:05
Matrix: Water
Date Received: 10/24/20 09:50

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	120		50	17	ug/L		10/26/20 11:32	10/27/20 03:16	1
Manganese	39		10	1.0	ug/L		10/26/20 11:32	10/27/20 03:16	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		10/26/20 11:32	10/27/20 00:20	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-640742/1-A
Matrix: Water
Analysis Batch: 640897

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 640742

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	17	U	50	17	ug/L		10/26/20 11:32	10/27/20 02:05	1
Manganese	1.74	J	10	1.0	ug/L		10/26/20 11:32	10/27/20 02:05	1

Lab Sample ID: LCS 680-640742/2-A
Matrix: Water
Analysis Batch: 640897

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 640742

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5000	4990		ug/L		100	87 - 115
Manganese	400	406		ug/L		101	90 - 114

Lab Sample ID: 680-190497-4 MS
Matrix: Water
Analysis Batch: 640897

Client Sample ID: 69WP-13-01-FAL20
Prep Type: Dissolved
Prep Batch: 640742

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	17000	J	5000	20400	J	ug/L		65	87 - 115
Manganese	240		400	602		ug/L		91	90 - 114

Lab Sample ID: 680-190497-4 MSD
Matrix: Water
Analysis Batch: 640897

Client Sample ID: 69WP-13-01-FAL20
Prep Type: Dissolved
Prep Batch: 640742

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	17000	J	5000	21000	J	ug/L		77	87 - 115	3	20
Manganese	240		400	624		ug/L		96	90 - 114	4	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-640741/1-A
Matrix: Water
Analysis Batch: 640876

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 640741

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		10/26/20 11:32	10/26/20 23:31	1

Lab Sample ID: LCS 680-640741/2-A
Matrix: Water
Analysis Batch: 640876

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 640741

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	103		ug/L		103	84 - 116

Lab Sample ID: 680-190497-4 MS
Matrix: Water
Analysis Batch: 640876

Client Sample ID: 69WP-13-01-FAL20
Prep Type: Dissolved
Prep Batch: 640741

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.5	U	100	96.9		ug/L		97	84 - 116

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 680-190497-4 MSD
Matrix: Water
Analysis Batch: 640876

Client Sample ID: 69WP-13-01-FAL20
Prep Type: Dissolved
Prep Batch: 640741

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	1.5	U	100	102		ug/L		102	84 - 116	5	20

Metals

Prep Batch: 640741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190497-1	69W-94-13-FAL20	Dissolved	Water	3005A	
680-190497-2	69W-94-14-FAL20	Dissolved	Water	3005A	
680-190497-3	69WP-08-01-FAL20	Dissolved	Water	3005A	
680-190497-4	69WP-13-01-FAL20	Dissolved	Water	3005A	
680-190497-5	AOC69W-DUP01-FAL20	Dissolved	Water	3005A	
680-190497-6	ZWM-01-25X-FAL20	Dissolved	Water	3005A	
680-190497-7	ZWM-95-15X-FAL20	Dissolved	Water	3005A	
680-190497-8	ZWM-95-18X-FAL20	Dissolved	Water	3005A	
680-190497-9	ZWM-99-22X-FAL20	Dissolved	Water	3005A	
680-190497-10	ZWM-99-23X-FAL20	Dissolved	Water	3005A	
680-190497-11	ZWM-99-24X-FAL20	Dissolved	Water	3005A	
MB 680-640741/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-640741/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
680-190497-4 MS	69WP-13-01-FAL20	Dissolved	Water	3005A	
680-190497-4 MSD	69WP-13-01-FAL20	Dissolved	Water	3005A	

Prep Batch: 640742

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190497-1	69W-94-13-FAL20	Dissolved	Water	3005A	
680-190497-2	69W-94-14-FAL20	Dissolved	Water	3005A	
680-190497-3	69WP-08-01-FAL20	Dissolved	Water	3005A	
680-190497-4	69WP-13-01-FAL20	Dissolved	Water	3005A	
680-190497-5	AOC69W-DUP01-FAL20	Dissolved	Water	3005A	
680-190497-6	ZWM-01-25X-FAL20	Dissolved	Water	3005A	
680-190497-7	ZWM-95-15X-FAL20	Dissolved	Water	3005A	
680-190497-8	ZWM-95-18X-FAL20	Dissolved	Water	3005A	
680-190497-9	ZWM-99-22X-FAL20	Dissolved	Water	3005A	
680-190497-10	ZWM-99-23X-FAL20	Dissolved	Water	3005A	
680-190497-11	ZWM-99-24X-FAL20	Dissolved	Water	3005A	
MB 680-640742/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-640742/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
680-190497-4 MS	69WP-13-01-FAL20	Dissolved	Water	3005A	
680-190497-4 MSD	69WP-13-01-FAL20	Dissolved	Water	3005A	

Analysis Batch: 640876

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190497-1	69W-94-13-FAL20	Dissolved	Water	6020A	640741
680-190497-2	69W-94-14-FAL20	Dissolved	Water	6020A	640741
680-190497-4	69WP-13-01-FAL20	Dissolved	Water	6020A	640741
680-190497-6	ZWM-01-25X-FAL20	Dissolved	Water	6020A	640741
680-190497-7	ZWM-95-15X-FAL20	Dissolved	Water	6020A	640741
680-190497-8	ZWM-95-18X-FAL20	Dissolved	Water	6020A	640741
680-190497-9	ZWM-99-22X-FAL20	Dissolved	Water	6020A	640741
680-190497-10	ZWM-99-23X-FAL20	Dissolved	Water	6020A	640741
680-190497-11	ZWM-99-24X-FAL20	Dissolved	Water	6020A	640741
MB 680-640741/1-A	Method Blank	Total Recoverable	Water	6020A	640741
LCS 680-640741/2-A	Lab Control Sample	Total Recoverable	Water	6020A	640741
680-190497-4 MS	69WP-13-01-FAL20	Dissolved	Water	6020A	640741
680-190497-4 MSD	69WP-13-01-FAL20	Dissolved	Water	6020A	640741

Metals

Analysis Batch: 640897

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190497-1	69W-94-13-FAL20	Dissolved	Water	6010C	640742
680-190497-2	69W-94-14-FAL20	Dissolved	Water	6010C	640742
680-190497-3	69WP-08-01-FAL20	Dissolved	Water	6010C	640742
680-190497-4	69WP-13-01-FAL20	Dissolved	Water	6010C	640742
680-190497-5	AOC69W-DUP01-FAL20	Dissolved	Water	6010C	640742
680-190497-6	ZWM-01-25X-FAL20	Dissolved	Water	6010C	640742
680-190497-7	ZWM-95-15X-FAL20	Dissolved	Water	6010C	640742
680-190497-8	ZWM-95-18X-FAL20	Dissolved	Water	6010C	640742
680-190497-9	ZWM-99-22X-FAL20	Dissolved	Water	6010C	640742
680-190497-10	ZWM-99-23X-FAL20	Dissolved	Water	6010C	640742
680-190497-11	ZWM-99-24X-FAL20	Dissolved	Water	6010C	640742
MB 680-640742/1-A	Method Blank	Total Recoverable	Water	6010C	640742
LCS 680-640742/2-A	Lab Control Sample	Total Recoverable	Water	6010C	640742
680-190497-4 MS	69WP-13-01-FAL20	Dissolved	Water	6010C	640742
680-190497-4 MSD	69WP-13-01-FAL20	Dissolved	Water	6010C	640742

Analysis Batch: 641002

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190497-3	69WP-08-01-FAL20	Dissolved	Water	6020A	640741
680-190497-5	AOC69W-DUP01-FAL20	Dissolved	Water	6020A	640741

Lab Chronicle

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens-LTM

Job ID: 680-190497-1

Client Sample ID: 69W-94-13-FAL20

Lab Sample ID: 680-190497-1

Date Collected: 10/23/20 09:50
Matrix: Water
Date Received: 10/24/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	640742	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6010C		1			640897	10/27/20 02:36	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	640741	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6020A		1			640876	10/26/20 23:53	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: 69W-94-14-FAL20

Lab Sample ID: 680-190497-2

Date Collected: 10/23/20 12:25
Matrix: Water
Date Received: 10/24/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	640742	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6010C		1			640897	10/27/20 03:07	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	640741	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6020A		1			640876	10/27/20 00:14	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: 69WP-08-01-FAL20

Lab Sample ID: 680-190497-3

Date Collected: 10/23/20 09:45
Matrix: Water
Date Received: 10/24/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	640742	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6010C		1			640897	10/27/20 03:20	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	640741	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6020A		1			641002	10/27/20 15:12	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: 69WP-13-01-FAL20

Lab Sample ID: 680-190497-4

Date Collected: 10/23/20 11:00
Matrix: Water
Date Received: 10/24/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	640742	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6010C		1			640897	10/27/20 02:14	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	640741	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6020A		1			640876	10/26/20 23:38	BJB	TAL SAV
	Instrument ID: ICPMSD									

Lab Chronicle

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens-LTM

Job ID: 680-190497-1

Client Sample ID: AOC69W-DUP01-FAL20

Lab Sample ID: 680-190497-5

Date Collected: 10/22/20 15:50
Matrix: Water
Date Received: 10/24/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	640742	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6010C		1			640897	10/27/20 03:02	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	640741	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6020A		1			641002	10/27/20 15:02	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: ZWM-01-25X-FAL20

Lab Sample ID: 680-190497-6

Date Collected: 10/22/20 15:00
Matrix: Water
Date Received: 10/24/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	640742	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6010C		1			640897	10/27/20 02:45	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	640741	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6020A		1			640876	10/26/20 23:59	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: ZWM-95-15X-FAL20

Lab Sample ID: 680-190497-7

Date Collected: 10/22/20 13:25
Matrix: Water
Date Received: 10/24/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	640742	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6010C		1			640897	10/27/20 03:24	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	640741	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6020A		1			640876	10/27/20 00:27	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: ZWM-95-18X-FAL20

Lab Sample ID: 680-190497-8

Date Collected: 10/22/20 15:50
Matrix: Water
Date Received: 10/24/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	640742	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6010C		1			640897	10/27/20 03:11	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	640741	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6020A		1			640876	10/27/20 00:17	BJB	TAL SAV
	Instrument ID: ICPMSD									

Lab Chronicle

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens-LTM

Job ID: 680-190497-1

Client Sample ID: ZWM-99-22X-FAL20

Lab Sample ID: 680-190497-9

Date Collected: 10/22/20 16:35

Matrix: Water

Date Received: 10/24/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	640742	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6010C		1			640897	10/27/20 02:58	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	640741	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6020A		1			640876	10/27/20 00:08	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: ZWM-99-23X-FAL20

Lab Sample ID: 680-190497-10

Date Collected: 10/23/20 12:35

Matrix: Water

Date Received: 10/24/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	640742	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6010C		1			640897	10/27/20 02:40	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	640741	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6020A		1			640876	10/26/20 23:56	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: ZWM-99-24X-FAL20

Lab Sample ID: 680-190497-11

Date Collected: 10/23/20 11:05

Matrix: Water

Date Received: 10/24/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	640742	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6010C		1			640897	10/27/20 03:16	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	640741	10/26/20 11:32	AJR	TAL SAV
Dissolved	Analysis	6020A		1			640876	10/27/20 00:20	BJB	TAL SAV
	Instrument ID: ICPMSD									

Laboratory References:

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Accreditation/Certification Summary

Client: Seres Engineering & Services LLC
Job ID: 680-190497-1
Project/Site: Fort Devens-LTM

Laboratory: Eurofins TestAmerica, Savannah

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2463	12-01-20

Method Summary

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens-LTM

Job ID: 680-190497-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL SAV

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

CHAIN-OF-CUSTODY RECORD

Seres-Arcadis JV
Nathan Mullens
669 Marina Drive, Suite B7, Charleston, SC 29492
(843) 478.0336, jennifer.singer@arcadis.com

COC #

Project Name: Former Fort Devens, Long Term Monitoring	Laboratory: Eurofins Environment Testing TestAmerica, Savannah, GA	Event: Seres-Arcadis JV, Long Term Monitoring, AOC 69W, Fall 2020
Project Number: DEVENS-LTM	Contact:	
WBS Code:	Ship to:	

Comments:
MADEPEP (A) = EPH with PAHs
SW6010C/FLDFLT (B) = Fe Mn
SW6020A/FLDFLT (B) = As

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
2	2x 1 Liter, amber, glass, 1:1 HCl to pH =2; Cool < 6degC
9	1x 250mL, plastic, HNO3, pH < 2; Cool < 6degC

Boston #215

Event: Seres-Arcadis JV, Long Term Monitoring, AOC 69W, Fall 2020

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: MADEPEP (A)	SW6010C/FLDFLT (B)	SW6020A/FLDFLT (B)	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Cooler	Comments
						2	9	9						
1	69W-94-13-FAL20	WG	10-23-20	950	NB	X	X	X	69W-94-13	N1	3.00	13.00		
2	69W-94-14-FAL20	WG	10-23-20	1225	NB	X	X	X	69W-94-14	N1	3.00	13.00		
3	69WP-08-01-FAL20	WG	10-23-20	945	EF		X	X	69WP-08-01	N1	10.00	13.00		
4	69WP-13-01-FAL20	WG	10-23-20	1100	EF		X	X	69WP-13-01	N1	0.00	0.00		
5	AOC69W-DUP01-FAL20	WG	10-22-20	350	EF	X	X	X	ZWM-95-18X	FD1	5.22	15.22		(1550)
6	ZWM-01-25X-FAL20	WG	10-22-20	0300	EF	X	X	X	ZWM-01-25X	N1	6.13	16.13		(15:00)
7	ZWM-95-15X-FAL20	WG	10-22-20	0125	EF	X	X	X	ZWM-95-15X	N1	5.87	15.87		(13:25)
8	ZWM-95-18X-FAL20	WG	10-22-20	350	EF	X	X	X	ZWM-95-18X	N1	5.22	15.22		(15:50)
9	ZWM-99-22X-FAL20	WG	10-22-20	1635	DC	X	X	X	ZWM-99-22X	N1	4.60	14.60		
10	ZWM-99-23X-FAL20	WG	10-23-20	1235	EF	X	X	X	ZWM-99-23X	N1	4.68	14.68		
11	ZWM-99-24X-FAL20	WG	10-23-20	1105	NB	X	X	X	ZWM-99-24X	N1	5.52	15.52		

Turnaround Time: NA

1.8/2.4/0.2/3.0/2.1/4.6(C) 2.1/2.7/0.5/3.3/2.4/4.9°C

680-190497 Chain of Custody

Relinquished by: Diane Chapgue
Date 10-23-20
Time 1730
Received by: 10/23/20 17:30
AOC69W_eCOC

Date 10/23/20 18:00
Time
Shipping Date:
Received by Laboratory: 10-24-20 0950
Condition:

12/14/2020

Login Sample Receipt Checklist

Client: Seres Engineering & Services LLC

Job Number: 680-190497-1

Login Number: 190497

List Source: Eurofins TestAmerica, Savannah

List Number: 1

Creator: Banda, Christy S

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing America



ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-190497-2
Client Project/Site: Fort Devens-LTM

For:
Seres Engineering & Services LLC
669 Marina Drive
Suite B7
Charleston, South Carolina 29492

Attn: Nathan R Mullens

Kathryn Smith

Authorized for release by:
12/15/2020 11:42:36 AM

Kathryn Smith, Client Service Manager
(912)250-0275
Kathy.Smith@Eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens-LTM

Job ID: 680-190497-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-190497-1	69W-94-13-FAL20	Water	10/23/20 09:50	10/24/20 09:50	
680-190497-2	69W-94-14-FAL20	Water	10/23/20 12:25	10/24/20 09:50	
680-190497-5	AOC69W-DUP01-FAL20	Water	10/22/20 15:50	10/24/20 09:50	
680-190497-6	ZWM-01-25X-FAL20	Water	10/22/20 15:00	10/24/20 09:50	
680-190497-7	ZWM-95-15X-FAL20	Water	10/22/20 13:25	10/24/20 09:50	
680-190497-8	ZWM-95-18X-FAL20	Water	10/22/20 15:50	10/24/20 09:50	
680-190497-9	ZWM-99-22X-FAL20	Water	10/22/20 16:35	10/24/20 09:50	
680-190497-10	ZWM-99-23X-FAL20	Water	10/23/20 12:35	10/24/20 09:50	
680-190497-11	ZWM-99-24X-FAL20	Water	10/23/20 11:05	10/24/20 09:50	

Method Summary

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens-LTM

Job ID: 680-190497-2

Method	Method Description	Protocol	Laboratory
MA-EPH	MADEP EPH (Extractable Petroleum Hydroca	MA DEP	

Protocol References:

MA DEP = Massachusetts Department Of Environmental Protection

Laboratory References:

= Katahdin Analytical Services Inc, 600 Technology Way, Scarborough, ME 04074

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: Fort Devens RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
SN8926-1, 2, 3, 4, 5, 6, 7, 8, 9

Matrices: X Groundwater/Surface Water Soil/Sediment Drinking Water Air Other: _____

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B **X**	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	X Yes No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	X Yes No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	X Yes No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	X Yes No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	X Yes No X Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	X Yes No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	X Yes No[1]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes X No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	X Yes No[1]

[1]*All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 12/14/2020

TEST AMERICA SAVANNAH
FORT DEVENS - LTM
SN8926

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
FORT DEVENS - LTM
SN8926

Sample Receipt

The following samples were received on October 27, 2020 and were logged in under Katahdin Analytical Services work order number SN8926 for a hardcopy due date of November 08, 2020.

KATAHDIN	TEST AMERICA SAVANNAH
Sample No.	Sample Identification
SN8926-1	69W-94-13-FAL20
SN8926-2	69W-94-14-FAL20
SN8926-3	AOC69W-DUP01-FAL20
SN8926-4	ZWM-01-25X-FAL20
SN8926-5	ZWM-95-15X-FAL20
SN8926-6	ZWM-95-18X-FAL20
SN8926-7	ZWM-99-22X-FAL20
SN8926-8	ZWM-99-23X-FAL20
SN8926-9	ZWM-99-24X-FAL20

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

We certify that the test results provided in this report meet all the requirements of the NELAP standards unless otherwise noted in this narrative or in the Report of Analysis.

We certify that the test results provided in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation L2223.

Analytes which are reported but not listed on our ANAB scope of accreditation will be "^" flagged and the following language will be included in the case narrative for all DoD compliant work: "^" Indicates this analyte is not included on Katahdin Analytical Services DoD-ELAP Scope of Accreditation.

Sample analyses have been performed by the methods as noted herein.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact your Katahdin Analytical Services Project Manager, **Ms. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of Work Order # SN8926 were analyzed in accordance with the Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis

MA-EPH Analysis

The LCS/LCSD, WG290064-2RA and 3RA, had low recoveries for the C9-C18 aliphatic range, and/or the target analyte naphthalene, and the extraction surrogate 5-alpha-androstane. Samples SN8926-1, 4, 5, and 7 had low recoveries for the extraction surrogates 5-alpha-androstane. The LCS/LCSD, WG289150-2RA and 3RA, had low recoveries for the C9-C18 aliphatic range and/or the extraction surrogate 5-alpha-androstane. Samples SN8926-8 and 9 had low recoveries for the extraction surrogates o-terphenyl and 5-alpha-androstane. These recoveries were outside the method acceptance limits. Both sample batches were re-fractionated and reanalyzed. Due to an instrument failure, the re-fractionated analyses were unreportable. Sample re-extraction was attempted but could not be completed within hold time. Consequently, only the results from initial fractionated samples are reported.

The opening calibration verification standards (CV) (files ANK20371 and ANK20404) had low responses for the C36 alkane that resulted in %Ds that exceeded the method acceptance limit of ± 25%. Since the C19-C36 aliphatic range response was acceptable, no further action was taken.

The closing CV (file ANK20433) was acceptable according to the method for allowing up to four analytes with responses resulting in %Ds greater than 25% but less than 40%.

The fractionation check standard (file ANK20388) had a low recovery for the C36 alkane that was outside the method acceptance limits.

There were no other protocol deviations or observations noted by the organics laboratory staff.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond
12.12.20

Leslie Dimond
Quality Assurance Officer

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: TA Sav.	KAS PM: HMM	Sampled By: Client
Project:	KIMS Entry By: JCB	Delivered By: Fedex
KAS Work Order#: 5N8926-8928	KIMS Review By: HMM	Received By: JCB
	Labeled By:	
SDG #:	Cooler: 1 of 3	Date/Time Rec.: 10/27/20 0935

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.					Temp (°C): 0.3 — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles: **Aqueous:** No bubble larger than a pea?	✓				
Soil/Sediment: Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
7. Trip Blank present in cooler?		✓			
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2				✓	
Sulfide - >9				✓	
Cyanide – pH >12				✓	
11. Bottleware Prepped on:					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client:	TA Sav.	KAS PM:	tttm	Sampled By:	Client
Project:		KIMS Entry By:	JCB	Delivered By:	Fedex
KAS Work Order#:	5N8926-8928	KIMS Review By:	tttm	Received By:	JCB
		Labeled By:			
SDG #:		Cooler: 2 of 3		Date/Time Rec.:	10/27/20 0935

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	/				
2. Chain of Custody present in cooler?	/				
3. Chain of Custody signed by client?	/				
4. Chain of Custody matches samples?	/				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.					Temp (°C): 0,4 — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	/				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	/				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	/				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				/	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles: **Aqueous:** No bubble larger than a pea?				/	
Soil/Sediment: Received in airtight container?				/	
Received in methanol?				/	
Methanol covering soil?				/	
D.I. Water - Received within 48 hour HT?				/	
7. Trip Blank present in cooler?				/	
8. Proper sample containers and volume?	/				
9. Samples within hold time upon receipt?	/				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2				/	
Sulfide - >9				/	
Cyanide – pH >12				/	
11. Bottleware Prepped on:					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

Katahdin Analytical Services, LLC. — Sample Receipt Condition Report

Client:	TA Sav.	KAS PM:	[illegible]	Sampled By:	Client
Project:		KIMS Entry By:	JCB	Delivered By:	Fedex
KAS Work Order#:	580926-8928	KIMS Review By:	[illegible]	Received By:	JCB
		Labeled By:	[illegible]		
SDG #:		Cooler: 3 of 3		Date/Time Rec.:	10/27/20 0935

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	/				
2. Chain of Custody present in cooler?	/				
3. Chain of Custody signed by client?	/				
4. Chain of Custody matches samples?	/				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.					Temp (°C): 1.3 — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	/				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	/				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	/				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				/	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles: **Aqueous:** No bubble larger than a pea?				/	
Soil/Sediment: Received in airtight container?				/	
Received in methanol?				/	
Methanol covering soil?				/	
D.I. Water - Received within 48 hour HT?				/	
7. Trip Blank present in cooler?				/	
8. Proper sample containers and volume?	/				
9. Samples within hold time upon receipt?	/				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2				/	
Sulfide - >9				/	
Cyanide – pH >12				/	
11. Bottleware Prepped on:					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

SN8926

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Smith, Kathryn E	Carrier Tracking No(s):	COC No: 680-630635.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Kathy.Smith@Eurofinset.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Katahdin Analytical Services		Accreditations Required (See note): Dept. of Defense ELAP - A2LA; DoD - ANAB		Job #: 680-190497-1
Address: 600 Technology Way,	Due Date Requested: 11/4/2020			
City: Scarborough	TAT Requested (days):			
State, Zip: ME, 04074				
Phone:	PO #:			
Email:	WO #:			
Project Name: Fort Devens-LTM	Project #: 68023801			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (MA EPH + PAHs)/ MA EPH	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
69W-94-13-FAL20 (680-190497-1)	10/23/20	09:50 Eastern		Water			X	2	
69W-94-14-FAL20 (680-190497-2)	10/23/20	12:25 Eastern		Water			X	2	
AOC69W-DUP01-FAL20 (680-190497-5)	10/22/20	15:50 Eastern		Water			X	2	
ZWM-01-25X-FAL20 (680-190497-6)	10/22/20	15:00 Eastern		Water			X	2	
ZWM-95-15X-FAL20 (680-190497-7)	10/22/20	13:25 Eastern		Water			X	2	
ZWM-95-18X-FAL20 (680-190497-8)	10/22/20	15:50 Eastern		Water			X	2	
ZWM-99-22X-FAL20 (680-190497-9)	10/22/20	16:35 Eastern		Water			X	2	
ZWM-99-23X-FAL20 (680-190497-10)	10/23/20	12:35 Eastern		Water			X	2	
ZWM-99-24X-FAL20 (680-190497-11)	10/23/20	11:05 Eastern		Water			X	2	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		10-26-20 1119			10/27/20 0935	KAS
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Katahdin ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Dec. 14, 2020
02:19 PM

Quote/Incoming:

Login Number: SN8926

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Primary Report Address:
Kathryn E Smith
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Kathy.Smith@Eurofinset.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 5.3 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Include LOD on form. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative.
CHECK NO.	:	
CLIENT PO#	:	
CLIENT PROJECT MANAGE	:	Kathy.Smith@Eurofins.com
CONTRACT	:	680-190497, PN: 68023801
COOLER TEMPERATURE	:	0.3, 0.4, 1.3
DELIVERY SERVICES	:	FedEx
EDD FORMAT	:	ECC-091317-TXT
LOGIN INITIALS	:	JCB
PM	:	HHM
PROJECT NAME	:	Fort Devens - LTM
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	SDS needs all forms. Include Level 4 narrative and MCP forms (from Leslie). Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS. Upload EDD to Ft. Devens Database. Email PDF, EDD, and invoice to Beth.Daughtry@Eurofinset.com & Kathy.Smith@Eurofins.com. No HC.
SDG ID	:	
SDG STATUS	:	
VERBAL TAT	:	

Login Number: SN8926

Quote/Incoming:

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SN8926-1	69W-94-13-FAL20	23-OCT-20 09:50	27-OCT-20			08-NOV-20	
Matrix	***Product***	***Hold Date (shortest)***	***Bottle Type***	***Bottle Count***		***Comments***	
Aqueous	S MA-EPH	06-NOV-20	1L N-Amber Glass				
SN8926-2	69W-94-14-FAL20	23-OCT-20 12:25	27-OCT-20			08-NOV-20	
Matrix	***Product***	***Hold Date (shortest)***	***Bottle Type***	***Bottle Count***		***Comments***	
Aqueous	S MA-EPH	06-NOV-20	1L N-Amber Glass				
SN8926-3	AOC69W-DUP01-FAL20	22-OCT-20 15:50	27-OCT-20			08-NOV-20	
Matrix	***Product***	***Hold Date (shortest)***	***Bottle Type***	***Bottle Count***		***Comments***	
Aqueous	S MA-EPH	05-NOV-20	1L N-Amber Glass				
SN8926-4	ZWM-01-25X-FAL20	22-OCT-20 15:00	27-OCT-20			08-NOV-20	
Matrix	***Product***	***Hold Date (shortest)***	***Bottle Type***	***Bottle Count***		***Comments***	
Aqueous	S MA-EPH	05-NOV-20	1L N-Amber Glass				
SN8926-5	ZWM-95-15X-FAL20	22-OCT-20 13:25	27-OCT-20			08-NOV-20	
Matrix	***Product***	***Hold Date (shortest)***	***Bottle Type***	***Bottle Count***		***Comments***	
Aqueous	S MA-EPH	05-NOV-20	1L N-Amber Glass				
SN8926-6	ZWM-95-18X-FAL20	22-OCT-20 15:50	27-OCT-20			08-NOV-20	
Matrix	***Product***	***Hold Date (shortest)***	***Bottle Type***	***Bottle Count***		***Comments***	
Aqueous	S MA-EPH	05-NOV-20	1L N-Amber Glass				
SN8926-7	ZWM-99-22X-FAL20	22-OCT-20 16:35	27-OCT-20			08-NOV-20	
Matrix	***Product***	***Hold Date (shortest)***	***Bottle Type***	***Bottle Count***		***Comments***	
Aqueous	S MA-EPH	05-NOV-20	1L N-Amber Glass				
SN8926-8	ZWM-99-23X-FAL20	23-OCT-20 12:35	27-OCT-20			08-NOV-20	
Matrix	***Product***	***Hold Date (shortest)***	***Bottle Type***	***Bottle Count***		***Comments***	
Aqueous	S MA-EPH	06-NOV-20	1L N-Amber Glass				
SN8926-9	ZWM-99-24X-FAL20	23-OCT-20 11:05	27-OCT-20			08-NOV-20	
Matrix	***Product***	***Hold Date (shortest)***	***Bottle Type***	***Bottle Count***		***Comments***	
Aqueous	S MA-EPH	06-NOV-20	1L N-Amber Glass				

Total Samples: 9 ***Total Analyses: 9***

SAMPLE DATA SUMMARY PACKAGE

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N Presumptive evidence of a compound based on a mass spectral library search.

A Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN8926-1RA
Client ID: 69W-94-13-FAL20
Project: Fort Devens - LTM
SDG: SN8926
Lab File ID: ANK20393.D

Sample Date: 23-OCT-20
Received Date: 27-OCT-20
Extract Date: 28-OCT-20
Extracted By: MP
Extraction Method: SW846 3510C
Lab Prep Batch: WG289064

Analysis Date: 22-NOV-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 11-DEC-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	ULL	93	ug/L	1	100	93.	47.	70.
C19-C36 Aliphatics	U	93	ug/L	1	100	93.	47.	70.
C11-C22 Aromatics	J	50	ug/L	1	100	93.	47.	70.
Naphthalene	UL	1.9	ug/L	1	2	1.9	0.84	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.93	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane	*	34.2	%					
o-Terphenyl		42.2	%					
2-Fluorobiphenyl		57.7	%					
2-Bromonaphthalene		57.1	%					

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P.O. Box 540, Scarborough, ME 04070
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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN8926-2RA
Client ID: 69W-94-14-FAL20
Project: Fort Devens - LTM
SDG: SN8926
Lab File ID: ANK20394.D

Sample Date: 23-OCT-20
Received Date: 27-OCT-20
Extract Date: 28-OCT-20
Extracted By: MP
Extraction Method: SW846 3510C
Lab Prep Batch: WG289064

Analysis Date: 22-NOV-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 11-DEC-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	ULL	95	ug/L	1	100	95.	48.	71.
C19-C36 Aliphatics	U	95	ug/L	1	100	95.	48.	71.
C11-C22 Aromatics	U	95	ug/L	1	100	95.	48.	71.
Naphthalene	UL	1.9	ug/L	1	2	1.9	0.86	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.95	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		42.1	%					
o-Terphenyl		59.2	%					
2-Fluorobiphenyl		65.6	%					
2-Bromonaphthalene		64.4	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN8926-3RA
Client ID: AOC69W-DUP01-FAL20
Project: Fort Devens - LTM
SDG: SN8926
Lab File ID: ANK20395.D

Sample Date: 22-OCT-20
Received Date: 27-OCT-20
Extract Date: 28-OCT-20
Extracted By: MP
Extraction Method: SW846 3510C
Lab Prep Batch: WG289064

Analysis Date: 22-NOV-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 14-DEC-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	ULL	100	ug/L	1	100	100	52.	77.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	52.	77.
C11-C22 Aromatics	U	100	ug/L	1	100	100	52.	77.
Naphthalene	UL	2.1	ug/L	1	2	2.1	0.93	1.5
2-Methylnaphthalene	U	2.1	ug/L	1	2	2.1	0.82	1.5
Phenanthrene	U	2.1	ug/L	1	2	2.1	0.93	1.5
Acenaphthylene	U	2.1	ug/L	1	2	2.1	0.82	1.5
Acenaphthene	U	2.1	ug/L	1	2	2.1	1.8	2.0
Anthracene	U	2.1	ug/L	1	2	2.1	1.4	1.5
Benzo(a)anthracene	U	2.1	ug/L	1	2	2.1	1.4	1.5
Benzo(a)pyrene	U	2.1	ug/L	1	2	2.1	1.3	1.5
Benzo(b)fluoranthene	U	2.1	ug/L	1	2	2.1	0.82	1.5
Benzo(g,h,i)perylene	U	2.1	ug/L	1	2	2.1	1.3	1.5
Benzo(k)fluoranthene	U	2.1	ug/L	1	2	2.1	1.0	1.5
Chrysene	U	2.1	ug/L	1	2	2.1	0.93	1.5
Dibenzo(a,h)anthracene	U	2.1	ug/L	1	2	2.1	1.2	1.5
Fluoranthene	U	2.1	ug/L	1	2	2.1	0.82	1.5
Fluorene	U	2.1	ug/L	1	2	2.1	0.93	1.5
Indeno(1,2,3-cd)pyrene	U	2.1	ug/L	1	2	2.1	1.4	1.5
Pyrene	U	2.1	ug/L	1	2	2.1	1.1	1.5
5-Alpha Androstane		40.3	%					
o-Terphenyl		49.1	%					
2-Fluorobiphenyl		62.6	%					
2-Bromonaphthalene		60.3	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN8926-4RA
Client ID: ZWM-01-25X-FAL20
Project: Fort Devens - LTM
SDG: SN8926
Lab File ID: ANK20396.D

Sample Date: 22-OCT-20
Received Date: 27-OCT-20
Extract Date: 28-OCT-20
Extracted By: MP
Extraction Method: SW846 3510C
Lab Prep Batch: WG289064

Analysis Date: 22-NOV-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 14-DEC-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	ULL	110	ug/L	1	100	110	54.	82.
C19-C36 Aliphatics	U	110	ug/L	1	100	110	54.	82.
C11-C22 Aromatics	U	110	ug/L	1	100	110	54.	82.
Naphthalene	UL	2.2	ug/L	1	2	2.2	0.98	1.6
2-Methylnaphthalene	U	2.2	ug/L	1	2	2.2	0.87	1.6
Phenanthrene	U	2.2	ug/L	1	2	2.2	0.98	1.6
Acenaphthylene	U	2.2	ug/L	1	2	2.2	0.87	1.6
Acenaphthene	U	2.2	ug/L	1	2	2.2	2.0	2.1
Anthracene	U	2.2	ug/L	1	2	2.2	1.5	1.6
Benzo(a)anthracene	U	2.2	ug/L	1	2	2.2	1.5	1.6
Benzo(a)pyrene	U	2.2	ug/L	1	2	2.2	1.4	1.6
Benzo(b)fluoranthene	U	2.2	ug/L	1	2	2.2	0.87	1.6
Benzo(g,h,i)perylene	U	2.2	ug/L	1	2	2.2	1.4	1.6
Benzo(k)fluoranthene	U	2.2	ug/L	1	2	2.2	1.1	1.6
Chrysene	U	2.2	ug/L	1	2	2.2	0.98	1.6
Dibenzo(a,h)anthracene	U	2.2	ug/L	1	2	2.2	1.3	1.6
Fluoranthene	U	2.2	ug/L	1	2	2.2	0.87	1.6
Fluorene	U	2.2	ug/L	1	2	2.2	0.98	1.6
Indeno(1,2,3-cd)pyrene	U	2.2	ug/L	1	2	2.2	1.5	1.6
Pyrene	U	2.2	ug/L	1	2	2.2	1.2	1.6
5-Alpha Androstane	*	36.3	%					
o-Terphenyl		52.0	%					
2-Fluorobiphenyl		67.7	%					
2-Bromonaphthalene		65.6	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN8926-5RA
Client ID: ZWM-95-15X-FAL20
Project: Fort Devens - LTM
SDG: SN8926
Lab File ID: ANK20397.D

Sample Date: 22-OCT-20
Received Date: 27-OCT-20
Extract Date: 28-OCT-20
Extracted By: MP
Extraction Method: SW846 3510C
Lab Prep Batch: WG289064

Analysis Date: 22-NOV-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 14-DEC-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	ULL	100	ug/L	1	100	100	50.	76.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	76.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	76.
Naphthalene	UL	2.0	ug/L	1	2	2.0	0.91	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.81	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.91	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.81	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.81	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.91	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.81	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.91	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane	*	36.3	%					
o-Terphenyl		41.5	%					
2-Fluorobiphenyl		55.4	%					
2-Bromonaphthalene		54.4	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN8926-6RA
Client ID: ZWM-95-18X-FAL20
Project: Fort Devens - LTM
SDG: SN8926
Lab File ID: ANK20398.D

Sample Date: 22-OCT-20
Received Date: 27-OCT-20
Extract Date: 28-OCT-20
Extracted By: MP
Extraction Method: SW846 3510C
Lab Prep Batch: WG289064

Analysis Date: 22-NOV-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 14-DEC-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	ULL	100	ug/L	1	100	100	51.	76.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	51.	76.
C11-C22 Aromatics	U	100	ug/L	1	100	100	51.	76.
Naphthalene	UL	2.0	ug/L	1	2	2.0	0.92	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.82	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.92	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.82	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.82	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.92	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.82	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.92	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		40.6	%					
o-Terphenyl		54.4	%					
2-Fluorobiphenyl		72.6	%					
2-Bromonaphthalene		70.4	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN8926-7RA
Client ID: ZWM-99-22X-FAL20
Project: Fort Devens - LTM
SDG: SN8926
Lab File ID: ANK20399.D

Sample Date: 22-OCT-20
Received Date: 27-OCT-20
Extract Date: 28-OCT-20
Extracted By: MP
Extraction Method: SW846 3510C
Lab Prep Batch: WG289064

Analysis Date: 22-NOV-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 14-DEC-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	ULL	95	ug/L	1	100	95.	48.	71.
C19-C36 Aliphatics	U	95	ug/L	1	100	95.	48.	71.
C11-C22 Aromatics	J	78	ug/L	1	100	95.	48.	71.
Naphthalene	UL	1.9	ug/L	1	2	1.9	0.86	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.95	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane	*	35.9	%					
o-Terphenyl		48.1	%					
2-Fluorobiphenyl		63.2	%					
2-Bromonaphthalene		61.5	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN8926-8RA
Client ID: ZWM-99-23X-FAL20
Project: Fort Devens - LTM
SDG: SN8926
Lab File ID: ANK20400.D

Sample Date: 23-OCT-20
Received Date: 27-OCT-20
Extract Date: 28-OCT-20
Extracted By: MP
Extraction Method: SW846 3510C
Lab Prep Batch: WG289064

Analysis Date: 22-NOV-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 11-DEC-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	ULL	99	ug/L	1	100	99.	50.	74.
C19-C36 Aliphatics	U	99	ug/L	1	100	99.	50.	74.
C11-C22 Aromatics	U	99	ug/L	1	100	99.	50.	74.
Naphthalene	UL	2.0	ug/L	1	2	2.0	0.89	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.89	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	0.99	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.89	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.89	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane	*	12.8	%					
o-Terphenyl	*	20.9	%					
2-Fluorobiphenyl		55.4	%					
2-Bromonaphthalene		53.4	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN8926-9RA
Client ID: ZWM-99-24X-FAL20
Project: Fort Devens - LTM
SDG: SN8926
Lab File ID: ANK20408.D

Sample Date: 23-OCT-20
Received Date: 27-OCT-20
Extract Date: 29-OCT-20
Extracted By: MP
Extraction Method: SW846 3510C
Lab Prep Batch: WG289150

Analysis Date: 23-NOV-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 11-DEC-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	ULL	98	ug/L	1	100	98.	49.	74.
C19-C36 Aliphatics	U	98	ug/L	1	100	98.	49.	74.
C11-C22 Aromatics	U	98	ug/L	1	100	98.	49.	74.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.88	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.88	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	0.98	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.88	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.88	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane	*	17.2	%					
o-Terphenyl	*	32.0	%					
2-Fluorobiphenyl		66.1	%					
2-Bromonaphthalene		64.6	%					

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Report of Analytical Results

Client:
Lab ID: WG289064-1RA
Client ID: Method Blank Sample
Project:
SDG: SN8926
Lab File ID: ANK20389.D

Sample Date:
Received Date:
Extract Date: 28-OCT-20
Extracted By: MP
Extraction Method: SW846 3510C
Lab Prep Batch: WG289064

Analysis Date: 22-NOV-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 11-DEC-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		41.7	%					
o-Terphenyl		53.9	%					
2-Fluorobiphenyl		62.1	%					
2-Bromonaphthalene		61.1	%					

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Report of Analytical Results

Client:
Lab ID: WG289150-1RA
Client ID: Method Blank Sample
Project:
SDG: SN8926
Lab File ID: ANK20405.D

Sample Date:
Received Date:
Extract Date: 29-OCT-20
Extracted By: MP
Extraction Method: SW846 3510C
Lab Prep Batch: WG289150

Analysis Date: 23-NOV-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 11-DEC-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		42.1	%					
o-Terphenyl		56.6	%					
2-Fluorobiphenyl		75.3	%					
2-Bromonaphthalene		73.6	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** Fort Devens - LTM **Matrix:** AQ
Lab Code: KAS **SDG:** SN8926

Client Sample ID	Lab Sample ID	Col. ID	2BN	#	2FBP	#	5AA	#	OTP	#
69W-94-13-FAL20	SN8926-1RA	B	57.1		57.7		34.2	*	42.2	
69W-94-14-FAL20	SN8926-2RA	B	64.4		65.6		42.1		59.2	
AOC69W-DUP01-FAL20	SN8926-3RA	B	60.3		62.6		40.3		49.1	
ZWM-01-25X-FAL20	SN8926-4RA	B	65.6		67.7		36.3	*	52.0	
ZWM-95-15X-FAL20	SN8926-5RA	B	54.4		55.4		36.3	*	41.5	
ZWM-95-18X-FAL20	SN8926-6RA	B	70.4		72.6		40.6		54.4	
ZWM-99-22X-FAL20	SN8926-7RA	B	61.5		63.2		35.9	*	48.1	
ZWM-99-23X-FAL20	SN8926-8RA	B	53.4		55.4		12.8	*	20.9	*
ZWM-99-24X-FAL20	SN8926-9RA	B	64.6		66.1		17.2	*	32.0	*
Method Blank Sample	WG289064-1RA	B	61.1		62.1		41.7		53.9	
Laboratory Control S	WG289064-2RA	B	64.9		65.9		36.7	*	54.2	
Laboratory Control S	WG289064-3RA	B	53.1		54.0		26.6	*	43.4	
Method Blank Sample	WG289150-1RA	B	73.6		75.3		42.1		56.6	
Laboratory Control S	WG289150-2RA	B	71.1		72.2		42.6		61.2	
Laboratory Control S	WG289150-3RA	B	70.7		71.9		37.1	*	56.6	

		QC Limits
5AA	5-ALPHA ANDROSTANE	40-140
OTP	O-TERPHENYL	40-140
2FBP	2-FLUOROBIPHENYL	40-140
2BN	2-BROMONAPHTHALENE	40-140

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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LCS/LCSD Recovery Report

LCS ID: WG289064-2RA
LCSD ID: WG289064-3RA
Project:
SDG: SN8926
Report Date: 11-DEC-20
LCS File ID: ANK20390.D

Received Date:
Extract Date: 28-OCT-20
Extracted By: MP
Extraction Method: SW846 3510C
Lab Prep Batch: WG289064
LCSD File ID: ANK10391a.D

Analysis Date: 22-NOV-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1530	865.	56.5	780.	51.0	ug/L	10	25	40-140
C9-C18 Aliphatics	540.	204.	37.8*	188.	34.8*	ug/L	8	25	40-140
C19-C36 Aliphatics	720.	333.	46.2	336.	46.7	ug/L	1	25	40-140
Naphthalene	90.0	41.9	46.6	34.1	37.9*	ug/L	20	25	40-140
2-Methylnaphthalene	90.0	43.4	48.2	36.8	40.9	ug/L	16	25	40-140
Phenanthrene	90.0	49.8	55.3	45.0	50.0	ug/L	10	25	40-140
Acenaphthylene	90.0	44.4	49.3	37.5	41.7	ug/L	17	25	40-140
Acenaphthene	90.0	45.3	50.3	39.0	43.3	ug/L	15	25	40-140
Anthracene	90.0	49.3	54.8	44.5	49.4	ug/L	10	25	40-140
Benzo(a)anthracene	90.0	50.8	56.4	47.1	52.3	ug/L	8	25	40-140
Benzo(a)pyrene	90.0	48.1	53.4	44.7	49.7	ug/L	7	25	40-140
Benzo(b)fluoranthene	90.0	50.2	55.8	46.8	52.0	ug/L	7	25	40-140
Benzo(g,h,i)perylene	90.0	58.4	64.9	54.2	60.2	ug/L	7	25	40-140
Benzo(k)fluoranthene	90.0	49.9	55.4	46.5	51.7	ug/L	7	25	40-140
Chrysene	90.0	51.3	57.0	47.6	52.9	ug/L	7	25	40-140
Dibenzo(a,h)anthracene	90.0	58.9	65.4	55.7	61.9	ug/L	6	25	40-140
Fluoranthene	90.0	51.2	56.9	47.3	52.6	ug/L	8	25	40-140
Fluorene	90.0	45.6	50.7	39.9	44.3	ug/L	13	25	40-140
Indeno(1,2,3-cd)pyrene	90.0	56.3	62.6	51.4	57.1	ug/L	9	25	40-140
Pyrene	90.0	50.1	55.7	46.5	51.7	ug/L	7	25	40-140
5-Alpha Androstane			36.7*		26.6*				40-140
o-Terphenyl			54.2		43.4				40-140
2-Fluorobiphenyl			65.9		54.0				40-140
2-Bromonaphthalene			64.9		53.1				40-140

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LCS/LCSD Recovery Report

LCS ID: WG289150-2RA
LCSD ID: WG289150-3RA
Project:
SDG: SN8926
Report Date: 11-DEC-20
LCS File ID: ANK20406.D

Received Date:
Extract Date: 29-OCT-20
Extracted By: MP
Extraction Method: SW846 3510C
Lab Prep Batch: WG289150
LCSD File ID: ANK10407a.D

Analysis Date: 23-NOV-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1530	881.	57.6	864.	56.5	ug/L	2	25	40-140
C9-C18 Aliphatics	540.	205.	38.0*	194.	35.9*	ug/L	6	25	40-140
C19-C36 Aliphatics	720.	348.	48.3	359.	49.9	ug/L	3	25	40-140
Naphthalene	90.0	39.0	43.3	40.4	44.9	ug/L	4	25	40-140
2-Methylnaphthalene	90.0	40.9	45.4	42.1	46.8	ug/L	3	25	40-140
Phenanthrene	90.0	51.3	57.0	50.8	56.4	ug/L	1	25	40-140
Acenaphthylene	90.0	42.8	47.6	44.3	49.2	ug/L	3	25	40-140
Acenaphthene	90.0	44.5	49.4	45.9	51.0	ug/L	3	25	40-140
Anthracene	90.0	49.7	55.2	49.4	54.9	ug/L	1	25	40-140
Benzo(a)anthracene	90.0	53.5	59.4	50.7	56.3	ug/L	5	25	40-140
Benzo(a)pyrene	90.0	50.4	56.0	48.1	53.4	ug/L	5	25	40-140
Benzo(b)fluoranthene	90.0	54.8	60.9	51.2	56.9	ug/L	7	25	40-140
Benzo(g,h,i)perylene	90.0	58.1	64.6	55.0	61.1	ug/L	5	25	40-140
Benzo(k)fluoranthene	90.0	51.5	57.2	49.8	55.3	ug/L	3	25	40-140
Chrysene	90.0	54.1	60.1	51.0	56.7	ug/L	6	25	40-140
Dibenzo(a,h)anthracene	90.0	56.8	63.1	56.4	62.7	ug/L	1	25	40-140
Fluoranthene	90.0	54.4	60.4	52.2	58.0	ug/L	4	25	40-140
Fluorene	90.0	45.6	50.7	46.4	51.6	ug/L	2	25	40-140
Indeno(1,2,3-cd)pyrene	90.0	57.1	63.4	54.9	61.0	ug/L	4	25	40-140
Pyrene	90.0	53.4	59.3	51.2	56.9	ug/L	4	25	40-140
5-Alpha Androstane			42.6		37.1*				40-140
o-Terphenyl			61.2		56.6				40-140
2-Fluorobiphenyl			72.2		71.9				40-140
2-Bromonaphthalene			71.1		70.7				40-140

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens - LTM
Lab File ID : ANK10389.D
Instrument ID : GC10

SDG : SN8926
Lab Sample ID : WG289064-1RA
Date Analyzed : 22-NOV-20
Time Analyzed : 07:05
Date Extracted : 28-OCT-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG289064-2RA	ANK10390	11/22/20	07:48
Laboratory Control S	WG289064-3RA	ANK10391	11/22/20	08:31
69W-94-13-FAL20	SN8926-1RA	ANK10393	11/22/20	09:58
69W-94-14-FAL20	SN8926-2RA	ANK10394	11/22/20	10:41
AOC69W-DUP01-FAL20	SN8926-3RA	ANK10395	11/22/20	11:25
ZWM-01-25X-FAL20	SN8926-4RA	ANK10396	11/22/20	12:08
ZWM-95-15X-FAL20	SN8926-5RA	ANK10397	11/22/20	12:51
ZWM-95-18X-FAL20	SN8926-6RA	ANK10398	11/22/20	13:35
ZWM-99-22X-FAL20	SN8926-7RA	ANK10399	11/22/20	14:18
ZWM-99-23X-FAL20	SN8926-8RA	ANK10400	11/22/20	15:02

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens - LTM
Lab File ID : ANK10389A.
Instrument ID : GC10

SDG : SN8926
Lab Sample ID : WG289064-1RA
Date Analyzed : 22-NOV-20
Time Analyzed : 07:05
Date Extracted : 28-OCT-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG289064-2RA	ANK10390	11/22/20	07:48
Laboratory Control S	WG289064-3RA	ANK10391	11/22/20	08:31
69W-94-13-FAL20	SN8926-1RA	ANK10393	11/22/20	09:58
69W-94-14-FAL20	SN8926-2RA	ANK10394	11/22/20	10:41
AOC69W-DUP01-FAL20	SN8926-3RA	ANK10395	11/22/20	11:25
ZWM-01-25X-FAL20	SN8926-4RA	ANK10396	11/22/20	12:08
ZWM-95-15X-FAL20	SN8926-5RA	ANK10397	11/22/20	12:51
ZWM-95-18X-FAL20	SN8926-6RA	ANK10398	11/22/20	13:35
ZWM-99-22X-FAL20	SN8926-7RA	ANK10399	11/22/20	14:18
ZWM-99-23X-FAL20	SN8926-8RA	ANK10400	11/22/20	15:02

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens - LTM
Lab File ID : ANK20389.D
Instrument ID : GC10

SDG : SN8926
Lab Sample ID : WG289064-1RA
Date Analyzed : 22-NOV-20
Time Analyzed : 07:05
Date Extracted : 28-OCT-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG289064-2RA	ANK20390	11/22/20	07:48
Laboratory Control S	WG289064-3RA	ANK20391	11/22/20	08:31
69W-94-13-FAL20	SN8926-1RA	ANK20393	11/22/20	09:58
69W-94-14-FAL20	SN8926-2RA	ANK20394	11/22/20	10:41
AOC69W-DUP01-FAL20	SN8926-3RA	ANK20395	11/22/20	11:25
ZWM-01-25X-FAL20	SN8926-4RA	ANK20396	11/22/20	12:08
ZWM-95-15X-FAL20	SN8926-5RA	ANK20397	11/22/20	12:51
ZWM-95-18X-FAL20	SN8926-6RA	ANK20398	11/22/20	13:35
ZWM-99-22X-FAL20	SN8926-7RA	ANK20399	11/22/20	14:18
ZWM-99-23X-FAL20	SN8926-8RA	ANK20400	11/22/20	15:02

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens - LTM
Lab File ID : ANK10405.D
Instrument ID : GC10

SDG : SN8926
Lab Sample ID : WG289150-1RA
Date Analyzed : 23-NOV-20
Time Analyzed : 05:32
Date Extracted : 29-OCT-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG289150-2RA	ANK10406	11/23/20	06:16
Laboratory Control S	WG289150-3RA	ANK10407	11/23/20	06:59
ZWM-99-24X-FAL20	SN8926-9RA	ANK10408	11/23/20	07:42

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens - LTM
Lab File ID : ANK10405A.
Instrument ID : GC10

SDG : SN8926
Lab Sample ID : WG289150-1RA
Date Analyzed : 23-NOV-20
Time Analyzed : 05:32
Date Extracted : 29-OCT-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG289150-2RA	ANK10406	11/23/20	06:16
Laboratory Control S	WG289150-3RA	ANK10407	11/23/20	06:59
ZWM-99-24X-FAL20	SN8926-9RA	ANK10408	11/23/20	07:42

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens - LTM
Lab File ID : ANK20405.D
Instrument ID : GC10

SDG : SN8926
Lab Sample ID : WG289150-1RA
Date Analyzed : 23-NOV-20
Time Analyzed : 05:32
Date Extracted : 29-OCT-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG289150-2RA	ANK20406	11/23/20	06:16
Laboratory Control S	WG289150-3RA	ANK20407	11/23/20	06:59
ZWM-99-24X-FAL20	SN8926-9RA	ANK20408	11/23/20	07:42

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN8926
Project : Fort Devens - LTM **Instrument ID:** GC10
Lab File IDs : ANK10359.D,ANK10360.D,ANK10357.D, ANK10356.D,ANK10355.D **Calibration Date(s):** 20-NOV-20 11:17, 20-NOV-20 14:54

	Level 1 1.0000	Level 2 10.0000	Level 3 50.0000	Level 4 100.0000	Level 5 200.0000		Crv New	b	m1	m2	%RSD	Max %RSD	
Unadjusted C11-C22 Aromatic	13222	13044	12856	12765	14260		AVG		13229		4.55524	25.00000	M
Naphthalene	15040	14177	13809	13348	15106		AVG		14296		5.37205	25.00000	O
2-Methylnaphthalene	15435	13975	13566	13177	14877		AVG		14206		6.56957	25.00000	O
Acenaphthylene	14863	13753	13434	13098	14852		AVG		14000		5.83024	25.00000	O
Acenaphthene	15558	14168	13810	13452	15221		AVG		14442		6.29732	25.00000	O
Fluorene	17071	13476	13181	12910	14545		AVG		14237		11.9522	25.00000	O
Phenanthrene	14174	13249	12875	12667	14270		AVG		13447		5.49025	25.00000	O
Anthracene	14041	13186	12642	12474	14071		AVG		13283		5.67300	25.00000	O
Fluoranthene	14306	13512	13141	13025	14674		AVG		13732		5.29495	25.00000	O
Pyrene	14433	13748	13324	13223	14892		AVG		13924		5.17801	25.00000	O
Benzo(a)Anthracene	13341	13110	12707	12744	14204		AVG		13221		4.60699	25.00000	O
Chrysene	13429	13115	12698	12730	14157		AVG		13226		4.54271	25.00000	O
Benzo(b)Fluoranthene	13542	13536	13412	13346	14668		AVG		13701		3.99281	25.00000	O
Benzo(k)Fluoranthene	12356	12753	12204	12435	13667		AVG		12683		4.61539	25.00000	O
Benzo(a)Pyrene	11792	12531	12325	12421	13637		AVG		12541		5.38433	25.00000	O
Indeno(1,2,3-cd)Pyrene	8478	11630	12690	13888	14841		AVG		12305		19.9826	25.00000	O
Dibenzo(a,h)Anthracene	7647	10737	11193	10401	11972		AVG		10390		15.8078	25.00000	O
Benzo(g,h,i)Perylene	9275	11088	11533	11666	12771		AVG		11267		11.3073	25.00000	O
2-Fluorobiphenyl	14290	12892	12529	12188	13746		AVG		13129		6.63042	25.00000	
2-Bromonaphthalene	10168	8687	8388	8204	9217		AVG		8933		8.84085	25.00000	
O-Terphenyl	16098	15091	14305	14062	15796		AVG		15070		5.91967	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN8926
Project : Fort Devens - LTM **Instrument ID:** GC10
Lab File IDs : ANK20358.ĽANK20360.ĽANK20357.Ľ **Calibration Date(s):** 20-NOV-20 11:17
ANK20356.ĽANK20355.Ľ 20-NOV-20 14:54

	20.0000 Level 1	10.0000 Level 2	50.0000 Level 3	100.0000 Level 4	200.0000 Level 5		New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C18 Aliphatic	6248	6715	6406	5923	6143		AVG		6287		4.71536	25.00000	M (
C19-C36 Aliphatic	6041	6354	6375	5986	6319		AVG		6215		2.99080	25.00000	S O
C-9	6203	6657	6388	5891	6102		AVG		6248		4.65073	30.00000	O
C-10	6187	6694	6325	5834	6064		AVG		6221		5.14842	25.00000	O
C-12	6264	6733	6423	5940	6168		AVG		6306		4.69108	25.00000	O
C-14	6234	6688	6393	5925	6140		AVG		6276		4.55709	25.00000	O
C-16	6337	6792	6489	6011	6226		AVG		6371		4.59845	25.00000	O
C-18	6262	6723	6417	5938	6158		AVG		6299		4.66246	25.00000	O
C-19	6381	6852	6542	6058	6293		AVG		6425		4.60150	25.00000	O
C-20	6421	6891	6582	6078	6328		AVG		6460		4.67568	25.00000	O
C-22	6479	6950	6626	6117	6375		AVG		6509		4.73728	25.00000	O
C-24	6498	6977	6655	6134	6402		AVG		6533		4.77754	25.00000	O
C-26	6570	7058	6719	6180	6452		AVG		6596		4.93079	25.00000	O
C-28	6727	7218	6880	6326	6546		AVG		6739		5.01761	25.00000	O
C-30	6588	6980	6793	6253	6459		AVG		6615		4.27757	25.00000	O
C-36	53311	19045	210194	474185	1138777		LNR	12.30880	5952		0.99522	0.99000	O
5-alpha androstane	7085	7623	7240	6695	7007		AVG		7130		4.76192	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens - LTM
SDG: SN8926
Lab ID : WG290222-1
Analytical Date: 11/21/20 17:48
Lab File ID : ANK10371.D
Instrument ID: GC10
Initial Calibration Date(s): 11/20/20 11:17 11/20/20 14:54
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	14296	15038	0.010	5.19052	25.00000	Averaged
60	2-Methylnaphthalene	14206	14576	0.010	2.60419	25.00000	Averaged
70	Phenanthrene	13447	13876	0.010	3.19243	25.00000	Averaged
80	Acenaphthylene	14000	14801	0.010	5.72121	25.00000	Averaged
90	Acenaphthene	14442	15160	0.010	4.97365	25.00000	Averaged
100	Anthracene	13283	13454	0.010	1.28817	25.00000	Averaged
110	Benzo(a)Anthracene	13221	14011	0.010	5.97826	25.00000	Averaged
120	Benzo(a)Pyrene	12541	13628	0.010	8.66807	25.00000	Averaged
130	Benzo(b)Fluoranthene	13701	14368	0.010	4.86977	25.00000	Averaged
140	Benzo(g,h,i)Perylene	11267	12597	0.010	11.80408	25.00000	Averaged
150	Benzo(k)Fluoranthene	12683	14059	0.010	10.85348	25.00000	Averaged
160	Chrysene	13226	14008	0.010	5.91622	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	10390	11531	0.010	10.98588	25.00000	Averaged
180	Fluoranthene	13732	14626	0.010	6.50972	25.00000	Averaged
190	Fluorene	14237	14019	0.010	-1.52973	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	12305	14301	0.010	16.21529	25.00000	Averaged
210	Pyrene	13924	14829	0.010	6.49570	25.00000	Averaged
4	2-Fluorobiphenyl	13129	13617	0.010	3.71449	25.00000	Averaged
6	2-Bromonaphthalene	8933	9047	0.010	1.27613	25.00000	Averaged
11	O-Terphenyl	15070	16292	0.010	8.10416	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens - LTM
Lab ID : WG290417-1
Lab File ID : ANK10404.D
Initial Calibration Date(s): 11/20/20 11:17 11/20/20 14:54

SDG: SN8926
Analytical Date: 11/23/20 04:19
Instrument ID: GC10
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	14296	13711	0.010	-4.09697	25.00000	Averaged
60	2-Methylnaphthalene	14206	13457	0.010	-5.27099	25.00000	Averaged
70	Phenanthrene	13447	12970	0.010	-3.54324	25.00000	Averaged
80	Acenaphthylene	14000	13671	0.010	-2.34698	25.00000	Averaged
90	Acenaphthene	14442	14000	0.010	-3.05962	25.00000	Averaged
100	Anthracene	13283	12695	0.010	-4.42872	25.00000	Averaged
110	Benzo(a)Anthracene	13221	12891	0.010	-2.49549	25.00000	Averaged
120	Benzo(a)Pyrene	12541	12495	0.010	-0.36944	25.00000	Averaged
130	Benzo(b)Fluoranthene	13701	13162	0.010	-3.93012	25.00000	Averaged
140	Benzo(g,h,i)Perylene	11267	11383	0.010	1.03380	25.00000	Averaged
150	Benzo(k)Fluoranthene	12683	12961	0.010	2.19233	25.00000	Averaged
160	Chrysene	13226	12918	0.010	-2.32505	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	10390	10541	0.010	1.45334	25.00000	Averaged
180	Fluoranthene	13732	13437	0.010	-2.14710	25.00000	Averaged
190	Fluorene	14237	13160	0.010	-7.56202	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	12305	12808	0.010	4.08532	25.00000	Averaged
210	Pyrene	13924	13658	0.010	-1.90771	25.00000	Averaged
4	2-Fluorobiphenyl	13129	12552	0.010	-4.39623	25.00000	Averaged
6	2-Bromonaphthalene	8933	8398	0.010	-5.97939	25.00000	Averaged
11	O-Terphenyl	15070	14734	0.010	-2.23241	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens - LTM
SDG: SN8926
Lab ID : WG290417-2
Analytical Date: 11/24/20 01:47
Lab File ID : ANK10433.D
Instrument ID: GC10
Initial Calibration Date(s): 11/20/20 11:17 11/20/20 14:54
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	14296	14803	0.010	3.54449	25.00000	Averaged
60	2-Methylnaphthalene	14206	14604	0.010	2.80313	25.00000	Averaged
70	Phenanthrene	13447	14038	0.010	4.39226	25.00000	Averaged
80	Acenaphthylene	14000	14363	0.010	2.59248	25.00000	Averaged
90	Acenaphthene	14442	14780	0.010	2.34099	25.00000	Averaged
100	Anthracene	13283	13828	0.010	4.10234	25.00000	Averaged
110	Benzo(a)Anthracene	13221	14120	0.010	6.79574	25.00000	Averaged
120	Benzo(a)Pyrene	12541	13623	0.010	8.62469	25.00000	Averaged
130	Benzo(b)Fluoranthene	13701	14661	0.010	7.01109	25.00000	Averaged
140	Benzo(g,h,i)Perylene	11267	12547	0.010	11.36350	25.00000	Averaged
150	Benzo(k)Fluoranthene	12683	13757	0.010	8.46663	25.00000	Averaged
160	Chrysene	13226	14107	0.010	6.66006	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	10390	11862	0.010	14.16821	25.00000	Averaged
180	Fluoranthene	13732	14457	0.010	5.28189	25.00000	Averaged
190	Fluorene	14237	14307	0.010	0.49096	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	12305	14293	0.010	16.15402	25.00000	Averaged
210	Pyrene	13924	14645	0.010	5.17971	25.00000	Averaged
4	2-Fluorobiphenyl	13129	13500	0.010	2.82485	25.00000	Averaged
6	2-Bromonaphthalene	8933	9084	0.010	1.69034	25.00000	Averaged
11	O-Terphenyl	15070	15504	0.010	2.87765	25.00000	Averaged

*** = Compound out of QC criteria**

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens - LTM
Lab ID : WG290222-3
Lab File ID : ANK20371.D
Initial Calibration Date(s): 11/20/20 11:17 11/20/20 14:54

SDG: SN8926
Analytical Date: 11/21/20 17:48
Instrument ID: GC10
Column ID: A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
1	C9-C18 Aliphatic	6287	6277	6277	0.010	-0.15316	25.00000	Averaged	
2	C19-C36 Aliphatic	6215	5977	5977	0.010	-3.82855	25.00000	Averaged	
3	C-9	6248	6251	6251	0.010	0.03889	30.00000	Averaged	
4	C-10	6221	6209	6209	0.010	-0.18631	25.00000	Averaged	
5	C-12	6306	6299	6299	0.010	-0.10051	25.00000	Averaged	
7	C-14	6276	6261	6261	0.010	-0.24172	25.00000	Averaged	
8	C-16	6371	6359	6359	0.010	-0.18626	25.00000	Averaged	
9	C-18	6299	6284	6284	0.010	-0.24174	25.00000	Averaged	
10	C-19	6425	6398	6398	0.010	-0.41676	25.00000	Averaged	
11	C-20	6460	6431	6431	0.010	-0.45813	25.00000	Averaged	
13	C-22	6509	6475	6475	0.010	-0.52346	25.00000	Averaged	
14	C-24	6533	6493	6493	0.010	-0.60601	25.00000	Averaged	
15	C-26	6596	6560	6560	0.010	-0.54033	25.00000	Averaged	
16	C-28	6739	6750	6750	0.010	0.16007	25.00000	Averaged	
18	C-30	6615	6588	6588	0.010	-0.40193	25.00000	Averaged	
19	C-36	50.00000	30.11652	2120	0.010	-39.76696	25.00000	Linear	*
44	5-alpha androstane	7130	7121	7121	0.010	-0.12893	25.00000	Averaged	

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens - LTM
Lab ID : WG290417-3
Lab File ID : ANK20404.D
Initial Calibration Date(s): 11/20/20 11:17 11/20/20 14:54

SDG: SN8926
Analytical Date: 11/23/20 04:19
Instrument ID: GC10
Column ID: A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
1	C9-C18 Aliphatic	6287	6330	6330	0.010	0.68294	25.00000	Averaged	
2	C19-C36 Aliphatic	6215	5957	5957	0.010	-4.15420	25.00000	Averaged	
3	C-9	6248	6335	6335	0.010	1.39188	30.00000	Averaged	
4	C-10	6221	6290	6290	0.010	1.11899	25.00000	Averaged	
5	C-12	6306	6362	6362	0.010	0.89067	25.00000	Averaged	
7	C-14	6276	6316	6316	0.010	0.63147	25.00000	Averaged	
8	C-16	6371	6386	6386	0.010	0.23124	25.00000	Averaged	
9	C-18	6299	6290	6290	0.010	-0.15093	25.00000	Averaged	
10	C-19	6425	6403	6403	0.010	-0.34361	25.00000	Averaged	
11	C-20	6460	6423	6423	0.010	-0.57392	25.00000	Averaged	
13	C-22	6509	6457	6457	0.010	-0.80829	25.00000	Averaged	
14	C-24	6533	6484	6484	0.010	-0.75541	25.00000	Averaged	
15	C-26	6596	6559	6559	0.010	-0.56458	25.00000	Averaged	
16	C-28	6739	6757	6757	0.010	0.26305	25.00000	Averaged	
18	C-30	6615	6630	6630	0.010	0.23726	25.00000	Averaged	
19	C-36	50.00000	28.61724	1941	0.010	-42.76552	25.00000	Linear	*
44	5-alpha androstane	7130	7122	7122	0.010	-0.10719	25.00000	Averaged	

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Fort Devens - LTM
Lab ID : WG290417-4
Lab File ID : ANK20433.D
Initial Calibration Date(s): 11/20/20 11:17 11/20/20 14:54

SDG: SN8926
Analytical Date: 11/24/20 01:47
Instrument ID: GC10
Column ID: A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
1	C9-C18 Aliphatic	6287	6306	6306	0.010	0.29791	25.00000	Averaged	
2	C19-C36 Aliphatic	6215	6488	6488	0.010	4.39212	25.00000	Averaged	
3	C-9	6248	6323	6323	0.010	1.20143	30.00000	Averaged	
4	C-10	6221	6244	6244	0.010	0.38018	25.00000	Averaged	
5	C-12	6306	6333	6333	0.010	0.43298	25.00000	Averaged	
7	C-14	6276	6290	6290	0.010	0.22005	25.00000	Averaged	
8	C-16	6371	6362	6362	0.010	-0.14357	25.00000	Averaged	
9	C-18	6299	6281	6281	0.010	-0.29095	25.00000	Averaged	
10	C-19	6425	6399	6399	0.010	-0.40026	25.00000	Averaged	
11	C-20	6460	6416	6416	0.010	-0.69094	25.00000	Averaged	
13	C-22	6509	6479	6479	0.010	-0.46969	25.00000	Averaged	
14	C-24	6533	6502	6502	0.010	-0.48141	25.00000	Averaged	
15	C-26	6596	6562	6562	0.010	-0.52031	25.00000	Averaged	
16	C-28	6739	6739	6739	0.010	-0.00315	25.00000	Averaged	
18	C-30	6615	6727	6727	0.010	1.70430	25.00000	Averaged	
19	C-36	50.00000	63.38106	6080	0.010	26.76211	25.00000	Linear	*
44	5-alpha androstane	7130	7071	7071	0.010	-0.83089	25.00000	Averaged	

*** = Compound out of QC criteria**

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FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 11/20/20 11/20/20

Instrument ID: GC10

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 10.85 S2 : 12.24

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	S2 RT	#
01		WG290418-5	11/20/20	1117	10.86		12.25	
02		WG290418-4	11/20/20	1201	10.85		12.24	
03		WG290418-3	11/20/20	1244	10.85		12.24	
04		WG290418-1	11/20/20	1411	10.85		12.24	
05		WG290418-2	11/20/20	1454	10.85		12.24	
06		WG290418-6	11/20/20	1538				
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

QC LIMITS
S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 11/20/20 11/20/20

Instrument ID: GC10

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 16.61

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG290418-5	11/20/20	1117	16.62	
02		WG290418-4	11/20/20	1201	16.61	
03		WG290418-3	11/20/20	1244	16.61	
04		WG290418-1	11/20/20	1411	16.61	
05		WG290418-2	11/20/20	1454	16.61	
06		WG290418-6	11/20/20	1538		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SN8926

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 11/20/20 11/20/20

Instrument ID: GC10

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 10.85 S2 : 12.23

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	S1 #	S2 RT	S2 #
01		WG290222-1	11/21/20	1748	10.85		12.23	
02	WG289064-BLA	WG289064-1RA	11/22/20	0705	10.85		12.24	
03	WG289064-LCS	WG289064-2RA	11/22/20	0748	10.85		12.24	
04	WG289064-LCS	WG289064-3RA	11/22/20	0831	10.85		12.23	
05	69W-94-13-FA	SN8926-1RA	11/22/20	0958	10.84		12.23	
06	69W-94-14-FA	SN8926-2RA	11/22/20	1041	10.84		12.22	
07	AOC69W-DUP01	SN8926-3RA	11/22/20	1125	10.84		12.22	
08	ZWM-01-25X-F	SN8926-4RA	11/22/20	1208	10.84		12.22	
09	ZWM-95-15X-F	SN8926-5RA	11/22/20	1251	10.84		12.22	
10	ZWM-95-18X-F	SN8926-6RA	11/22/20	1335	10.84		12.22	
11	ZWM-99-22X-F	SN8926-7RA	11/22/20	1418	10.84		12.22	
12	ZWM-99-23X-F	SN8926-8RA	11/22/20	1502	10.84		12.22	
13		WG290417-1	11/23/20	0419	10.84		12.23	
14	WG289150-BLA	WG289150-1RA	11/23/20	0532	10.85		12.24	
15	WG289150-LCS	WG289150-2RA	11/23/20	0616	10.84		12.23	
16	WG289150-LCS	WG289150-3RA	11/23/20	0659	10.84		12.23	
17	ZWM-99-24X-F	SN8926-9RA	11/23/20	0742	10.84		12.23	
18		WG290417-2	11/24/20	0147	10.84		12.22	
19								
20								

QC LIMITS
S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SN8926

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 11/20/20 11/20/20

Instrument ID: GC10

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 16.61

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT	#	RT	#
01		WG290222-1	11/21/20	1748	16.61			
02	WG289064-BLA	WG289064-1RA	11/22/20	0705	16.61			
03	WG289064-LCS	WG289064-2RA	11/22/20	0748	16.61			
04	WG289064-LCS	WG289064-3RA	11/22/20	0831	16.61			
05	69W-94-13-FA	SN8926-1RA	11/22/20	0958	16.60			
06	69W-94-14-FA	SN8926-2RA	11/22/20	1041	16.60			
07	AOC69W-DUP01	SN8926-3RA	11/22/20	1125	16.60			
08	ZWM-01-25X-F	SN8926-4RA	11/22/20	1208	16.60			
09	ZWM-95-15X-F	SN8926-5RA	11/22/20	1251	16.60			
10	ZWM-95-18X-F	SN8926-6RA	11/22/20	1335	16.60			
11	ZWM-99-22X-F	SN8926-7RA	11/22/20	1418	16.60			
12	ZWM-99-23X-F	SN8926-8RA	11/22/20	1502	16.59			
13		WG290417-1	11/23/20	0419	16.60			
14	WG289150-BLA	WG289150-1RA	11/23/20	0532	16.61			
15	WG289150-LCS	WG289150-2RA	11/23/20	0616	16.60			
16	WG289150-LCS	WG289150-3RA	11/23/20	0659	16.60			
17	ZWM-99-24X-F	SN8926-9RA	11/23/20	0742	16.60			
18		WG290417-2	11/24/20	0147	16.60			
19								
20								

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: SDG No.: SDGA02536

GC Column: DB-1 ID: 0.53 (mm)Init. Calib. Date(s): 11/20/20 11/20/20

Instrument ID: GC10

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 18.09

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01		WG290418-11	11/20/20	1117	18.09			
02		WG290418-10	11/20/20	1201	18.09			
03		WG290418-9	11/20/20	1244	18.09			
04		WG290418-8	11/20/20	1328	18.09			
05		WG290418-7	11/20/20	1454	18.09			
06		WG290418-12	11/20/20	1538				
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

QC LIMITS
S1 = 5-alpha androstane (+/- 0.36 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 1 of 1

FORM VIII DRO

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SN8926

GC Column: DB-1 ID: 0.53 (mm)Init. Calib. Date(s): 11/20/20 11/20/20

Instrument ID: GC10

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 18.09

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	RT	#
01		WG290222-3	11/21/20	1748	18.09			
02	WG289064-BLA	WG289064-1RA	11/22/20	0705	18.08			
03	WG289064-LCS	WG289064-2RA	11/22/20	0748	18.08			
04	WG289064-LCS	WG289064-3RA	11/22/20	0831	18.08			
05	69W-94-13-FA	SN8926-1RA	11/22/20	0958	18.09			
06	69W-94-14-FA	SN8926-2RA	11/22/20	1041	18.09			
07	AOC69W-DUP01	SN8926-3RA	11/22/20	1125	18.09			
08	ZWM-01-25X-F	SN8926-4RA	11/22/20	1208	18.09			
09	ZWM-95-15X-F	SN8926-5RA	11/22/20	1251	18.09			
10	ZWM-95-18X-F	SN8926-6RA	11/22/20	1335	18.09			
11	ZWM-99-22X-F	SN8926-7RA	11/22/20	1418	18.09			
12	ZWM-99-23X-F	SN8926-8RA	11/22/20	1502	18.09			
13		WG290417-3	11/23/20	0419	18.09			
14	WG289150-BLA	WG289150-1RA	11/23/20	0532	18.08			
15	WG289150-LCS	WG289150-2RA	11/23/20	0616	18.09			
16	WG289150-LCS	WG289150-3RA	11/23/20	0659	18.09			
17	ZWM-99-24X-F	SN8926-9RA	11/23/20	0742	18.09			
18		WG290417-4	11/24/20	0147	18.10			
19								
20								

QC LIMITS
S1 = 5-alpha androstane (+/- 0.36 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 1 of 1

FORM VIII DRO

CHAIN-OF-CUSTODY RECORD

Seres-Arcadis JV
Nathan Mullens
669 Marina Drive, Suite B7, Charleston, SC 29492
(843) 478.0336, jennifer.singer@arcadis.com

COC #

Project Name: Former Fort Devens, Long Term Monitoring	Laboratory: Eurofins Environment Testing TestAmerica, Savannah, GA	Event: Seres-Arcadis JV, Long Term Monitoring, AOC 69W, Fall 2020
Project Number: DEVENS-LTM	Contact:	
WBS Code:	Ship to:	

Comments:
MADEPEP (A) = EPH with PAHs
SW6010C/FLDFLT (B) = Fe Mn
SW6020A/FLDFLT (B) = As

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
2	2x 1 Liter, amber, glass, 1:1 HCl to pH =2; Cool < 6degC
9	1x 250mL, plastic, HNO3, pH < 2; Cool < 6degC

Boston #215

Event: Seres-Arcadis JV, Long Term Monitoring, AOC 69W, Fall 2020

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: MADEPEP (A)	SW6010C/FLDFLT (B)	SW6020A/FLDFLT (B)	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Cooler	Comments
						2	9	9						
1	69W-94-13-FAL20	WG	10-23-20	950	NB	X	X	X	69W-94-13	N1	3.00	13.00		
2	69W-94-14-FAL20	WG	10-23-20	1225	NB	X	X	X	69W-94-14	N1	3.00	13.00		
3	69WP-08-01-FAL20	WG	10-23-20	945	EF		X	X	69WP-08-01	N1	10.00	13.00		
4	69WP-13-01-FAL20	WG	10-23-20	1100	EF		X	X	69WP-13-01	N1	0.00	0.00		
5	AOC69W-DUP01-FAL20	WG	10-22-20	350	EF	X	X	X	ZWM-95-18X	FD1	5.22	15.22		(1550)
6	ZWM-01-25X-FAL20	WG	10-22-20	0300	EF	X	X	X	ZWM-01-25X	N1	6.13	16.13		(15:00)
7	ZWM-95-15X-FAL20	WG	10-22-20	0125	EF	X	X	X	ZWM-95-15X	N1	5.87	15.87		(13:25)
8	ZWM-95-18X-FAL20	WG	10-22-20	350	EF	X	X	X	ZWM-95-18X	N1	5.22	15.22		(15:50)
9	ZWM-99-22X-FAL20	WG	10-22-20	1635	DC	X	X	X	ZWM-99-22X	N1	4.60	14.60		
10	ZWM-99-23X-FAL20	WG	10-23-20	1235	EF	X	X	X	ZWM-99-23X	N1	4.68	14.68		
11	ZWM-99-24X-FAL20	WG	10-23-20	1105	NB	X	X	X	ZWM-99-24X	N1	5.52	15.52		

Turnaround Time: NA

1.8/2.4/0.2/3.0/2.1/4.6(C) 2.1/2.7/0.5/3.3/2.4/4.9°C

680-190497 Chain of Custody

Relinquished by: Diane Chapgue
Date 10-23-20
Time 1730
Received by: 10/23/20 17:30
AOC69W_eCOC

Date 10/23/20 18:00
Time
Shipping Date:
Received by Laboratory: 10-24-20 0950
Condition:

12/15/2020

Login Sample Receipt Checklist

Client: Seres Engineering & Services LLC

Job Number: 680-190497-2

Login Number: 190497
List Number: 1
Creator: Banda, Christy S

List Source: Eurofins TestAmerica, Savannah

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-190501-1
Client Project/Site: Fort Devens - LTM

For:
Seres Engineering & Services LLC
669 Marina Drive
Suite B7
Charleston, South Carolina 29492

Attn: Nathan R Mullens

Kathryn Smith

Authorized for release by:
12/14/2020 6:25:45 PM

Kathryn Smith, Client Service Manager
(912)250-0275
Kathy.Smith@Eurofinset.com

LINKS

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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Client: Seres Engineering & Services LLC
Job ID: 680-190501-1
Project/Site: Fort Devens - LTM

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

HPLC/IC

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

General Chemistry

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190501-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-190501-1	DCL-DUP01-FAL20	Water	10/23/20 14:50	10/24/20 09:50	
680-190501-2	LFM-99-02B-FAL20	Water	10/23/20 14:10	10/24/20 09:50	
680-190501-3	LFM-99-05A-FAL20	Water	10/23/20 14:50	10/24/20 09:50	
680-190501-4	LFM-99-O6ARP-FAL20	Water	10/23/20 11:35	10/24/20 09:50	

Job ID: 680-190501-1

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE
Client: Seres Engineering & Services LLC
Project: Fort Devens - LTM

Report Number: 680-190501-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT
The samples were received on 10/24/2020; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 6 coolers at receipt time were 0.5º C, 2.1º C, 2.4º C, 3.3º C, 3.7º C and 4.9º C.

PESTICIDES AND PCBS
Samples DCL-DUP01-FAL20 (680-190501-1), LFM-99-02B-FAL20 (680-190501-2), LFM-99-05A-FAL20 (680-190501-3) and LFM-99-O6ARP-FAL20 (680-190501-4) were analyzed for Pesticides and PCBs in accordance with EPA SW-846 Method 8081B_8082A. The samples were prepared on 10/29/2020 and analyzed on 10/31/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS (ICP)
Samples DCL-DUP01-FAL20 (680-190501-1), LFM-99-02B-FAL20 (680-190501-2), LFM-99-05A-FAL20 (680-190501-3) and LFM-99-O6ARP-FAL20 (680-190501-4) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 10/28/2020 and analyzed on 10/30/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS
Samples DCL-DUP01-FAL20 (680-190501-1), LFM-99-02B-FAL20 (680-190501-2), LFM-99-05A-FAL20 (680-190501-3) and LFM-99-O6ARP-FAL20 (680-190501-4) were analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared and analyzed on 10/28/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY
Samples DCL-DUP01-FAL20 (680-190501-1), LFM-99-02B-FAL20 (680-190501-2), LFM-99-05A-FAL20 (680-190501-3) and LFM-99-O6ARP-FAL20 (680-190501-4) were analyzed for mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared on 10/26/2020 and analyzed on 10/27/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ALKALINITY
Samples DCL-DUP01-FAL20 (680-190501-1), LFM-99-02B-FAL20 (680-190501-2), LFM-99-05A-FAL20 (680-190501-3) and LFM-99-O6ARP-FAL20 (680-190501-4) were analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 11/02/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS
Samples DCL-DUP01-FAL20 (680-190501-1), LFM-99-02B-FAL20 (680-190501-2), LFM-99-05A-FAL20 (680-190501-3) and

Job ID: 680-190501-1 (Continued)

Laboratory: Eurofins TestAmerica, Savannah (Continued)

LFM-99-O6ARP-FAL20 (680-190501-4) were analyzed for total dissolved solids in accordance with SM 2540C. The samples were analyzed on 10/30/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NITRATE-NITRITE AS NITROGEN

Samples DCL-DUP01-FAL20 (680-190501-1), LFM-99-02B-FAL20 (680-190501-2), LFM-99-05A-FAL20 (680-190501-3) and LFM-99-O6ARP-FAL20 (680-190501-4) were analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 11/09/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CHEMICAL OXYGEN DEMAND

Samples DCL-DUP01-FAL20 (680-190501-1), LFM-99-02B-FAL20 (680-190501-2), LFM-99-05A-FAL20 (680-190501-3) and LFM-99-O6ARP-FAL20 (680-190501-4) were analyzed for chemical oxygen demand in accordance with EPA Method 410.4. The samples were analyzed on 10/28/2020.

Samples DCL-DUP01-FAL20 (680-190501-1)[2X], LFM-99-02B-FAL20 (680-190501-2)[2X], LFM-99-05A-FAL20 (680-190501-3)[2X] and LFM-99-O6ARP-FAL20 (680-190501-4)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CYANIDE

Samples DCL-DUP01-FAL20 (680-190501-1), LFM-99-02B-FAL20 (680-190501-2), LFM-99-05A-FAL20 (680-190501-3) and LFM-99-O6ARP-FAL20 (680-190501-4) were analyzed for cyanide in accordance with EPA SW-846 Method 9012B. The samples were prepared and analyzed on 10/28/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS BY ION CHROMATOGRAPHY (28 DAY)

Samples DCL-DUP01-FAL20 (680-190501-1), LFM-99-02B-FAL20 (680-190501-2), LFM-99-05A-FAL20 (680-190501-3) and LFM-99-O6ARP-FAL20 (680-190501-4) were analyzed for Anions by Ion Chromatography (28 Day) in accordance with SW 846 9056A. The samples were analyzed on 10/28/2020.

Samples DCL-DUP01-FAL20 (680-190501-1)[10X], LFM-99-02B-FAL20 (680-190501-2)[10X], LFM-99-05A-FAL20 (680-190501-3)[10X] and LFM-99-O6ARP-FAL20 (680-190501-4)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190501-1

Client Sample ID: DCL-DUP01-FAL20

Date Collected: 10/23/20 14:50
Date Received: 10/24/20 09:50

Lab Sample ID: 680-190501-1

Matrix: Water

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.0036	U	0.029	0.0036	ug/L		10/29/20 19:03	10/31/20 17:30	1
4,4'-DDE	0.0029	U	0.029	0.0029	ug/L		10/29/20 19:03	10/31/20 17:30	1
4,4'-DDT	0.0040	U Q	0.029	0.0040	ug/L		10/29/20 19:03	10/31/20 17:30	1
Aldrin	0.0041	U	0.029	0.0041	ug/L		10/29/20 19:03	10/31/20 17:30	1
alpha-BHC	0.0019	U	0.029	0.0019	ug/L		10/29/20 19:03	10/31/20 17:30	1
beta-BHC	0.0052	U	0.029	0.0052	ug/L		10/29/20 19:03	10/31/20 17:30	1
Chlordane (technical)	0.054	U M	0.29	0.054	ug/L		10/29/20 19:03	10/31/20 17:30	1
delta-BHC	0.0043	U	0.029	0.0043	ug/L		10/29/20 19:03	10/31/20 17:30	1
Dieldrin	0.0022	U	0.029	0.0022	ug/L		10/29/20 19:03	10/31/20 17:30	1
Endosulfan I	0.0020	U	0.029	0.0020	ug/L		10/29/20 19:03	10/31/20 17:30	1
Endosulfan II	0.0024	U	0.029	0.0024	ug/L		10/29/20 19:03	10/31/20 17:30	1
Endosulfan sulfate	0.0029	U	0.029	0.0029	ug/L		10/29/20 19:03	10/31/20 17:30	1
Endrin	0.0030	U	0.029	0.0030	ug/L		10/29/20 19:03	10/31/20 17:30	1
Endrin aldehyde	0.0035	U	0.029	0.0035	ug/L		10/29/20 19:03	10/31/20 17:30	1
Endrin ketone	0.0026	U	0.029	0.0026	ug/L		10/29/20 19:03	10/31/20 17:30	1
gamma-BHC (Lindane)	0.0021	U	0.029	0.0021	ug/L		10/29/20 19:03	10/31/20 17:30	1
Heptachlor	0.0041	U	0.029	0.0041	ug/L		10/29/20 19:03	10/31/20 17:30	1
Heptachlor epoxide	0.0021	U	0.029	0.0021	ug/L		10/29/20 19:03	10/31/20 17:30	1
Methoxychlor	0.0056	U Q	0.029	0.0056	ug/L		10/29/20 19:03	10/31/20 17:30	1
Toxaphene	0.23	U	2.9	0.23	ug/L		10/29/20 19:03	10/31/20 17:30	1
PCB-1221	0.11	U	0.57	0.11	ug/L		10/29/20 19:03	10/31/20 17:30	1
PCB-1242	0.11	U	0.57	0.11	ug/L		10/29/20 19:03	10/31/20 17:30	1
PCB-1254	0.063	U	0.57	0.063	ug/L		10/29/20 19:03	10/31/20 17:30	1
PCB-1260	0.069	U	0.57	0.069	ug/L		10/29/20 19:03	10/31/20 17:30	1
PCB-1016	0.10	U	0.57	0.10	ug/L		10/29/20 19:03	10/31/20 17:30	1
PCB-1248	0.12	U	0.57	0.12	ug/L		10/29/20 19:03	10/31/20 17:30	1
PCB-1232	0.14	U	0.57	0.14	ug/L		10/29/20 19:03	10/31/20 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*49*		*14 - 130*	*10/29/20 19:03*	*10/31/20 17:30*	*1*
Tetrachloro-m-xylene	*94*		*44 - 124*	*10/29/20 19:03*	*10/31/20 17:30*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**280**		5.0	2.0	mg/L			10/28/20 21:58	10
Sulfate	**16**		10	4.0	mg/L			10/28/20 21:58	10

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**18**		10	1.7	ug/L		10/28/20 15:11	10/30/20 04:46	1
Cadmium	1.0	U	5.0	1.0	ug/L		10/28/20 15:11	10/30/20 04:46	1
Chromium	1.6	U	10	1.6	ug/L		10/28/20 15:11	10/30/20 04:46	1
Copper	1.8	U	20	1.8	ug/L		10/28/20 15:11	10/30/20 04:46	1
Iron	**28**	**J**	50	17	ug/L		10/28/20 15:11	10/30/20 04:46	1
Lead	3.9	U	10	3.9	ug/L		10/28/20 15:11	10/30/20 04:46	1
Manganese	1.0	U	10	1.0	ug/L		10/28/20 15:11	10/30/20 04:46	1
Selenium	9.9	U	20	9.9	ug/L		10/28/20 15:11	10/30/20 04:46	1
Silver	0.60	U	10	0.60	ug/L		10/28/20 15:11	10/30/20 04:46	1

Client Sample ID: DCL-DUP01-FAL20

Lab Sample ID: 680-190501-1

Date Collected: 10/23/20 14:50

Matrix: Water

Date Received: 10/24/20 09:50

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		10/28/20 10:57	10/28/20 16:10	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	ug/L		10/26/20 14:46	10/27/20 20:50	1

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate/Nitrite-N	**0.65**		0.10	0.019	mg/L			11/09/20 18:59	1
Chemical Oxygen Demand	**17**	**J**	40	17	mg/L			10/28/20 09:48	2
Cyanide, Total	**0.012**		0.010	0.0025	mg/L		10/28/20 10:57	10/28/20 16:21	1
Alkalinity	**81**		10	3.1	mg/L			11/02/20 16:34	1
Total Dissolved Solids (TDS)	**570**		20	9.4	mg/L			10/30/20 11:25	1

Client Sample ID: LFM-99-02B-FAL20

Lab Sample ID: 680-190501-2

Date Collected: 10/23/20 14:10

Matrix: Water

Date Received: 10/24/20 09:50

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.0030	U	0.024	0.0030	ug/L		10/29/20 19:03	10/31/20 17:48	1
4,4'-DDE	0.0024	U	0.024	0.0024	ug/L		10/29/20 19:03	10/31/20 17:48	1
4,4'-DDT	0.0033	U Q	0.024	0.0033	ug/L		10/29/20 19:03	10/31/20 17:48	1
Aldrin	0.0034	U	0.024	0.0034	ug/L		10/29/20 19:03	10/31/20 17:48	1
alpha-BHC	0.0016	U	0.024	0.0016	ug/L		10/29/20 19:03	10/31/20 17:48	1
beta-BHC	0.0043	U M	0.024	0.0043	ug/L		10/29/20 19:03	10/31/20 17:48	1
Chlordane (technical)	0.045	U M	0.24	0.045	ug/L		10/29/20 19:03	10/31/20 17:48	1
delta-BHC	0.0036	U	0.024	0.0036	ug/L		10/29/20 19:03	10/31/20 17:48	1
Dieldrin	0.0018	U M	0.024	0.0018	ug/L		10/29/20 19:03	10/31/20 17:48	1
Endosulfan I	0.0017	U	0.024	0.0017	ug/L		10/29/20 19:03	10/31/20 17:48	1
Endosulfan II	0.0020	U	0.024	0.0020	ug/L		10/29/20 19:03	10/31/20 17:48	1
Endosulfan sulfate	0.0024	U	0.024	0.0024	ug/L		10/29/20 19:03	10/31/20 17:48	1
Endrin	0.0025	U	0.024	0.0025	ug/L		10/29/20 19:03	10/31/20 17:48	1
Endrin aldehyde	0.0029	U	0.024	0.0029	ug/L		10/29/20 19:03	10/31/20 17:48	1
Endrin ketone	0.0022	U	0.024	0.0022	ug/L		10/29/20 19:03	10/31/20 17:48	1
gamma-BHC (Lindane)	0.0017	U	0.024	0.0017	ug/L		10/29/20 19:03	10/31/20 17:48	1
Heptachlor	0.0034	U	0.024	0.0034	ug/L		10/29/20 19:03	10/31/20 17:48	1
Heptachlor epoxide	0.0018	U M	0.024	0.0018	ug/L		10/29/20 19:03	10/31/20 17:48	1
Methoxychlor	0.0047	U Q	0.024	0.0047	ug/L		10/29/20 19:03	10/31/20 17:48	1
Toxaphene	0.19	U	2.4	0.19	ug/L		10/29/20 19:03	10/31/20 17:48	1
PCB-1221	0.090	U	0.48	0.090	ug/L		10/29/20 19:03	10/31/20 17:48	1
PCB-1242	0.090	U M	0.48	0.090	ug/L		10/29/20 19:03	10/31/20 17:48	1
PCB-1254	0.052	U	0.48	0.052	ug/L		10/29/20 19:03	10/31/20 17:48	1
PCB-1260	0.057	U	0.48	0.057	ug/L		10/29/20 19:03	10/31/20 17:48	1
PCB-1016	0.086	U M	0.48	0.086	ug/L		10/29/20 19:03	10/31/20 17:48	1
PCB-1248	0.10	U M	0.48	0.10	ug/L		10/29/20 19:03	10/31/20 17:48	1
PCB-1232	0.12	U M	0.48	0.12	ug/L		10/29/20 19:03	10/31/20 17:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*22*		*14 - 130*	*10/29/20 19:03*	*10/31/20 17:48*	*1*
Tetrachloro-m-xylene	*74*		*44 - 124*	*10/29/20 19:03*	*10/31/20 17:48*	*1*

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190501-1

Client Sample ID: LFM-99-02B-FAL20

Lab Sample ID: 680-190501-2

Date Collected: 10/23/20 14:10

Matrix: Water

Date Received: 10/24/20 09:50

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**310**		5.0	2.0	mg/L			10/28/20 22:10	10
Sulfate	**20**		10	4.0	mg/L			10/28/20 22:10	10

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**9.3**	**J**	10	1.7	ug/L		10/28/20 15:11	10/30/20 04:50	1
Cadmium	1.0	U	5.0	1.0	ug/L		10/28/20 15:11	10/30/20 04:50	1
Chromium	1.6	U	10	1.6	ug/L		10/28/20 15:11	10/30/20 04:50	1
Copper	1.8	U	20	1.8	ug/L		10/28/20 15:11	10/30/20 04:50	1
Iron	17	U	50	17	ug/L		10/28/20 15:11	10/30/20 04:50	1
Lead	3.9	U	10	3.9	ug/L		10/28/20 15:11	10/30/20 04:50	1
Manganese	1.0	U	10	1.0	ug/L		10/28/20 15:11	10/30/20 04:50	1
Selenium	9.9	U	20	9.9	ug/L		10/28/20 15:11	10/30/20 04:50	1
Silver	0.60	U	10	0.60	ug/L		10/28/20 15:11	10/30/20 04:50	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**22**		3.0	1.5	ug/L		10/28/20 10:57	10/28/20 16:01	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	ug/L		10/26/20 14:46	10/27/20 20:55	1

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate/Nitrite-N	**0.38**		0.10	0.019	mg/L			11/09/20 19:01	1
Chemical Oxygen Demand	17	U	40	17	mg/L			10/28/20 09:48	2
Cyanide, Total	0.0025	U	0.010	0.0025	mg/L		10/28/20 10:57	10/28/20 16:21	1
Alkalinity	**100**		10	3.1	mg/L			11/02/20 16:39	1
Total Dissolved Solids (TDS)	**690**		20	9.4	mg/L			10/30/20 11:25	1

Client Sample ID: LFM-99-05A-FAL20

Lab Sample ID: 680-190501-3

Date Collected: 10/23/20 14:50

Matrix: Water

Date Received: 10/24/20 09:50

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.0034	U M	0.027	0.0034	ug/L		10/29/20 19:03	10/31/20 18:04	1
4,4'-DDE	0.0028	U	0.027	0.0028	ug/L		10/29/20 19:03	10/31/20 18:04	1
4,4'-DDT	0.0038	U	0.027	0.0038	ug/L		10/29/20 19:03	10/31/20 18:04	1
Aldrin	0.0039	U	0.027	0.0039	ug/L		10/29/20 19:03	10/31/20 18:04	1
alpha-BHC	0.0018	U	0.027	0.0018	ug/L		10/29/20 19:03	10/31/20 18:04	1
beta-BHC	0.0049	U	0.027	0.0049	ug/L		10/29/20 19:03	10/31/20 18:04	1
Chlordane (technical)	0.051	U M	0.27	0.051	ug/L		10/29/20 19:03	10/31/20 18:04	1
delta-BHC	0.0041	U M	0.027	0.0041	ug/L		10/29/20 19:03	10/31/20 18:04	1
Dieldrin	0.0021	U	0.027	0.0021	ug/L		10/29/20 19:03	10/31/20 18:04	1
Endosulfan I	0.0019	U	0.027	0.0019	ug/L		10/29/20 19:03	10/31/20 18:04	1
Endosulfan II	0.0023	U	0.027	0.0023	ug/L		10/29/20 19:03	10/31/20 18:04	1
Endosulfan sulfate	0.0028	U	0.027	0.0028	ug/L		10/29/20 19:03	10/31/20 18:04	1
Endrin	0.0029	U Q	0.027	0.0029	ug/L		10/29/20 19:03	10/31/20 18:04	1
Endrin aldehyde	0.0033	U M	0.027	0.0033	ug/L		10/29/20 19:03	10/31/20 18:04	1

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190501-1

Client Sample ID: LFM-99-05A-FAL20

Date Collected: 10/23/20 14:50
Date Received: 10/24/20 09:50

Lab Sample ID: 680-190501-3

Matrix: Water

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Endrin ketone	0.0025	U M	0.027	0.0025	ug/L		10/29/20 19:03	10/31/20 18:04	1
gamma-BHC (Lindane)	0.0020	U	0.027	0.0020	ug/L		10/29/20 19:03	10/31/20 18:04	1
Heptachlor	0.0038	U	0.027	0.0038	ug/L		10/29/20 19:03	10/31/20 18:04	1
Heptachlor epoxide	0.0020	U	0.027	0.0020	ug/L		10/29/20 19:03	10/31/20 18:04	1
Methoxychlor	0.0053	U	0.027	0.0053	ug/L		10/29/20 19:03	10/31/20 18:04	1
Toxaphene	0.22	U	2.7	0.22	ug/L		10/29/20 19:03	10/31/20 18:04	1
PCB-1221	0.10	U M	0.54	0.10	ug/L		10/29/20 19:03	10/31/20 18:04	1
PCB-1242	0.10	U	0.54	0.10	ug/L		10/29/20 19:03	10/31/20 18:04	1
PCB-1254	0.060	U	0.54	0.060	ug/L		10/29/20 19:03	10/31/20 18:04	1
PCB-1260	0.065	U	0.54	0.065	ug/L		10/29/20 19:03	10/31/20 18:04	1
PCB-1016	0.098	U	0.54	0.098	ug/L		10/29/20 19:03	10/31/20 18:04	1
PCB-1248	0.11	U M	0.54	0.11	ug/L		10/29/20 19:03	10/31/20 18:04	1
PCB-1232	0.14	U	0.54	0.14	ug/L		10/29/20 19:03	10/31/20 18:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*46*		*14 - 130*	*10/29/20 19:03*	*10/31/20 18:04*	*1*
Tetrachloro-m-xylene	*71*		*44 - 124*	*10/29/20 19:03*	*10/31/20 18:04*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**290**		5.0	2.0	mg/L			10/28/20 22:23	10
Sulfate	**16**		10	4.0	mg/L			10/28/20 22:23	10

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**21**		10	1.7	ug/L		10/28/20 15:11	10/30/20 05:04	1
Cadmium	1.0	U	5.0	1.0	ug/L		10/28/20 15:11	10/30/20 05:04	1
Chromium	1.6	U	10	1.6	ug/L		10/28/20 15:11	10/30/20 05:04	1
Copper	1.8	U	20	1.8	ug/L		10/28/20 15:11	10/30/20 05:04	1
Iron	**24**	**J**	50	17	ug/L		10/28/20 15:11	10/30/20 05:04	1
Lead	3.9	U	10	3.9	ug/L		10/28/20 15:11	10/30/20 05:04	1
Manganese	1.0	U	10	1.0	ug/L		10/28/20 15:11	10/30/20 05:04	1
Selenium	9.9	U	20	9.9	ug/L		10/28/20 15:11	10/30/20 05:04	1
Silver	0.60	U	10	0.60	ug/L		10/28/20 15:11	10/30/20 05:04	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		10/28/20 10:57	10/28/20 16:22	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	ug/L		10/26/20 14:46	10/27/20 21:09	1

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate/Nitrite-N	**0.64**		0.10	0.019	mg/L			11/09/20 19:03	1
Chemical Oxygen Demand	17	U	40	17	mg/L			10/28/20 09:48	2
Cyanide, Total	0.0025	U	0.010	0.0025	mg/L		10/28/20 10:57	10/28/20 16:21	1
Alkalinity	**79**		10	3.1	mg/L			11/02/20 16:44	1
Total Dissolved Solids (TDS)	**610**		20	9.4	mg/L			10/30/20 11:25	1

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190501-1

Client Sample ID: LFM-99-O6ARP-FAL20

Date Collected: 10/23/20 11:35
Date Received: 10/24/20 09:50

Lab Sample ID: 680-190501-4

Matrix: Water

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.0030	U	0.024	0.0030	ug/L		10/29/20 19:03	10/31/20 18:06	1
4,4'-DDE	0.0025	U	0.024	0.0025	ug/L		10/29/20 19:03	10/31/20 18:06	1
4,4'-DDT	0.0034	U Q	0.024	0.0034	ug/L		10/29/20 19:03	10/31/20 18:06	1
Aldrin	0.0035	U	0.024	0.0035	ug/L		10/29/20 19:03	10/31/20 18:06	1
alpha-BHC	0.0016	U	0.024	0.0016	ug/L		10/29/20 19:03	10/31/20 18:06	1
beta-BHC	0.0044	U	0.024	0.0044	ug/L		10/29/20 19:03	10/31/20 18:06	1
Chlordane (technical)	0.046	U M	0.24	0.046	ug/L		10/29/20 19:03	10/31/20 18:06	1
delta-BHC	0.0036	U	0.024	0.0036	ug/L		10/29/20 19:03	10/31/20 18:06	1
Dieldrin	0.0018	U	0.024	0.0018	ug/L		10/29/20 19:03	10/31/20 18:06	1
Endosulfan I	0.0017	U	0.024	0.0017	ug/L		10/29/20 19:03	10/31/20 18:06	1
Endosulfan II	0.0020	U	0.024	0.0020	ug/L		10/29/20 19:03	10/31/20 18:06	1
Endosulfan sulfate	0.0025	U	0.024	0.0025	ug/L		10/29/20 19:03	10/31/20 18:06	1
Endrin	0.0025	U	0.024	0.0025	ug/L		10/29/20 19:03	10/31/20 18:06	1
Endrin aldehyde	0.0029	U	0.024	0.0029	ug/L		10/29/20 19:03	10/31/20 18:06	1
Endrin ketone	0.0022	U	0.024	0.0022	ug/L		10/29/20 19:03	10/31/20 18:06	1
gamma-BHC (Lindane)	0.0017	U	0.024	0.0017	ug/L		10/29/20 19:03	10/31/20 18:06	1
Heptachlor	0.0034	U	0.024	0.0034	ug/L		10/29/20 19:03	10/31/20 18:06	1
Heptachlor epoxide	0.0018	U	0.024	0.0018	ug/L		10/29/20 19:03	10/31/20 18:06	1
Methoxychlor	0.0047	U Q	0.024	0.0047	ug/L		10/29/20 19:03	10/31/20 18:06	1
Toxaphene	0.19	U	2.4	0.19	ug/L		10/29/20 19:03	10/31/20 18:06	1
PCB-1221	0.091	U	0.48	0.091	ug/L		10/29/20 19:03	10/31/20 18:06	1
PCB-1242	0.091	U M	0.48	0.091	ug/L		10/29/20 19:03	10/31/20 18:06	1
PCB-1254	0.053	U	0.48	0.053	ug/L		10/29/20 19:03	10/31/20 18:06	1
PCB-1260	0.058	U	0.48	0.058	ug/L		10/29/20 19:03	10/31/20 18:06	1
PCB-1016	0.086	U M	0.48	0.086	ug/L		10/29/20 19:03	10/31/20 18:06	1
PCB-1248	0.10	U M	0.48	0.10	ug/L		10/29/20 19:03	10/31/20 18:06	1
PCB-1232	0.12	U M	0.48	0.12	ug/L		10/29/20 19:03	10/31/20 18:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*48*		*14 - 130*	*10/29/20 19:03*	*10/31/20 18:06*	*1*
Tetrachloro-m-xylene	*107*		*44 - 124*	*10/29/20 19:03*	*10/31/20 18:06*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**360**		5.0	2.0	mg/L			10/28/20 22:36	10
Sulfate	**25**		10	4.0	mg/L			10/28/20 22:36	10

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**4.7**	**J**	10	1.7	ug/L		10/28/20 15:42	10/30/20 02:25	1
Cadmium	1.0	U	5.0	1.0	ug/L		10/28/20 15:42	10/30/20 02:25	1
Chromium	1.6	U	10	1.6	ug/L		10/28/20 15:42	10/30/20 02:25	1
Copper	1.8	U	20	1.8	ug/L		10/28/20 15:42	10/30/20 02:25	1
Iron	**30**	**J**	50	17	ug/L		10/28/20 15:42	10/30/20 02:25	1
Lead	3.9	U	10	3.9	ug/L		10/28/20 15:42	10/30/20 02:25	1
Manganese	1.0	U	10	1.0	ug/L		10/28/20 15:42	10/30/20 02:25	1
Selenium	9.9	U	20	9.9	ug/L		10/28/20 15:42	10/30/20 02:25	1
Silver	0.60	U	10	0.60	ug/L		10/28/20 15:42	10/30/20 02:25	1

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190501-1

Client Sample ID: LFM-99-O6ARP-FAL20

Lab Sample ID: 680-190501-4

Date Collected: 10/23/20 11:35

Matrix: Water

Date Received: 10/24/20 09:50

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		10/28/20 10:57	10/28/20 16:19	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	ug/L		10/26/20 14:46	10/27/20 21:13	1

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate/Nitrite-N	**1.5**		0.10	0.019	mg/L			11/09/20 19:05	1
Chemical Oxygen Demand	17	U	40	17	mg/L			10/28/20 09:48	2
Cyanide, Total	**0.0037**	**J**	0.010	0.0025	mg/L		10/28/20 10:57	10/28/20 16:21	1
Alkalinity	**150**		10	3.1	mg/L			11/02/20 16:50	1
Total Dissolved Solids (TDS)	**810**		20	9.4	mg/L			10/30/20 11:25	1

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Lab Sample ID: MB 680-641209/9-A
Matrix: Water
Analysis Batch: 641757

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 641209

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.0032	U M	0.025	0.0032	ug/L		10/28/20 19:45	10/31/20 15:50	1
4,4'-DDE	0.0026	U M	0.025	0.0026	ug/L		10/28/20 19:45	10/31/20 15:50	1
4,4'-DDT	0.0035	U M	0.025	0.0035	ug/L		10/28/20 19:45	10/31/20 15:50	1
Aldrin	0.0036	U M	0.025	0.0036	ug/L		10/28/20 19:45	10/31/20 15:50	1
alpha-BHC	0.0017	U M	0.025	0.0017	ug/L		10/28/20 19:45	10/31/20 15:50	1
beta-BHC	0.0046	U M	0.025	0.0046	ug/L		10/28/20 19:45	10/31/20 15:50	1
Chlordane (technical)	0.048	U M	0.25	0.048	ug/L		10/28/20 19:45	10/31/20 15:50	1
delta-BHC	0.0038	U M	0.025	0.0038	ug/L		10/28/20 19:45	10/31/20 15:50	1
Dieldrin	0.0019	U M	0.025	0.0019	ug/L		10/28/20 19:45	10/31/20 15:50	1
Endosulfan I	0.0018	U M	0.025	0.0018	ug/L		10/28/20 19:45	10/31/20 15:50	1
Endosulfan II	0.0021	U M	0.025	0.0021	ug/L		10/28/20 19:45	10/31/20 15:50	1
Endosulfan sulfate	0.0026	U M	0.025	0.0026	ug/L		10/28/20 19:45	10/31/20 15:50	1
Endrin	0.0027	U M	0.025	0.0027	ug/L		10/28/20 19:45	10/31/20 15:50	1
Endrin aldehyde	0.0031	U M	0.025	0.0031	ug/L		10/28/20 19:45	10/31/20 15:50	1
Endrin ketone	0.0023	U	0.025	0.0023	ug/L		10/28/20 19:45	10/31/20 15:50	1
gamma-BHC (Lindane)	0.0018	U M	0.025	0.0018	ug/L		10/28/20 19:45	10/31/20 15:50	1
Heptachlor	0.0036	U M	0.025	0.0036	ug/L		10/28/20 19:45	10/31/20 15:50	1
Heptachlor epoxide	0.0019	U M	0.025	0.0019	ug/L		10/28/20 19:45	10/31/20 15:50	1
Methoxychlor	0.0049	U M	0.025	0.0049	ug/L		10/28/20 19:45	10/31/20 15:50	1
Toxaphene	0.20	U M	2.5	0.20	ug/L		10/28/20 19:45	10/31/20 15:50	1
PCB-1221	0.095	U M	0.50	0.095	ug/L		10/28/20 19:45	10/31/20 15:50	1
PCB-1242	0.095	U M	0.50	0.095	ug/L		10/28/20 19:45	10/31/20 15:50	1
PCB-1254	0.055	U M	0.50	0.055	ug/L		10/28/20 19:45	10/31/20 15:50	1
PCB-1260	0.060	U M	0.50	0.060	ug/L		10/28/20 19:45	10/31/20 15:50	1
PCB-1016	0.090	U M	0.50	0.090	ug/L		10/28/20 19:45	10/31/20 15:50	1
PCB-1248	0.11	U M	0.50	0.11	ug/L		10/28/20 19:45	10/31/20 15:50	1
PCB-1232	0.13	U M	0.50	0.13	ug/L		10/28/20 19:45	10/31/20 15:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*54*		*14 - 130*	*10/28/20 19:45*	*10/31/20 15:50*	*1*
Tetrachloro-m-xylene	*60*		*44 - 124*	*10/28/20 19:45*	*10/31/20 15:50*	*1*

Lab Sample ID: LCS 680-641209/10-A
Matrix: Water
Analysis Batch: 641757

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 641209

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	0.0500	0.0666		ug/L		133	56 - 143
4,4'-DDE	0.0500	0.0428		ug/L		86	57 - 135
4,4'-DDT	0.0500	0.0602		ug/L		120	51 - 143
Aldrin	0.0500	0.0336		ug/L		67	45 - 134
alpha-BHC	0.0500	0.0420		ug/L		84	54 - 138
beta-BHC	0.0500	0.0389		ug/L		78	56 - 136
delta-BHC	0.0500	0.0456		ug/L		91	52 - 142
Dieldrin	0.0500	0.0558		ug/L		112	60 - 136
Endosulfan I	0.0500	0.0392		ug/L		78	62 - 126
Endosulfan II	0.0500	0.0491		ug/L		98	52 - 135
Endosulfan sulfate	0.0500	0.0509		ug/L		102	62 - 133

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: LCS 680-641209/10-A
Matrix: Water
Analysis Batch: 641757

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 641209

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Endrin			0.0500	0.0566		ug/L		113	60 - 138		
Endrin aldehyde			0.0500	0.0529		ug/L		106	51 - 132		
Endrin ketone			0.0500	0.0479		ug/L		96	58 - 134		
gamma-BHC (Lindane)			0.0500	0.0438		ug/L		88	59 - 134		
Heptachlor			0.0500	0.0363		ug/L		73	54 - 130		
Heptachlor epoxide			0.0500	0.0491		ug/L		98	61 - 133		
Methoxychlor			0.0500	0.0574		ug/L		115	54 - 145		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*75*		*14 - 130*
Tetrachloro-m-xylene	*68*		*44 - 124*

Lab Sample ID: LCS 680-641209/12-A
Matrix: Water
Analysis Batch: 641757

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 641209

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
PCB-1260			3.00	2.96	M	ug/L		99	45 - 134		
PCB-1016			3.00	2.19		ug/L		73	46 - 129		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*77*		*14 - 130*
Tetrachloro-m-xylene	*63*		*44 - 124*

Lab Sample ID: LCSD 680-641209/11-A
Matrix: Water
Analysis Batch: 641757

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 641209

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4,4'-DDD			0.0500	0.0515		ug/L		103	56 - 143	25	30
4,4'-DDE			0.0500	0.0470		ug/L		94	57 - 135	9	30
4,4'-DDT			0.0500	0.0565		ug/L		113	51 - 143	6	30
Aldrin			0.0500	0.0359		ug/L		72	45 - 134	7	30
alpha-BHC			0.0500	0.0403		ug/L		81	54 - 138	4	30
beta-BHC			0.0500	0.0414		ug/L		83	56 - 136	6	30
delta-BHC			0.0500	0.0478		ug/L		96	52 - 142	5	30
Dieldrin			0.0500	0.0475		ug/L		95	60 - 136	16	30
Endosulfan I			0.0500	0.0404		ug/L		81	62 - 126	3	30
Endosulfan II			0.0500	0.0484		ug/L		97	52 - 135	1	30
Endosulfan sulfate			0.0500	0.0503		ug/L		101	62 - 133	1	30
Endrin			0.0500	0.0606		ug/L		121	60 - 138	7	30
Endrin aldehyde			0.0500	0.0596		ug/L		119	51 - 132	12	30
Endrin ketone			0.0500	0.0479		ug/L		96	58 - 134	0	30
gamma-BHC (Lindane)			0.0500	0.0431		ug/L		86	59 - 134	2	30
Heptachlor			0.0500	0.0372		ug/L		74	54 - 130	3	30
Heptachlor epoxide			0.0500	0.0432		ug/L		86	61 - 133	13	30
Methoxychlor			0.0500	0.0563		ug/L		113	54 - 145	2	30

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: LCSD 680-641209/11-A
Matrix: Water
Analysis Batch: 641757

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 641209

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
DCB Decachlorobiphenyl	82		14 - 130
Tetrachloro-m-xylene	64		44 - 124

Lab Sample ID: LCSD 680-641209/13-A
Matrix: Water
Analysis Batch: 641757

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 641209

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-1260			3.00	2.92	M	ug/L		97	45 - 134	1	30
PCB-1016			3.00	2.24		ug/L		75	46 - 129	2	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
DCB Decachlorobiphenyl	81		14 - 130
Tetrachloro-m-xylene	68		44 - 124

Lab Sample ID: MB 680-641508/15-A
Matrix: Water
Analysis Batch: 641748

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 641508

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.0032	U	0.025	0.0032	ug/L		10/29/20 19:03	10/31/20 16:01	1
4,4'-DDE	0.0026	U	0.025	0.0026	ug/L		10/29/20 19:03	10/31/20 16:01	1
4,4'-DDT	0.0035	U	0.025	0.0035	ug/L		10/29/20 19:03	10/31/20 16:01	1
Aldrin	0.0036	U	0.025	0.0036	ug/L		10/29/20 19:03	10/31/20 16:01	1
alpha-BHC	0.0017	U	0.025	0.0017	ug/L		10/29/20 19:03	10/31/20 16:01	1
beta-BHC	0.0046	U	0.025	0.0046	ug/L		10/29/20 19:03	10/31/20 16:01	1
Chlordane (technical)	0.048	U M	0.25	0.048	ug/L		10/29/20 19:03	10/31/20 16:01	1
delta-BHC	0.0038	U	0.025	0.0038	ug/L		10/29/20 19:03	10/31/20 16:01	1
Dieldrin	0.0019	U	0.025	0.0019	ug/L		10/29/20 19:03	10/31/20 16:01	1
Endosulfan I	0.0018	U	0.025	0.0018	ug/L		10/29/20 19:03	10/31/20 16:01	1
Endosulfan II	0.0021	U	0.025	0.0021	ug/L		10/29/20 19:03	10/31/20 16:01	1
Endosulfan sulfate	0.0026	U	0.025	0.0026	ug/L		10/29/20 19:03	10/31/20 16:01	1
Endrin	0.0027	U	0.025	0.0027	ug/L		10/29/20 19:03	10/31/20 16:01	1
Endrin aldehyde	0.0031	U	0.025	0.0031	ug/L		10/29/20 19:03	10/31/20 16:01	1
Endrin ketone	0.0023	U	0.025	0.0023	ug/L		10/29/20 19:03	10/31/20 16:01	1
gamma-BHC (Lindane)	0.0018	U	0.025	0.0018	ug/L		10/29/20 19:03	10/31/20 16:01	1
Heptachlor	0.0036	U	0.025	0.0036	ug/L		10/29/20 19:03	10/31/20 16:01	1
Heptachlor epoxide	0.0019	U	0.025	0.0019	ug/L		10/29/20 19:03	10/31/20 16:01	1
Methoxychlor	0.0049	U	0.025	0.0049	ug/L		10/29/20 19:03	10/31/20 16:01	1
Toxaphene	0.20	U	2.5	0.20	ug/L		10/29/20 19:03	10/31/20 16:01	1
PCB-1221	0.095	U	0.50	0.095	ug/L		10/29/20 19:03	10/31/20 16:01	1
PCB-1242	0.095	U	0.50	0.095	ug/L		10/29/20 19:03	10/31/20 16:01	1
PCB-1254	0.055	U	0.50	0.055	ug/L		10/29/20 19:03	10/31/20 16:01	1
PCB-1260	0.060	U	0.50	0.060	ug/L		10/29/20 19:03	10/31/20 16:01	1
PCB-1016	0.090	U	0.50	0.090	ug/L		10/29/20 19:03	10/31/20 16:01	1
PCB-1248	0.11	U	0.50	0.11	ug/L		10/29/20 19:03	10/31/20 16:01	1
PCB-1232	0.13	U M	0.50	0.13	ug/L		10/29/20 19:03	10/31/20 16:01	1

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: MB 680-641508/15-A
Matrix: Water
Analysis Batch: 641748

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 641508

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	37		14 - 130	10/29/20 19:03	10/31/20 16:01	1
Tetrachloro-m-xylene	90		44 - 124	10/29/20 19:03	10/31/20 16:01	1

Lab Sample ID: LCS 680-641508/16-A
Matrix: Water
Analysis Batch: 641748

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 641508

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	0.0500	0.0615		ug/L		123	56 - 143
4,4'-DDE	0.0500	0.0652		ug/L		130	57 - 135
4,4'-DDT	0.0500	0.0678		ug/L		136	51 - 143
Aldrin	0.0500	0.0528		ug/L		106	45 - 134
alpha-BHC	0.0500	0.0612		ug/L		122	54 - 138
beta-BHC	0.0500	0.0584		ug/L		117	56 - 136
delta-BHC	0.0500	0.0657		ug/L		131	52 - 142
Dieldrin	0.0500	0.0629		ug/L		126	60 - 136
Endosulfan I	0.0500	0.0570		ug/L		114	62 - 126
Endosulfan II	0.0500	0.0604		ug/L		121	52 - 135
Endosulfan sulfate	0.0500	0.0640		ug/L		128	62 - 133
Endrin	0.0500	0.0677		ug/L		135	60 - 138
Endrin aldehyde	0.0500	0.0612		ug/L		122	51 - 132
Endrin ketone	0.0500	0.0646		ug/L		129	58 - 134
gamma-BHC (Lindane)	0.0500	0.0611		ug/L		122	59 - 134
Heptachlor	0.0500	0.0474		ug/L		95	54 - 130
Heptachlor epoxide	0.0500	0.0634		ug/L		127	61 - 133
Methoxychlor	0.0500	0.0657		ug/L		131	54 - 145

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	64		14 - 130
Tetrachloro-m-xylene	105		44 - 124

Lab Sample ID: LCS 680-641508/21-A
Matrix: Water
Analysis Batch: 641748

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 641508

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1260	3.00	3.18		ug/L		106	45 - 134
PCB-1016	3.00	2.56		ug/L		85	46 - 129

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	48		14 - 130
Tetrachloro-m-xylene	102		44 - 124

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: LCSD 680-641508/22-A
Matrix: Water
Analysis Batch: 641748

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 641508

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-1260			3.00	3.45		ug/L		115	45 - 134	8	30
PCB-1016			3.00	2.79		ug/L		93	46 - 129	9	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*53*		*14 - 130*
Tetrachloro-m-xylene	*107*		*44 - 124*

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 680-641087/33
Matrix: Water
Analysis Batch: 641087

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.20	U	0.50	0.20	mg/L			10/28/20 16:54	1
Sulfate	0.40	U	1.0	0.40	mg/L			10/28/20 16:54	1

Lab Sample ID: LCS 680-641087/34
Matrix: Water
Analysis Batch: 641087

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			10.0	9.89		mg/L		99	87 - 111		
Sulfate			10.0	10.2		mg/L		102	87 - 112		

Lab Sample ID: LCSD 680-641087/35
Matrix: Water
Analysis Batch: 641087

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride			10.0	9.90		mg/L		99	87 - 111	0	15
Sulfate			10.0	10.3		mg/L		103	87 - 112	1	15

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-641196/1-A
Matrix: Water
Analysis Batch: 641661

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 641196

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	1.7	U	10	1.7	ug/L		10/28/20 15:11	10/30/20 03:35	1
Cadmium	1.0	U	5.0	1.0	ug/L		10/28/20 15:11	10/30/20 03:35	1
Chromium	1.6	U	10	1.6	ug/L		10/28/20 15:11	10/30/20 03:35	1
Copper	1.8	U	20	1.8	ug/L		10/28/20 15:11	10/30/20 03:35	1
Iron	17	U	50	17	ug/L		10/28/20 15:11	10/30/20 03:35	1
Lead	3.9	U	10	3.9	ug/L		10/28/20 15:11	10/30/20 03:35	1
Manganese	1.0	U	10	1.0	ug/L		10/28/20 15:11	10/30/20 03:35	1
Selenium	9.9	U	20	9.9	ug/L		10/28/20 15:11	10/30/20 03:35	1
Silver	0.60	U	10	0.60	ug/L		10/28/20 15:11	10/30/20 03:35	1

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 680-641196/2-A
Matrix: Water
Analysis Batch: 641661

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 641196

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	100	99.8		ug/L		100	88 - 113
Cadmium	50.0	48.9		ug/L		98	88 - 113
Chromium	100	100		ug/L		100	90 - 113
Copper	100	97.9		ug/L		98	86 - 114
Iron	5000	4930		ug/L		99	87 - 115
Lead	454	453		ug/L		100	86 - 113
Manganese	400	399		ug/L		100	90 - 114
Selenium	100	93.5		ug/L		93	83 - 114
Silver	50.0	49.5		ug/L		99	84 - 115

Lab Sample ID: MB 680-641215/1-A
Matrix: Water
Analysis Batch: 641661

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 641215

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	1.7	U	10	1.7	ug/L		10/28/20 15:42	10/30/20 01:01	1
Cadmium	1.0	U	5.0	1.0	ug/L		10/28/20 15:42	10/30/20 01:01	1
Chromium	1.6	U	10	1.6	ug/L		10/28/20 15:42	10/30/20 01:01	1
Copper	1.8	U	20	1.8	ug/L		10/28/20 15:42	10/30/20 01:01	1
Iron	17	U	50	17	ug/L		10/28/20 15:42	10/30/20 01:01	1
Lead	3.9	U	10	3.9	ug/L		10/28/20 15:42	10/30/20 01:01	1
Manganese	1.0	U	10	1.0	ug/L		10/28/20 15:42	10/30/20 01:01	1
Selenium	9.9	U	20	9.9	ug/L		10/28/20 15:42	10/30/20 01:01	1
Silver	0.60	U	10	0.60	ug/L		10/28/20 15:42	10/30/20 01:01	1

Lab Sample ID: LCS 680-641215/2-A
Matrix: Water
Analysis Batch: 641661

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 641215

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	100	97.9		ug/L		98	88 - 113
Cadmium	50.0	48.9		ug/L		98	88 - 113
Chromium	100	99.4		ug/L		99	90 - 113
Copper	100	97.9		ug/L		98	86 - 114
Iron	5000	4930		ug/L		99	87 - 115
Lead	454	449		ug/L		99	86 - 113
Manganese	400	398		ug/L		99	90 - 114
Selenium	100	96.0		ug/L		96	83 - 114
Silver	50.0	48.8		ug/L		98	84 - 115

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-641119/1-A
Matrix: Water
Analysis Batch: 641311

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 641119

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		10/28/20 10:57	10/28/20 15:33	1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 680-641119/2-A
Matrix: Water
Analysis Batch: 641311

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 641119

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	100		ug/L		100	84 - 116

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 680-640802/1-A
Matrix: Water
Analysis Batch: 641187

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 640802

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	ug/L		10/26/20 14:46	10/27/20 19:35	1

Lab Sample ID: LCS 680-640802/2-A
Matrix: Water
Analysis Batch: 641187

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 640802

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	2.50	2.47		ug/L		99	80 - 124

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 280-516005/60
Matrix: Water
Analysis Batch: 516005

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate/Nitrite-N	0.019	U	0.10	0.019	mg/L			11/09/20 18:01	1

Lab Sample ID: LCS 280-516005/59
Matrix: Water
Analysis Batch: 516005

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate/Nitrite-N	5.00	5.04		mg/L		101	90 - 110

Method: 410.4 - COD

Lab Sample ID: MB 280-514419/5
Matrix: Water
Analysis Batch: 514419

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	8.7	U	20	8.7	mg/L			10/28/20 09:48	1

Lab Sample ID: LCS 280-514419/3
Matrix: Water
Analysis Batch: 514419

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	100	100		mg/L		100	90 - 110

Method: 410.4 - COD (Continued)

Lab Sample ID: LCSD 280-514419/4
Matrix: Water
Analysis Batch: 514419

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chemical Oxygen Demand	100	97.0		mg/L		97	90 - 110	3	11

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 680-641085/12-A
Matrix: Water
Analysis Batch: 641267

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 641085

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.0025	U	0.010	0.0025	mg/L		10/28/20 10:57	10/28/20 16:14	1

Lab Sample ID: LCS 680-641085/13-A
Matrix: Water
Analysis Batch: 641267

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 641085

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0500	0.0451		mg/L		90	83 - 116

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-515193/31
Matrix: Water
Analysis Batch: 515193

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	3.1	U	10	3.1	mg/L			11/02/20 16:15	1

Lab Sample ID: LCS 280-515193/30
Matrix: Water
Analysis Batch: 515193

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	200	212		mg/L		106	89 - 109

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-514838/1
Matrix: Water
Analysis Batch: 514838

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	4.7	U	10	4.7	mg/L			10/30/20 11:25	1

Lab Sample ID: LCS 280-514838/2
Matrix: Water
Analysis Batch: 514838

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	496		mg/L		99	93 - 110

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: 680-190501-4 DU
Client Sample ID: LFM-99-O6ARP-FAL20
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 514838

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids (TDS)	810			806		mg/L				1	10

QC Association Summary

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190501-1

GC Semi VOA

Prep Batch: 641209

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 680-641209/9-A	Method Blank	Total/NA	Water	3520C	
LCS 680-641209/10-A	Lab Control Sample	Total/NA	Water	3520C	
LCS 680-641209/12-A	Lab Control Sample	Total/NA	Water	3520C	
LCSD 680-641209/11-A	Lab Control Sample Dup	Total/NA	Water	3520C	
LCSD 680-641209/13-A	Lab Control Sample Dup	Total/NA	Water	3520C	

Prep Batch: 641508

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-1	DCL-DUP01-FAL20	Total/NA	Water	3520C	
680-190501-2	LFM-99-02B-FAL20	Total/NA	Water	3520C	
680-190501-3	LFM-99-05A-FAL20	Total/NA	Water	3520C	
680-190501-4	LFM-99-O6ARP-FAL20	Total/NA	Water	3520C	
MB 680-641508/15-A	Method Blank	Total/NA	Water	3520C	
LCS 680-641508/16-A	Lab Control Sample	Total/NA	Water	3520C	
LCS 680-641508/21-A	Lab Control Sample	Total/NA	Water	3520C	
LCSD 680-641508/22-A	Lab Control Sample Dup	Total/NA	Water	3520C	

Analysis Batch: 641748

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-1	DCL-DUP01-FAL20	Total/NA	Water	8081B 8082A	641508
680-190501-2	LFM-99-02B-FAL20	Total/NA	Water	8081B 8082A	641508
680-190501-4	LFM-99-O6ARP-FAL20	Total/NA	Water	8081B 8082A	641508
MB 680-641508/15-A	Method Blank	Total/NA	Water	8081B 8082A	641508
LCS 680-641508/16-A	Lab Control Sample	Total/NA	Water	8081B 8082A	641508
LCS 680-641508/21-A	Lab Control Sample	Total/NA	Water	8081B 8082A	641508
LCSD 680-641508/22-A	Lab Control Sample Dup	Total/NA	Water	8081B 8082A	641508

Analysis Batch: 641757

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-3	LFM-99-05A-FAL20	Total/NA	Water	8081B 8082A	641508
MB 680-641209/9-A	Method Blank	Total/NA	Water	8081B 8082A	641209
LCS 680-641209/10-A	Lab Control Sample	Total/NA	Water	8081B 8082A	641209
LCS 680-641209/12-A	Lab Control Sample	Total/NA	Water	8081B 8082A	641209
LCSD 680-641209/11-A	Lab Control Sample Dup	Total/NA	Water	8081B 8082A	641209
LCSD 680-641209/13-A	Lab Control Sample Dup	Total/NA	Water	8081B 8082A	641209

HPLC/IC

Analysis Batch: 641087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-1	DCL-DUP01-FAL20	Total/NA	Water	9056A	
680-190501-2	LFM-99-02B-FAL20	Total/NA	Water	9056A	
680-190501-3	LFM-99-05A-FAL20	Total/NA	Water	9056A	
680-190501-4	LFM-99-O6ARP-FAL20	Total/NA	Water	9056A	
MB 680-641087/33	Method Blank	Total/NA	Water	9056A	
LCS 680-641087/34	Lab Control Sample	Total/NA	Water	9056A	
LCSD 680-641087/35	Lab Control Sample Dup	Total/NA	Water	9056A	

Metals

Prep Batch: 640802

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-1	DCL-DUP01-FAL20	Total/NA	Water	7470A	
680-190501-2	LFM-99-02B-FAL20	Total/NA	Water	7470A	
680-190501-3	LFM-99-05A-FAL20	Total/NA	Water	7470A	
680-190501-4	LFM-99-O6ARP-FAL20	Total/NA	Water	7470A	
MB 680-640802/1-A	Method Blank	Total/NA	Water	7470A	
LCS 680-640802/2-A	Lab Control Sample	Total/NA	Water	7470A	

Prep Batch: 641119

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-1	DCL-DUP01-FAL20	Total/NA	Water	3010A	
680-190501-2	LFM-99-02B-FAL20	Total/NA	Water	3010A	
680-190501-3	LFM-99-05A-FAL20	Total/NA	Water	3010A	
680-190501-4	LFM-99-O6ARP-FAL20	Total/NA	Water	3010A	
MB 680-641119/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-641119/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 641187

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-1	DCL-DUP01-FAL20	Total/NA	Water	7470A	640802
680-190501-2	LFM-99-02B-FAL20	Total/NA	Water	7470A	640802
680-190501-3	LFM-99-05A-FAL20	Total/NA	Water	7470A	640802
680-190501-4	LFM-99-O6ARP-FAL20	Total/NA	Water	7470A	640802
MB 680-640802/1-A	Method Blank	Total/NA	Water	7470A	640802
LCS 680-640802/2-A	Lab Control Sample	Total/NA	Water	7470A	640802

Prep Batch: 641196

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-1	DCL-DUP01-FAL20	Total Recoverable	Water	3005A	
680-190501-2	LFM-99-02B-FAL20	Total Recoverable	Water	3005A	
680-190501-3	LFM-99-05A-FAL20	Total Recoverable	Water	3005A	
MB 680-641196/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-641196/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 641215

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-4	LFM-99-O6ARP-FAL20	Total Recoverable	Water	3005A	
MB 680-641215/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-641215/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 641311

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-1	DCL-DUP01-FAL20	Total/NA	Water	6020A	641119
680-190501-2	LFM-99-02B-FAL20	Total/NA	Water	6020A	641119
680-190501-3	LFM-99-05A-FAL20	Total/NA	Water	6020A	641119
680-190501-4	LFM-99-O6ARP-FAL20	Total/NA	Water	6020A	641119
MB 680-641119/1-A	Method Blank	Total/NA	Water	6020A	641119
LCS 680-641119/2-A	Lab Control Sample	Total/NA	Water	6020A	641119

Analysis Batch: 641661

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-1	DCL-DUP01-FAL20	Total Recoverable	Water	6010C	641196

Metals (Continued)

Analysis Batch: 641661 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-2	LFM-99-02B-FAL20	Total Recoverable	Water	6010C	641196
680-190501-3	LFM-99-05A-FAL20	Total Recoverable	Water	6010C	641196
680-190501-4	LFM-99-O6ARP-FAL20	Total Recoverable	Water	6010C	641215
MB 680-641196/1-A	Method Blank	Total Recoverable	Water	6010C	641196
MB 680-641215/1-A	Method Blank	Total Recoverable	Water	6010C	641215
LCS 680-641196/2-A	Lab Control Sample	Total Recoverable	Water	6010C	641196
LCS 680-641215/2-A	Lab Control Sample	Total Recoverable	Water	6010C	641215

General Chemistry

Analysis Batch: 514419

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-1	DCL-DUP01-FAL20	Total/NA	Water	410.4	
680-190501-2	LFM-99-02B-FAL20	Total/NA	Water	410.4	
680-190501-3	LFM-99-05A-FAL20	Total/NA	Water	410.4	
680-190501-4	LFM-99-O6ARP-FAL20	Total/NA	Water	410.4	
MB 280-514419/5	Method Blank	Total/NA	Water	410.4	
LCS 280-514419/3	Lab Control Sample	Total/NA	Water	410.4	
LCSD 280-514419/4	Lab Control Sample Dup	Total/NA	Water	410.4	

Analysis Batch: 514838

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-1	DCL-DUP01-FAL20	Total/NA	Water	SM 2540C	
680-190501-2	LFM-99-02B-FAL20	Total/NA	Water	SM 2540C	
680-190501-3	LFM-99-05A-FAL20	Total/NA	Water	SM 2540C	
680-190501-4	LFM-99-O6ARP-FAL20	Total/NA	Water	SM 2540C	
MB 280-514838/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-514838/2	Lab Control Sample	Total/NA	Water	SM 2540C	
680-190501-4 DU	LFM-99-O6ARP-FAL20	Total/NA	Water	SM 2540C	

Analysis Batch: 515193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-1	DCL-DUP01-FAL20	Total/NA	Water	SM 2320B	
680-190501-2	LFM-99-02B-FAL20	Total/NA	Water	SM 2320B	
680-190501-3	LFM-99-05A-FAL20	Total/NA	Water	SM 2320B	
680-190501-4	LFM-99-O6ARP-FAL20	Total/NA	Water	SM 2320B	
MB 280-515193/31	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-515193/30	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 516005

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-1	DCL-DUP01-FAL20	Total/NA	Water	353.2	
680-190501-2	LFM-99-02B-FAL20	Total/NA	Water	353.2	
680-190501-3	LFM-99-05A-FAL20	Total/NA	Water	353.2	
680-190501-4	LFM-99-O6ARP-FAL20	Total/NA	Water	353.2	
MB 280-516005/60	Method Blank	Total/NA	Water	353.2	
LCS 280-516005/59	Lab Control Sample	Total/NA	Water	353.2	

Prep Batch: 641085

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-1	DCL-DUP01-FAL20	Total/NA	Water	9012B	

General Chemistry (Continued)

Prep Batch: 641085 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-2	LFM-99-02B-FAL20	Total/NA	Water	9012B	
680-190501-3	LFM-99-05A-FAL20	Total/NA	Water	9012B	
680-190501-4	LFM-99-O6ARP-FAL20	Total/NA	Water	9012B	
MB 680-641085/12-A	Method Blank	Total/NA	Water	9012B	
LCS 680-641085/13-A	Lab Control Sample	Total/NA	Water	9012B	

Analysis Batch: 641267

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190501-1	DCL-DUP01-FAL20	Total/NA	Water	9012B	641085
680-190501-2	LFM-99-02B-FAL20	Total/NA	Water	9012B	641085
680-190501-3	LFM-99-05A-FAL20	Total/NA	Water	9012B	641085
680-190501-4	LFM-99-O6ARP-FAL20	Total/NA	Water	9012B	641085
MB 680-641085/12-A	Method Blank	Total/NA	Water	9012B	641085
LCS 680-641085/13-A	Lab Control Sample	Total/NA	Water	9012B	641085

Lab Chronicle

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190501-1

Client Sample ID: DCL-DUP01-FAL20

Date Collected: 10/23/20 14:50
Date Received: 10/24/20 09:50

Lab Sample ID: 680-190501-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			875.2 mL	5 mL	641508	10/29/20 19:03	EHS	TAL SAV
Total/NA	Analysis	8081B 8082A		1			641748	10/31/20 17:30	JCK	TAL SAV
	Instrument ID: CSGJ									
Total/NA	Analysis	9056A		10	5 mL	5 mL	641087	10/28/20 21:58	UI	TAL SAV
	Instrument ID: CICK									
Total Recoverable	Prep	3005A			50 mL	50 mL	641196	10/28/20 15:11	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			641661	10/30/20 04:46	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	641119	10/28/20 10:57	AJR	TAL SAV
Total/NA	Analysis	6020A		1			641311	10/28/20 16:10	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	640802	10/26/20 14:46	BCB	TAL SAV
Total/NA	Analysis	7470A		1			641187	10/27/20 20:50	BWR	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	516005	11/09/20 18:59	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		2	2 mL	2 mL	514419	10/28/20 09:48	SPG	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			6 mL	6 mL	641085	10/28/20 10:57	CMR	TAL SAV
Total/NA	Analysis	9012B		1			641267	10/28/20 16:21	CMR	TAL SAV
	Instrument ID: KONELAB4									
Total/NA	Analysis	SM 2320B		1			515193	11/02/20 16:34	RAF	TAL DEN
	Instrument ID: WC_AT4									
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	514838	10/30/20 11:25	LEB	TAL DEN
	Instrument ID: NOEQUIP									

Client Sample ID: LFM-99-02B-FAL20

Date Collected: 10/23/20 14:10
Date Received: 10/24/20 09:50

Lab Sample ID: 680-190501-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1052.5 mL	5 mL	641508	10/29/20 19:03	EHS	TAL SAV
Total/NA	Analysis	8081B 8082A		1			641748	10/31/20 17:48	JCK	TAL SAV
	Instrument ID: CSGJ									
Total/NA	Analysis	9056A		10	5 mL	5 mL	641087	10/28/20 22:10	UI	TAL SAV
	Instrument ID: CICK									
Total Recoverable	Prep	3005A			50 mL	50 mL	641196	10/28/20 15:11	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			641661	10/30/20 04:50	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	641119	10/28/20 10:57	AJR	TAL SAV
Total/NA	Analysis	6020A		1			641311	10/28/20 16:01	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	640802	10/26/20 14:46	BCB	TAL SAV
Total/NA	Analysis	7470A		1			641187	10/27/20 20:55	BWR	TAL SAV
	Instrument ID: LEEMAN2									

Client Sample ID: LFM-99-02B-FAL20

Lab Sample ID: 680-190501-2

Date Collected: 10/23/20 14:10

Matrix: Water

Date Received: 10/24/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	353.2		1	100 mL	100 mL	516005	11/09/20 19:01	SVC	TAL DEN
Total/NA	Analysis	410.4		2	2 mL	2 mL	514419	10/28/20 09:48	SPG	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			6 mL	6 mL	641085	10/28/20 10:57	CMR	TAL SAV
Total/NA	Analysis	9012B		1			641267	10/28/20 16:21	CMR	TAL SAV
	Instrument ID: KONELAB4									
Total/NA	Analysis	SM 2320B		1			515193	11/02/20 16:39	RAF	TAL DEN
	Instrument ID: WC_AT4									
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	514838	10/30/20 11:25	LEB	TAL DEN
	Instrument ID: NOEQUIP									

Client Sample ID: LFM-99-05A-FAL20

Lab Sample ID: 680-190501-3

Date Collected: 10/23/20 14:50

Matrix: Water

Date Received: 10/24/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			922.4 mL	5 mL	641508	10/29/20 19:03	EHS	TAL SAV
Total/NA	Analysis	8081B 8082A		1			641757	10/31/20 18:04	JCK	TAL SAV
	Instrument ID: CSGZ									
Total/NA	Analysis	9056A		10	5 mL	5 mL	641087	10/28/20 22:23	UI	TAL SAV
	Instrument ID: CICK									
Total Recoverable	Prep	3005A			50 mL	50 mL	641196	10/28/20 15:11	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			641661	10/30/20 05:04	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	641119	10/28/20 10:57	AJR	TAL SAV
Total/NA	Analysis	6020A		1			641311	10/28/20 16:22	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	640802	10/26/20 14:46	BCB	TAL SAV
Total/NA	Analysis	7470A		1			641187	10/27/20 21:09	BWR	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	516005	11/09/20 19:03	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		2	2 mL	2 mL	514419	10/28/20 09:48	SPG	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			6 mL	6 mL	641085	10/28/20 10:57	CMR	TAL SAV
Total/NA	Analysis	9012B		1			641267	10/28/20 16:21	CMR	TAL SAV
	Instrument ID: KONELAB4									
Total/NA	Analysis	SM 2320B		1			515193	11/02/20 16:44	RAF	TAL DEN
	Instrument ID: WC_AT4									
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	514838	10/30/20 11:25	LEB	TAL DEN
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190501-1

Client Sample ID: LFM-99-O6ARP-FAL20

Date Collected: 10/23/20 11:35
Date Received: 10/24/20 09:50

Lab Sample ID: 680-190501-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1040.8 mL	5 mL	641508	10/29/20 19:03	EHS	TAL SAV
Total/NA	Analysis	8081B 8082A		1			641748	10/31/20 18:06	JCK	TAL SAV
	Instrument ID: CSGJ									
Total/NA	Analysis	9056A		10	5 mL	5 mL	641087	10/28/20 22:36	UI	TAL SAV
	Instrument ID: CICK									
Total Recoverable	Prep	3005A			50 mL	50 mL	641215	10/28/20 15:42	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			641661	10/30/20 02:25	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	641119	10/28/20 10:57	AJR	TAL SAV
Total/NA	Analysis	6020A		1			641311	10/28/20 16:19	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	640802	10/26/20 14:46	BCB	TAL SAV
Total/NA	Analysis	7470A		1			641187	10/27/20 21:13	BWR	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	516005	11/09/20 19:05	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		2	2 mL	2 mL	514419	10/28/20 09:48	SPG	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			6 mL	6 mL	641085	10/28/20 10:57	CMR	TAL SAV
Total/NA	Analysis	9012B		1			641267	10/28/20 16:21	CMR	TAL SAV
	Instrument ID: KONELAB4									
Total/NA	Analysis	SM 2320B		1			515193	11/02/20 16:50	RAF	TAL DEN
	Instrument ID: WC_AT4									
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	514838	10/30/20 11:25	LEB	TAL DEN
	Instrument ID: NOEQUIP									

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Accreditation/Certification Summary

Client: Seres Engineering & Services LLC
Job ID: 680-190501-1
Project/Site: Fort Devens - LTM

Laboratory: Eurofins TestAmerica, Savannah

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2463	12-01-20

Laboratory: Eurofins TestAmerica, Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-21

Method Summary

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190501-1

Method	Method Description	Protocol	Laboratory
8081B 8082A	Organochlorine Pesticides & PCBs (GC)	SW846	TAL SAV
9056A	Anions, Ion Chromatography	SW846	TAL SAV
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
7470A	Mercury (CVAA)	SW846	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL DEN
410.4	COD	MCAWW	TAL DEN
9012B	Cyanide, Total and/or Amenable	EPA	TAL SAV
SM 2320B	Alkalinity	SM	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL SAV
3010A	Preparation, Total Metals	SW846	TAL SAV
3520C	Liquid-Liquid Extraction (Continuous)	SW846	TAL SAV
7470A	Preparation, Mercury	SW846	TAL SAV
9012B	Cyanide, Total and/or Amenable, Distillation	SW846	TAL SAV

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

CHAIN-OF-CUSTODY RECORD

Seres-Arcadis JV
Nathan Mullens
669 Marina Drive, Suite B7, Charleston, SC 29492
(843) 478.0336, jennifer.singer@arcadis.com

COC #

Project Name: Former Fort Devens, Long Term Monitoring	Laboratory: Eurofins Environment Testing TestAmerica, Savannah, GA	Event: Seres-Arcadis JV, Long Term Monitoring, DCL, Fall 2020
Project Number: DEVENS-LTM	POC:	
WBS Code:	Ship to:	

Comments:
A2320B (A) = Alkalinity
E353.2 (A) = Nitrite Nitrate as N
MADEPEP (A) = EPH with PAHs
MADEPVP (A) = VPH with targets
SW6010C (D) = Ba Cd Cr Cu Fe Pb Mn Se Ag
SW7470A (A) = Mercury
SW8081B (A) = Pesticides
SW9012B (A) = Cyanide
SW9056A (A) = Cl SO4

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
2	2x 1 Liter, amber, glass, 1:1 HCl to pH =2; Cool < 6degC
4	3x 40mL glass VOA Vials, HCl, pH < 2; Cool < 6degC
6	1x 125mL, plastic, Cool < 6degC
9	1x 250mL, plastic, HNO3, pH < 2; Cool < 6degC
21	1x 2-1 Liter, amber, glass, Cool < 6degC
46	1x 250mL, plastic, Cool < 6degC
47	1x 500mL, amber glass, H2SO4; Cool < 6degC
49	1x 500mL plastic, Cool < 6degC
1	2x 1L amber glass bottles, Cool to <6degC
5	1x 125mL plastic, Cool < 6degC
48	1x 250mL plastic, NaOH to pH >12; Cool < 6degC

BOSTON #215

Analytical Test Method

	Event: Seres-Arcadis JV, Long Term Monitoring, DCL, Fall 2020					A2320B (A)	A2540C - TDS	E353.2 (A)	E410.4 - COD	MADEPEP (A)	MADEPVP (A)	SW6010C (D)	SW6020A - As	SW7470A (A)	SW8081B (A)	SW8082A - PCB	SW9012B (A)	SW9056A (A)					
						46	49	47	6	2	4	9	9	9	21	1	48	5					
	Sample ID	Matrix	Date	Time	Samp Init.														Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Cooler	Comments
1	DCL-DUP01-FAL20	WG	10-23-20	250	EF	X	X	X	X	X	X	X	X	X	X	X	X	X	LFM-99-05A	FD1	19.00	29.98		(14:50)
2	LFM-03-07-FAL20	WG				X	X	X	X	X	X	X	X	X	X	X	X	X	LFM-03-07	N1	10.90	20.90		
3	LFM-99-02B-FAL20	WG	10-23-20	1410	DC	X	X	X	X	X	X	X	X	X	X	X	X	X	LFM-99-02B	N1	14.50	25.83		
4	LFM-99-05A-FAL20	WG	10-23-20	250	EF	X	X	X	X	X	X	X	X	X	X	X	X	X	LFM-99-05A	N1	19.00	29.98		(14:50)
5	LFM-99-06ARP-FAL20	WG	10-23-20	1135	DC	X	X	X	X	X	X	X	X	X	X	X	X	X	LFM-99-06ARP	N1	10.09	19.39		

Turnaround Time: NA

Trip Blank for VPH & BTEX

680-190501 Chain of Custody

1.8/3.4/0.2/3.0/2.1/4.6(a)
2.1/3.7/0.5/3.3/2.4/4.9°C

Relinquished by: Diane Depew
Date 10-23-20
Time 1730
Received by: 12:30
DCL_eCOC

Date
Time
Shipping Date: 18:00
Received by Laboratory: 10-24-20 0950
Condition:

12/14/2020

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Smith, Kathryn E	Carrier Tracking No(s):	COC No: 680-630643.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Kathy.Smith@Eurofinset.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): Dept. of Defense ELAP - A2LA; DoD - ANAB		Job #: 680-190501-1
Address: 4955 Yarrow Street, ,	Due Date Requested: 11/4/2020			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: Fort Devens - LTM	Project #: 68023801			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2320B/ Alkalinity	410.4/ COD	353.2_Pres	2540C_Calcd/ TDS	Total Number of containers	Special Instructions/Note:
			Preservation Code:									
DCL-DUP01-FAL20 (680-190501-1)	10/23/20	14:50 Eastern		Water			X	X	X	X	4	
LFM-99-02B-FAL20 (680-190501-2)	10/23/20	14:10 Eastern		Water			X	X	X	X	4	
LFM-99-05A-FAL20 (680-190501-3)	10/23/20	14:50 Eastern		Water			X	X	X	X	4	
LFM-99-06ARP-FAL20 (680-190501-4)	10/23/20	11:35 Eastern		Water			X	X	X	X	4	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[illegible]	10-26-20	1743	[signature]	10/27/2020 0950	ETADEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 3.7 IR11 -0.3 50 10/27/2020

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Seres Engineering & Services LLC

Job Number: 680-190501-1

Login Number: 190501

List Source: Eurofins TestAmerica, Savannah

List Number: 1

Creator: Banda, Christy S

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Seres Engineering & Services LLC

Job Number: 680-190501-1

Login Number: 190501
List Number: 2
Creator: O'Hara, Jake F

List Source: Eurofins TestAmerica, Denver
List Creation: 10/27/20 05:21 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-190504-1
Client Project/Site: Fort Devens - LTM
Revision: 1

For:
Seres Engineering & Services LLC
669 Marina Drive
Suite B7
Charleston, South Carolina 29492

Attn: Nathan R Mullens

Kathryn Smith

Authorized for release by:
11/17/2020 1:11:32 PM

Kathryn Smith, Client Service Manager
(912)250-0275
Kathy.Smith@Eurofinset.com

LINKS

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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
B	Blank contamination: The analyte was detected above one-half the reporting limit in an associated blank.
H	Sample was prepped or analyzed beyond the specified holding time
J	Estimated: The analyte was positively identified; the quantitation is an estimation
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

GC VOA

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

GC Semi VOA

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190504-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-190504-1	DCL LEACHATE_FAL20	Water	10/23/20 09:00	10/24/20 09:50	
680-190504-2	TB2-FAL20	Water	10/23/20 00:00	10/24/20 09:50	

Job ID: 680-190504-1

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE
Client: Seres Engineering & Services LLC
Project: Fort Devens - LTM

Report Number: 680-190504-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT
The samples were received on 10/24/2020; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 6 coolers at receipt time were 0.5º C, 2.1º C, 2.4º C, 3.3º C, 3.7º C and 4.9º C.

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Sample DCL LEACHATE_FAL20 (680-190504-1) was analyzed for Volatile Organic Compounds (GC-MS) in accordance with EPA Method 624. The samples were analyzed on 11/03/2020.

The following sample was received unpreserved and presented a pH >2. Analysis was not performed within 7 days per EPA recommendation: DCL LEACHATE_FAL20 (680-190504-1).

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOLATILE ORGANIC COMPOUNDS (GC/MS)
Sample TB2-FAL20 (680-190504-2) was analyzed for Volatile Organic Compounds (GC/MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 11/05/2020.

1,2-Dichloroethene, Total and cis-1,2-Dichloroethene were detected in method blank MB 680-642552/8 at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

SEMIVOLATILE ORGANIC COMPOUNDS (GC-MS)
Sample DCL LEACHATE_FAL20 (680-190504-1) was analyzed for semivolatile organic compounds (GC-MS) in accordance with EPA Method 625. The samples were prepared on 10/29/2020 and analyzed on 11/03/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GASOLINE RANGE ORGANICS (GRO)
Sample DCL LEACHATE_FAL20 (680-190504-1) was analyzed for gasoline range organics (GRO) in accordance with EPA SW-846 8015C. The samples were analyzed on 10/28/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

DIESEL AND MOTOR OIL RANGE ORGANICS
Sample DCL LEACHATE_FAL20 (680-190504-1) was analyzed for diesel and motor oil range organics in accordance with EPA SW-846 Method 8015C. The samples were prepared on 10/26/2020 and analyzed on 10/27/2020.

Due to the nature of this analysis which involves a total area sum over the entire retention time range, manual integrations are routinely performed for target analytes and surrogates to ensure consistent integration.

Job ID: 680-190504-1 (Continued)

Laboratory: Eurofins TestAmerica, Savannah (Continued)

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PESTICIDES AND PCBS
Sample DCL LEACHATE_FAL20 (680-190504-1) was analyzed for Pesticides and PCBs in accordance with EPA SW-846 Method 8081B_8082A. The samples were prepared on 10/29/2020 and analyzed on 10/31/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS (ICP)
Sample DCL LEACHATE_FAL20 (680-190504-1) was analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 10/28/2020 and analyzed on 10/30/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS
Sample DCL LEACHATE_FAL20 (680-190504-1) was analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared and analyzed on 10/28/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY
Sample DCL LEACHATE_FAL20 (680-190504-1) was analyzed for mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared on 10/26/2020 and analyzed on 10/27/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL SUSPENDED SOLIDS
Sample DCL LEACHATE_FAL20 (680-190504-1) was analyzed for total suspended solids in accordance with SM 2540D. The samples were analyzed on 10/28/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CYANIDE
Sample DCL LEACHATE_FAL20 (680-190504-1) was analyzed for cyanide in accordance with EPA SW-846 Method 9012B. The samples were prepared and analyzed on 10/29/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PH
Sample DCL LEACHATE_FAL20 (680-190504-1) was analyzed for pH in accordance with EPA SW-846 Method 9040C. The samples were analyzed on 10/26/2020.

No or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PHENOLICS, TOTAL RECOVERABLE
Sample DCL LEACHATE_FAL20 (680-190504-1) was analyzed for phenolics, total recoverable in accordance with EPA SW-846 Method 9066. The samples were prepared on 11/03/2020 and analyzed on 11/04/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190504-1

Client Sample ID: DCL LEACHATE_FAL20
Date Collected: 10/23/20 09:00
Date Received: 10/24/20 09:50

Lab Sample ID: 680-190504-1
Matrix: Water

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.43	U H	1.0	0.43	ug/L			11/03/20 17:42	1
Dichlorobromomethane	0.44	U H	1.0	0.44	ug/L			11/03/20 17:42	1
Bromoform	0.43	U H	1.0	0.43	ug/L			11/03/20 17:42	1
Bromomethane	2.5	U H	5.0	2.5	ug/L			11/03/20 17:42	1
Carbon tetrachloride	0.33	U H	1.0	0.33	ug/L			11/03/20 17:42	1
Chlorobenzene	0.26	U H	1.0	0.26	ug/L			11/03/20 17:42	1
Chloroethane	2.5	U H	5.0	2.5	ug/L			11/03/20 17:42	1
2-Chloroethyl vinyl ether	5.0	U H	10	5.0	ug/L			11/03/20 17:42	1
Chloroform	0.50	U H	1.0	0.50	ug/L			11/03/20 17:42	1
Chloromethane	0.40	U H	1.0	0.40	ug/L			11/03/20 17:42	1
Chlorodibromomethane	0.32	U H	1.0	0.32	ug/L			11/03/20 17:42	1
1,2-Dichlorobenzene	0.37	U H	1.0	0.37	ug/L			11/03/20 17:42	1
1,3-Dichlorobenzene	0.43	U H	1.0	0.43	ug/L			11/03/20 17:42	1
1,4-Dichlorobenzene	0.46	U H	1.0	0.46	ug/L			11/03/20 17:42	1
1,1-Dichloroethane	0.38	U H	1.0	0.38	ug/L			11/03/20 17:42	1
1,2-Dichloroethane	0.50	U M H	1.0	0.50	ug/L			11/03/20 17:42	1
1,1-Dichloroethene	0.36	U H	1.0	0.36	ug/L			11/03/20 17:42	1
trans-1,2-Dichloroethene	0.37	U H	1.0	0.37	ug/L			11/03/20 17:42	1
1,2-Dichloropropane	0.67	U H	1.0	0.67	ug/L			11/03/20 17:42	1
cis-1,3-Dichloropropene	0.40	U H	1.0	0.40	ug/L			11/03/20 17:42	1
trans-1,3-Dichloropropene	0.42	U H	1.0	0.42	ug/L			11/03/20 17:42	1
Ethylbenzene	0.33	U H	1.0	0.33	ug/L			11/03/20 17:42	1
Methylene Chloride	2.5	U H	5.0	2.5	ug/L			11/03/20 17:42	1
1,1,2,2-Tetrachloroethane	0.62	U H	1.0	0.62	ug/L			11/03/20 17:42	1
Tetrachloroethene	0.74	U H	1.0	0.74	ug/L			11/03/20 17:42	1
Toluene	0.48	U H	1.0	0.48	ug/L			11/03/20 17:42	1
1,1,1-Trichloroethane	0.37	U H	1.0	0.37	ug/L			11/03/20 17:42	1
1,1,2-Trichloroethane	0.33	U H	1.0	0.33	ug/L			11/03/20 17:42	1
Trichloroethene	0.48	U H	1.0	0.48	ug/L			11/03/20 17:42	1
Trichlorofluoromethane	0.42	U H	1.0	0.42	ug/L			11/03/20 17:42	1
Vinyl chloride	0.50	U H	1.0	0.50	ug/L			11/03/20 17:42	1
Xylenes, Total	0.57	U H	2.0	0.57	ug/L			11/03/20 17:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*79 - 119*		*11/03/20 17:42*	*1*
1,2-Dichloroethane-d4 (Surr)	*119*		*70 - 130*		*11/03/20 17:42*	*1*
4-Bromofluorobenzene (Surr)	*102*		*71 - 121*		*11/03/20 17:42*	*1*
Dibromofluoromethane (Surr)	*105*		*77 - 129*		*11/03/20 17:42*	*1*

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	0.78	U	9.6	0.78	ug/L		10/29/20 14:18	11/03/20 18:25	1
2,4-Dichlorophenol	1.1	U	9.6	1.1	ug/L		10/29/20 14:18	11/03/20 18:25	1
2,4-Dimethylphenol	3.7	U	9.6	3.7	ug/L		10/29/20 14:18	11/03/20 18:25	1
2,4-Dinitrophenol	9.6	U	48	9.6	ug/L		10/29/20 14:18	11/03/20 18:25	1
2-Nitrophenol	0.71	U	9.6	0.71	ug/L		10/29/20 14:18	11/03/20 18:25	1
4,6-Dinitro-2-methylphenol	4.8	U	48	4.8	ug/L		10/29/20 14:18	11/03/20 18:25	1
4-Chloro-3-methylphenol	1.1	U	9.6	1.1	ug/L		10/29/20 14:18	11/03/20 18:25	1
4-Nitrophenol	9.6	U	48	9.6	ug/L		10/29/20 14:18	11/03/20 18:25	1
Pentachlorophenol	1.7	U	48	1.7	ug/L		10/29/20 14:18	11/03/20 18:25	1

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190504-1

Client Sample ID: DCL LEACHATE_FAL20
Date Collected: 10/23/20 09:00
Date Received: 10/24/20 09:50

Lab Sample ID: 680-190504-1
Matrix: Water

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chlorophenol	0.86	U	9.6	0.86	ug/L		10/29/20 14:18	11/03/20 18:25	1
1,2,4-Trichlorobenzene	0.54	U	9.6	0.54	ug/L		10/29/20 14:18	11/03/20 18:25	1
1,2-Dichlorobenzene	0.54	U	9.6	0.54	ug/L		10/29/20 14:18	11/03/20 18:25	1
1,2-Diphenylhydrazine	0.82	U	9.6	0.82	ug/L		10/29/20 14:18	11/03/20 18:25	1
1,3-Dichlorobenzene	0.63	U	9.6	0.63	ug/L		10/29/20 14:18	11/03/20 18:25	1
1,4-Dichlorobenzene	0.55	U	9.6	0.55	ug/L		10/29/20 14:18	11/03/20 18:25	1
2-Chloronaphthalene	0.75	U	9.6	0.75	ug/L		10/29/20 14:18	11/03/20 18:25	1
2,6-Dinitrotoluene	1.1	U M	9.6	1.1	ug/L		10/29/20 14:18	11/03/20 18:25	1
2,4-Dinitrotoluene	1.1	U	9.6	1.1	ug/L		10/29/20 14:18	11/03/20 18:25	1
3,3'-Dichlorobenzidine	29	U	57	29	ug/L		10/29/20 14:18	11/03/20 18:25	1
4-Bromophenyl phenyl ether	0.77	U M	9.6	0.77	ug/L		10/29/20 14:18	11/03/20 18:25	1
4-Chlorophenyl phenyl ether	0.77	U	9.6	0.77	ug/L		10/29/20 14:18	11/03/20 18:25	1
Acenaphthene	0.72	U	9.6	0.72	ug/L		10/29/20 14:18	11/03/20 18:25	1
Acenaphthylene	0.77	U	9.6	0.77	ug/L		10/29/20 14:18	11/03/20 18:25	1
Anthracene	0.70	U	9.6	0.70	ug/L		10/29/20 14:18	11/03/20 18:25	1
Benzidine	40	U	77	40	ug/L		10/29/20 14:18	11/03/20 18:25	1
Benzo[a]anthracene	0.90	U	9.6	0.90	ug/L		10/29/20 14:18	11/03/20 18:25	1
Benzo[a]pyrene	0.71	U	9.6	0.71	ug/L		10/29/20 14:18	11/03/20 18:25	1
Benzo[b]fluoranthene	2.4	U	9.6	2.4	ug/L		10/29/20 14:18	11/03/20 18:25	1
Benzo[g,h,i]perylene	0.85	U	9.6	0.85	ug/L		10/29/20 14:18	11/03/20 18:25	1
Benzo[k]fluoranthene	0.86	U	9.6	0.86	ug/L		10/29/20 14:18	11/03/20 18:25	1
Bis(2-chloroethoxy)methane	1.1	U	9.6	1.1	ug/L		10/29/20 14:18	11/03/20 18:25	1
Bis(2-chloroethyl)ether	1.1	U	9.6	1.1	ug/L		10/29/20 14:18	11/03/20 18:25	1
Bis(2-ethylhexyl) phthalate	1.5	U M	9.6	1.5	ug/L		10/29/20 14:18	11/03/20 18:25	1
Butyl benzyl phthalate	1.1	U M	9.6	1.1	ug/L		10/29/20 14:18	11/03/20 18:25	1
Chrysene	0.50	U	9.6	0.50	ug/L		10/29/20 14:18	11/03/20 18:25	1
Di-n-butyl phthalate	0.84	U M	9.6	0.84	ug/L		10/29/20 14:18	11/03/20 18:25	1
Di-n-octyl phthalate	1.2	U M	9.6	1.2	ug/L		10/29/20 14:18	11/03/20 18:25	1
Dibenz(a,h)anthracene	0.73	U	9.6	0.73	ug/L		10/29/20 14:18	11/03/20 18:25	1
Diethyl phthalate	0.82	U	9.6	0.82	ug/L		10/29/20 14:18	11/03/20 18:25	1
Dimethyl phthalate	0.93	U M	9.6	0.93	ug/L		10/29/20 14:18	11/03/20 18:25	1
Fluoranthene	0.68	U	9.6	0.68	ug/L		10/29/20 14:18	11/03/20 18:25	1
Fluorene	0.89	U	9.6	0.89	ug/L		10/29/20 14:18	11/03/20 18:25	1
Hexachlorobenzene	0.77	U	9.6	0.77	ug/L		10/29/20 14:18	11/03/20 18:25	1
Hexachlorobutadiene	0.59	U	9.6	0.59	ug/L		10/29/20 14:18	11/03/20 18:25	1
Hexachlorocyclopentadiene	9.6	U	19	9.6	ug/L		10/29/20 14:18	11/03/20 18:25	1
Hexachloroethane	0.77	U	9.6	0.77	ug/L		10/29/20 14:18	11/03/20 18:25	1
Indeno[1,2,3-cd]pyrene	1.1	U	9.6	1.1	ug/L		10/29/20 14:18	11/03/20 18:25	1
Isophorone	0.86	U	9.6	0.86	ug/L		10/29/20 14:18	11/03/20 18:25	1
N-Nitrosodi-n-propylamine	0.71	U	9.6	0.71	ug/L		10/29/20 14:18	11/03/20 18:25	1
N-Nitrosodimethylamine	9.6	U	19	9.6	ug/L		10/29/20 14:18	11/03/20 18:25	1
N-Nitrosodiphenylamine	0.87	U	9.6	0.87	ug/L		10/29/20 14:18	11/03/20 18:25	1
Naphthalene	0.67	U	9.6	0.67	ug/L		10/29/20 14:18	11/03/20 18:25	1
Nitrobenzene	0.55	U	9.6	0.55	ug/L		10/29/20 14:18	11/03/20 18:25	1
Phenanthrene	0.77	U	9.6	0.77	ug/L		10/29/20 14:18	11/03/20 18:25	1
Pyrene	0.61	U	9.6	0.61	ug/L		10/29/20 14:18	11/03/20 18:25	1
bis (2-chloroisopropyl) ether	0.81	U Q	9.6	0.81	ug/L		10/29/20 14:18	11/03/20 18:25	1
Phenol	1.1	U	9.6	1.1	ug/L		10/29/20 14:18	11/03/20 18:25	1

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190504-1

Client Sample ID: DCL LEACHATE_FAL20
Date Collected: 10/23/20 09:00
Date Received: 10/24/20 09:50

Lab Sample ID: 680-190504-1
Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol (Surr)	71		34 - 132	10/29/20 14:18	11/03/20 18:25	1
2-Fluorophenol (Surr)	59		35 - 110	10/29/20 14:18	11/03/20 18:25	1
Phenol-d5 (Surr)	66		27 - 119	10/29/20 14:18	11/03/20 18:25	1
2-Fluorobiphenyl (Surr)	60		38 - 121	10/29/20 14:18	11/03/20 18:25	1
Nitrobenzene-d5 (Surr)	68		44 - 119	10/29/20 14:18	11/03/20 18:25	1
Terphenyl-d14 (Surr)	47		10 - 165	10/29/20 14:18	11/03/20 18:25	1

Method: 8015C GRO - Gasoline Range Organics (GRO)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	0.050	U	0.10	0.050	mg/L			10/28/20 13:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	93		69 - 133		10/28/20 13:46	1

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**2.2**		0.096	0.048	mg/L		10/26/20 13:57	10/27/20 17:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	68		43 - 130	10/26/20 13:57	10/27/20 17:16	1

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.0030	U	0.024	0.0030	ug/L		10/29/20 19:03	10/31/20 18:24	1
4,4'-DDE	0.0024	U M	0.024	0.0024	ug/L		10/29/20 19:03	10/31/20 18:24	1
4,4'-DDT	0.0033	U M Q	0.024	0.0033	ug/L		10/29/20 19:03	10/31/20 18:24	1
Aldrin	0.0034	U	0.024	0.0034	ug/L		10/29/20 19:03	10/31/20 18:24	1
alpha-BHC	**0.0083**	**J**	0.024	0.0016	ug/L		10/29/20 19:03	10/31/20 18:24	1
beta-BHC	0.0043	U M	0.024	0.0043	ug/L		10/29/20 19:03	10/31/20 18:24	1
Chlordane (technical)	0.045	U M	0.24	0.045	ug/L		10/29/20 19:03	10/31/20 18:24	1
delta-BHC	0.0036	U	0.024	0.0036	ug/L		10/29/20 19:03	10/31/20 18:24	1
Dieldrin	0.0018	U	0.024	0.0018	ug/L		10/29/20 19:03	10/31/20 18:24	1
Endosulfan I	0.0017	U	0.024	0.0017	ug/L		10/29/20 19:03	10/31/20 18:24	1
Endosulfan II	0.0020	U	0.024	0.0020	ug/L		10/29/20 19:03	10/31/20 18:24	1
Endosulfan sulfate	0.0024	U	0.024	0.0024	ug/L		10/29/20 19:03	10/31/20 18:24	1
Endrin	0.0025	U M	0.024	0.0025	ug/L		10/29/20 19:03	10/31/20 18:24	1
Endrin aldehyde	0.0029	U M	0.024	0.0029	ug/L		10/29/20 19:03	10/31/20 18:24	1
Endrin ketone	0.0022	U	0.024	0.0022	ug/L		10/29/20 19:03	10/31/20 18:24	1
gamma-BHC (Lindane)	0.0017	U	0.024	0.0017	ug/L		10/29/20 19:03	10/31/20 18:24	1
Heptachlor	0.0034	U	0.024	0.0034	ug/L		10/29/20 19:03	10/31/20 18:24	1
Heptachlor epoxide	0.0018	U M	0.024	0.0018	ug/L		10/29/20 19:03	10/31/20 18:24	1
Methoxychlor	0.0047	U M Q	0.024	0.0047	ug/L		10/29/20 19:03	10/31/20 18:24	1
Toxaphene	0.19	U	2.4	0.19	ug/L		10/29/20 19:03	10/31/20 18:24	1
PCB-1221	0.091	U	0.48	0.091	ug/L		10/29/20 19:03	10/31/20 18:24	1
PCB-1242	0.091	U	0.48	0.091	ug/L		10/29/20 19:03	10/31/20 18:24	1
PCB-1254	0.052	U M	0.48	0.052	ug/L		10/29/20 19:03	10/31/20 18:24	1
PCB-1260	0.057	U M	0.48	0.057	ug/L		10/29/20 19:03	10/31/20 18:24	1
PCB-1016	0.086	U	0.48	0.086	ug/L		10/29/20 19:03	10/31/20 18:24	1
PCB-1248	0.10	U	0.48	0.10	ug/L		10/29/20 19:03	10/31/20 18:24	1
PCB-1232	0.12	U	0.48	0.12	ug/L		10/29/20 19:03	10/31/20 18:24	1

Client Sample ID: DCL LEACHATE_FAL20

Lab Sample ID: 680-190504-1

Date Collected: 10/23/20 09:00

Matrix: Water

Date Received: 10/24/20 09:50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*15*		*14 - 130*	*10/29/20 19:03*	*10/31/20 18:24*	*1*
Tetrachloro-m-xylene	*91*		*44 - 124*	*10/29/20 19:03*	*10/31/20 18:24*	*1*

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	24	U	200	24	ug/L		10/28/20 15:42	10/30/20 02:29	1
Cadmium	1.0	U	5.0	1.0	ug/L		10/28/20 15:42	10/30/20 02:29	1
Chromium	1.6	U	10	1.6	ug/L		10/28/20 15:42	10/30/20 02:29	1
Copper	1.8	U	20	1.8	ug/L		10/28/20 15:42	10/30/20 02:29	1
Lead	3.9	U	10	3.9	ug/L		10/28/20 15:42	10/30/20 02:29	1
Nickel	**3.8**	**J**	40	2.1	ug/L		10/28/20 15:42	10/30/20 02:29	1
Silver	0.60	U	10	0.60	ug/L		10/28/20 15:42	10/30/20 02:29	1
Zinc	7.0	U	20	7.0	ug/L		10/28/20 15:42	10/30/20 02:29	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**2.0**	**J**	3.0	1.5	ug/L		10/28/20 10:57	10/28/20 16:13	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	ug/L		10/26/20 14:46	10/27/20 21:18	1

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	**0.0028**	**J**	0.010	0.0025	mg/L		10/29/20 13:52	10/29/20 16:58	1
pH	**7.5**	**HF**			SU			10/26/20 10:00	1
Temperature	**18.6**	**HF**			Degrees C			10/26/20 10:00	1
Phenols, Total	0.0068	U	0.020	0.0068	mg/L		11/03/20 17:35	11/04/20 20:12	1
Total Suspended Solids	**10**		4.0	1.1	mg/L			10/28/20 07:23	1

Client Sample ID: TB2-FAL20

Lab Sample ID: 680-190504-2

Date Collected: 10/23/20 00:00

Matrix: Water

Date Received: 10/24/20 09:50

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.37	U	1.0	0.37	ug/L			11/05/20 22:09	1
1,1,1-Trichloroethane	0.37	U	1.0	0.37	ug/L			11/05/20 22:09	1
1,1,2,2-Tetrachloroethane	0.62	U	1.0	0.62	ug/L			11/05/20 22:09	1
1,1,2-Trichloroethane	0.33	U	1.0	0.33	ug/L			11/05/20 22:09	1
1,1-Dichloroethane	0.38	U	1.0	0.38	ug/L			11/05/20 22:09	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/05/20 22:09	1
1,1-Dichloropropene	0.34	U	1.0	0.34	ug/L			11/05/20 22:09	1
1,2,3-Trichlorobenzene	2.5	U	5.0	2.5	ug/L			11/05/20 22:09	1
1,2,3-Trichloropropane	0.39	U	1.0	0.39	ug/L			11/05/20 22:09	1
1,2,4-Trichlorobenzene	2.5	U	5.0	2.5	ug/L			11/05/20 22:09	1
1,2,4-Trimethylbenzene	0.47	U	1.0	0.47	ug/L			11/05/20 22:09	1
1,2-Dibromo-3-Chloropropane	1.1	U	5.0	1.1	ug/L			11/05/20 22:09	1
1,2-Dichlorobenzene	0.37	U	1.0	0.37	ug/L			11/05/20 22:09	1
1,2-Dichloroethane	0.50	U M	1.0	0.50	ug/L			11/05/20 22:09	1
1,2-Dichloroethene, Total	0.74	U	2.0	0.74	ug/L			11/05/20 22:09	1

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190504-1

Client Sample ID: TB2-FAL20
Date Collected: 10/23/20 00:00
Date Received: 10/24/20 09:50

Lab Sample ID: 680-190504-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloropropane	0.67	U	1.0	0.67	ug/L			11/05/20 22:09	1
1,3,5-Trimethylbenzene	0.31	U	1.0	0.31	ug/L			11/05/20 22:09	1
1,3-Dichlorobenzene	0.43	U	1.0	0.43	ug/L			11/05/20 22:09	1
1,3-Dichloropropane	0.34	U	1.0	0.34	ug/L			11/05/20 22:09	1
1,4-Dichlorobenzene	0.46	U	1.0	0.46	ug/L			11/05/20 22:09	1
2,2-Dichloropropane	0.37	U	1.0	0.37	ug/L			11/05/20 22:09	1
2-Butanone (MEK)	3.4	U	10	3.4	ug/L			11/05/20 22:09	1
2-Chlorotoluene	0.27	U	1.0	0.27	ug/L			11/05/20 22:09	1
2-Hexanone	2.0	U	10	2.0	ug/L			11/05/20 22:09	1
4-Chlorotoluene	0.45	U	1.0	0.45	ug/L			11/05/20 22:09	1
4-Isopropyltoluene	0.48	U	1.0	0.48	ug/L			11/05/20 22:09	1
4-Methyl-2-pentanone (MIBK)	2.1	U	10	2.1	ug/L			11/05/20 22:09	1
Acetone	7.0	U	10	7.0	ug/L			11/05/20 22:09	1
Benzene	0.43	U M	1.0	0.43	ug/L			11/05/20 22:09	1
Bromobenzene	0.50	U	1.0	0.50	ug/L			11/05/20 22:09	1
Bromoform	0.43	U	1.0	0.43	ug/L			11/05/20 22:09	1
Bromomethane	2.5	U	5.0	2.5	ug/L			11/05/20 22:09	1
Carbon disulfide	0.43	U	2.0	0.43	ug/L			11/05/20 22:09	1
Carbon tetrachloride	0.33	U	1.0	0.33	ug/L			11/05/20 22:09	1
Chlorobenzene	0.26	U	1.0	0.26	ug/L			11/05/20 22:09	1
Chlorobromomethane	0.45	U	1.0	0.45	ug/L			11/05/20 22:09	1
Chlorodibromomethane	0.32	U	1.0	0.32	ug/L			11/05/20 22:09	1
Chloroethane	2.5	U	5.0	2.5	ug/L			11/05/20 22:09	1
Chloroform	0.50	U	1.0	0.50	ug/L			11/05/20 22:09	1
Chloromethane	0.40	U	1.0	0.40	ug/L			11/05/20 22:09	1
cis-1,2-Dichloroethene	**0.55**	**J B**	1.0	0.41	ug/L			11/05/20 22:09	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	ug/L			11/05/20 22:09	1
Dibromomethane	0.35	U	1.0	0.35	ug/L			11/05/20 22:09	1
Dichlorobromomethane	0.44	U	1.0	0.44	ug/L			11/05/20 22:09	1
Dichlorodifluoromethane	0.60	U Q	1.0	0.60	ug/L			11/05/20 22:09	1
Ethylbenzene	0.33	U	1.0	0.33	ug/L			11/05/20 22:09	1
Ethylene Dibromide	0.44	U	1.0	0.44	ug/L			11/05/20 22:09	1
Hexachlorobutadiene	2.5	U	5.0	2.5	ug/L			11/05/20 22:09	1
Isopropylbenzene	0.35	U	1.0	0.35	ug/L			11/05/20 22:09	1
Methyl tert-butyl ether	0.30	U	10	0.30	ug/L			11/05/20 22:09	1
Methylene Chloride	2.5	U	5.0	2.5	ug/L			11/05/20 22:09	1
m-Xylene & p-Xylene	0.35	U	1.0	0.35	ug/L			11/05/20 22:09	1
Naphthalene	2.5	U	5.0	2.5	ug/L			11/05/20 22:09	1
n-Butylbenzene	0.47	U	1.0	0.47	ug/L			11/05/20 22:09	1
N-Propylbenzene	0.38	U	1.0	0.38	ug/L			11/05/20 22:09	1
o-Xylene	0.23	U	1.0	0.23	ug/L			11/05/20 22:09	1
sec-Butylbenzene	0.42	U	1.0	0.42	ug/L			11/05/20 22:09	1
Styrene	0.27	U	1.0	0.27	ug/L			11/05/20 22:09	1
tert-Butylbenzene	0.45	U	1.0	0.45	ug/L			11/05/20 22:09	1
Tetrachloroethene	0.74	U	1.0	0.74	ug/L			11/05/20 22:09	1
Toluene	0.48	U	1.0	0.48	ug/L			11/05/20 22:09	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/05/20 22:09	1
trans-1,3-Dichloropropene	0.42	U	1.0	0.42	ug/L			11/05/20 22:09	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/05/20 22:09	1

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190504-1

Client Sample ID: TB2-FAL20
Date Collected: 10/23/20 00:00
Date Received: 10/24/20 09:50

Lab Sample ID: 680-190504-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	0.42	U	1.0	0.42	ug/L			11/05/20 22:09	1
Vinyl acetate	0.81	U	2.0	0.81	ug/L			11/05/20 22:09	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/05/20 22:09	1
Xylenes, Total	0.23	U	2.0	0.23	ug/L			11/05/20 22:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*85 - 114*		*11/05/20 22:09*	*1*
Dibromofluoromethane (Surr)	*91*		*80 - 119*		*11/05/20 22:09*	*1*
Toluene-d8 (Surr)	*91*		*89 - 112*		*11/05/20 22:09*	*1*
1,2-Dichloroethane-d4 (Surr)	*91*		*81 - 118*		*11/05/20 22:09*	*1*

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 680-641993/8
Matrix: Water
Analysis Batch: 641993

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.43	U	1.0	0.43	ug/L			11/03/20 16:35	1
Dichlorobromomethane	0.44	U	1.0	0.44	ug/L			11/03/20 16:35	1
Bromoform	0.43	U	1.0	0.43	ug/L			11/03/20 16:35	1
Bromomethane	2.5	U	5.0	2.5	ug/L			11/03/20 16:35	1
Carbon tetrachloride	0.33	U	1.0	0.33	ug/L			11/03/20 16:35	1
Chlorobenzene	0.26	U	1.0	0.26	ug/L			11/03/20 16:35	1
Chloroethane	2.5	U	5.0	2.5	ug/L			11/03/20 16:35	1
2-Chloroethyl vinyl ether	5.0	U	10	5.0	ug/L			11/03/20 16:35	1
Chloroform	0.50	U	1.0	0.50	ug/L			11/03/20 16:35	1
Chloromethane	0.40	U	1.0	0.40	ug/L			11/03/20 16:35	1
Chlorodibromomethane	0.32	U	1.0	0.32	ug/L			11/03/20 16:35	1
1,2-Dichlorobenzene	0.37	U	1.0	0.37	ug/L			11/03/20 16:35	1
1,3-Dichlorobenzene	0.43	U	1.0	0.43	ug/L			11/03/20 16:35	1
1,4-Dichlorobenzene	0.46	U	1.0	0.46	ug/L			11/03/20 16:35	1
1,1-Dichloroethane	0.38	U	1.0	0.38	ug/L			11/03/20 16:35	1
1,2-Dichloroethane	0.50	U M	1.0	0.50	ug/L			11/03/20 16:35	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/03/20 16:35	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/03/20 16:35	1
1,2-Dichloropropane	0.67	U	1.0	0.67	ug/L			11/03/20 16:35	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	ug/L			11/03/20 16:35	1
trans-1,3-Dichloropropene	0.42	U	1.0	0.42	ug/L			11/03/20 16:35	1
Ethylbenzene	0.33	U	1.0	0.33	ug/L			11/03/20 16:35	1
Methylene Chloride	2.5	U	5.0	2.5	ug/L			11/03/20 16:35	1
1,1,2,2-Tetrachloroethane	0.62	U	1.0	0.62	ug/L			11/03/20 16:35	1
Tetrachloroethene	0.74	U	1.0	0.74	ug/L			11/03/20 16:35	1
Toluene	0.48	U	1.0	0.48	ug/L			11/03/20 16:35	1
1,1,1-Trichloroethane	0.37	U	1.0	0.37	ug/L			11/03/20 16:35	1
1,1,2-Trichloroethane	0.33	U	1.0	0.33	ug/L			11/03/20 16:35	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/03/20 16:35	1
Trichlorofluoromethane	0.42	U	1.0	0.42	ug/L			11/03/20 16:35	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/03/20 16:35	1
Xylenes, Total	0.57	U	2.0	0.57	ug/L			11/03/20 16:35	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*79 - 119*		*11/03/20 16:35*	*1*
1,2-Dichloroethane-d4 (Surr)	*117*		*70 - 130*		*11/03/20 16:35*	*1*
4-Bromofluorobenzene (Surr)	*101*		*71 - 121*		*11/03/20 16:35*	*1*
Dibromofluoromethane (Surr)	*108*		*77 - 129*		*11/03/20 16:35*	*1*

Lab Sample ID: LCS 680-641993/3
Matrix: Water
Analysis Batch: 641993

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	48.3		ug/L		97	37 - 151
Dichlorobromomethane	50.0	54.3		ug/L		109	35 - 155
Bromoform	50.0	44.9		ug/L		90	45 - 169
Bromomethane	50.0	64.8		ug/L		130	1 - 242

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 680-641993/3
Matrix: Water
Analysis Batch: 641993

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon tetrachloride	50.0	57.1		ug/L		114	70 - 140
Chlorobenzene	50.0	46.6		ug/L		93	37 - 160
Chloroethane	50.0	64.5		ug/L		129	14 - 230
2-Chloroethyl vinyl ether	50.0	36.3		ug/L		73	1 - 305
Chloroform	50.0	53.3		ug/L		107	51 - 138
Chloromethane	50.0	45.2		ug/L		90	1 - 273
Chlorodibromomethane	50.0	51.4		ug/L		103	53 - 149
1,2-Dichlorobenzene	50.0	52.2		ug/L		104	18 - 190
1,3-Dichlorobenzene	50.0	45.9		ug/L		92	59 - 156
1,4-Dichlorobenzene	50.0	45.3		ug/L		91	18 - 190
1,1-Dichloroethane	50.0	47.9		ug/L		96	59 - 155
1,2-Dichloroethane	50.0	58.2		ug/L		116	49 - 155
1,1-Dichloroethene	50.0	49.0		ug/L		98	1 - 234
trans-1,2-Dichloroethene	50.0	47.9		ug/L		96	54 - 156
1,2-Dichloropropane	50.0	46.3		ug/L		93	1 - 210
cis-1,3-Dichloropropene	50.0	49.7		ug/L		99	1 - 227
trans-1,3-Dichloropropene	50.0	51.4		ug/L		103	17 - 183
Ethylbenzene	50.0	48.0		ug/L		96	37 - 162
Methylene Chloride	50.0	50.1		ug/L		100	1 - 221
1,1,2,2-Tetrachloroethane	50.0	49.2		ug/L		98	46 - 157
Tetrachloroethene	50.0	50.7		ug/L		101	64 - 148
Toluene	50.0	48.2		ug/L		96	47 - 150
1,1,1-Trichloroethane	50.0	58.0		ug/L		116	52 - 162
1,1,2-Trichloroethane	50.0	46.8		ug/L		94	52 - 150
Trichloroethene	50.0	50.4		ug/L		101	71 - 157
Trichlorofluoromethane	50.0	65.2		ug/L		130	17 - 181
Vinyl chloride	50.0	49.0		ug/L		98	1 - 251
Xylenes, Total	100	94.6		ug/L		95	78 - 119

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*79 - 119*
1,2-Dichloroethane-d4 (Surr)	*122*		*70 - 130*
4-Bromofluorobenzene (Surr)	*88*		*71 - 121*
Dibromofluoromethane (Surr)	*108*		*77 - 129*

Lab Sample ID: LCSD 680-641993/4
Matrix: Water
Analysis Batch: 641993

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	50.0	47.5		ug/L		95	37 - 151	2	30
Dichlorobromomethane	50.0	53.0		ug/L		106	35 - 155	2	30
Bromoform	50.0	46.4		ug/L		93	45 - 169	3	30
Bromomethane	50.0	65.6		ug/L		131	1 - 242	1	100
Carbon tetrachloride	50.0	57.0		ug/L		114	70 - 140	0	30
Chlorobenzene	50.0	46.3		ug/L		93	37 - 160	1	30
Chloroethane	50.0	63.5		ug/L		127	14 - 230	2	50
2-Chloroethyl vinyl ether	50.0	38.1		ug/L		76	1 - 305	5	100

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 680-641993/4
Matrix: Water
Analysis Batch: 641993

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloroform			50.0	52.2		ug/L		104	51 - 138	2	30
Chloromethane			50.0	43.9		ug/L		88	1 - 273	3	50
Chlorodibromomethane			50.0	51.4		ug/L		103	53 - 149	0	30
1,2-Dichlorobenzene			50.0	53.3		ug/L		107	18 - 190	2	30
1,3-Dichlorobenzene			50.0	46.6		ug/L		93	59 - 156	2	30
1,4-Dichlorobenzene			50.0	46.1		ug/L		92	18 - 190	2	30
1,1-Dichloroethane			50.0	47.9		ug/L		96	59 - 155	0	30
1,2-Dichloroethane			50.0	57.3		ug/L		115	49 - 155	2	30
1,1-Dichloroethene			50.0	47.8		ug/L		96	1 - 234	3	30
trans-1,2-Dichloroethene			50.0	47.7		ug/L		95	54 - 156	0	30
1,2-Dichloropropane			50.0	46.1		ug/L		92	1 - 210	0	30
cis-1,3-Dichloropropene			50.0	48.9		ug/L		98	1 - 227	2	30
trans-1,3-Dichloropropene			50.0	51.4		ug/L		103	17 - 183	0	30
Ethylbenzene			50.0	48.3		ug/L		97	37 - 162	1	30
Methylene Chloride			50.0	48.7		ug/L		97	1 - 221	3	30
1,1,2,2-Tetrachloroethane			50.0	48.3		ug/L		97	46 - 157	2	30
Tetrachloroethene			50.0	50.2		ug/L		100	64 - 148	1	30
Toluene			50.0	48.2		ug/L		96	47 - 150	0	30
1,1,1-Trichloroethane			50.0	57.4		ug/L		115	52 - 162	1	30
1,1,2-Trichloroethane			50.0	47.5		ug/L		95	52 - 150	1	30
Trichloroethene			50.0	49.0		ug/L		98	71 - 157	3	30
Trichlorofluoromethane			50.0	63.7		ug/L		127	17 - 181	2	30
Vinyl chloride			50.0	47.9		ug/L		96	1 - 251	2	50
Xylenes, Total			100	95.3		ug/L		95	78 - 119	1	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*99*		*79 - 119*
1,2-Dichloroethane-d4 (Surr)	*122*		*70 - 130*
4-Bromofluorobenzene (Surr)	*90*		*71 - 121*
Dibromofluoromethane (Surr)	*107*		*77 - 129*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 680-642552/8
Matrix: Water
Analysis Batch: 642552

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.37	U	1.0	0.37	ug/L			11/05/20 18:09	1
1,1,1-Trichloroethane	0.37	U	1.0	0.37	ug/L			11/05/20 18:09	1
1,1,2,2-Tetrachloroethane	0.62	U	1.0	0.62	ug/L			11/05/20 18:09	1
1,1,2-Trichloroethane	0.33	U	1.0	0.33	ug/L			11/05/20 18:09	1
1,1-Dichloroethane	0.38	U	1.0	0.38	ug/L			11/05/20 18:09	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/05/20 18:09	1
1,1-Dichloropropene	0.34	U	1.0	0.34	ug/L			11/05/20 18:09	1
1,2,3-Trichlorobenzene	2.5	U	5.0	2.5	ug/L			11/05/20 18:09	1
1,2,3-Trichloropropane	0.39	U	1.0	0.39	ug/L			11/05/20 18:09	1
1,2,4-Trichlorobenzene	2.5	U	5.0	2.5	ug/L			11/05/20 18:09	1
1,2,4-Trimethylbenzene	0.47	U	1.0	0.47	ug/L			11/05/20 18:09	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 680-642552/8
Matrix: Water
Analysis Batch: 642552

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromo-3-Chloropropane	1.1	U	5.0	1.1	ug/L			11/05/20 18:09	1
1,2-Dichlorobenzene	0.37	U	1.0	0.37	ug/L			11/05/20 18:09	1
1,2-Dichloroethane	0.50	U M	1.0	0.50	ug/L			11/05/20 18:09	1
1,2-Dichloroethene, Total	0.787	J	2.0	0.74	ug/L			11/05/20 18:09	1
1,2-Dichloropropane	0.67	U	1.0	0.67	ug/L			11/05/20 18:09	1
1,3,5-Trimethylbenzene	0.31	U	1.0	0.31	ug/L			11/05/20 18:09	1
1,3-Dichlorobenzene	0.43	U	1.0	0.43	ug/L			11/05/20 18:09	1
1,3-Dichloropropane	0.34	U	1.0	0.34	ug/L			11/05/20 18:09	1
1,4-Dichlorobenzene	0.46	U M	1.0	0.46	ug/L			11/05/20 18:09	1
2,2-Dichloropropane	0.37	U	1.0	0.37	ug/L			11/05/20 18:09	1
2-Butanone (MEK)	3.4	U	10	3.4	ug/L			11/05/20 18:09	1
2-Chlorotoluene	0.27	U	1.0	0.27	ug/L			11/05/20 18:09	1
2-Hexanone	2.0	U	10	2.0	ug/L			11/05/20 18:09	1
4-Chlorotoluene	0.45	U	1.0	0.45	ug/L			11/05/20 18:09	1
4-Isopropyltoluene	0.48	U	1.0	0.48	ug/L			11/05/20 18:09	1
4-Methyl-2-pentanone (MIBK)	2.1	U	10	2.1	ug/L			11/05/20 18:09	1
Acetone	7.0	U	10	7.0	ug/L			11/05/20 18:09	1
Benzene	0.43	U M	1.0	0.43	ug/L			11/05/20 18:09	1
Bromobenzene	0.50	U	1.0	0.50	ug/L			11/05/20 18:09	1
Bromoform	0.43	U	1.0	0.43	ug/L			11/05/20 18:09	1
Bromomethane	2.5	U	5.0	2.5	ug/L			11/05/20 18:09	1
Carbon disulfide	0.43	U	2.0	0.43	ug/L			11/05/20 18:09	1
Carbon tetrachloride	0.33	U	1.0	0.33	ug/L			11/05/20 18:09	1
Chlorobenzene	0.26	U	1.0	0.26	ug/L			11/05/20 18:09	1
Chlorobromomethane	0.45	U	1.0	0.45	ug/L			11/05/20 18:09	1
Chlorodibromomethane	0.32	U	1.0	0.32	ug/L			11/05/20 18:09	1
Chloroethane	2.5	U	5.0	2.5	ug/L			11/05/20 18:09	1
Chloroform	0.50	U	1.0	0.50	ug/L			11/05/20 18:09	1
Chloromethane	0.40	U	1.0	0.40	ug/L			11/05/20 18:09	1
cis-1,2-Dichloroethene	0.787	J	1.0	0.41	ug/L			11/05/20 18:09	1
cis-1,3-Dichloropropene	0.40	U	1.0	0.40	ug/L			11/05/20 18:09	1
Dibromomethane	0.35	U	1.0	0.35	ug/L			11/05/20 18:09	1
Dichlorobromomethane	0.44	U	1.0	0.44	ug/L			11/05/20 18:09	1
Dichlorodifluoromethane	0.60	U	1.0	0.60	ug/L			11/05/20 18:09	1
Ethylbenzene	0.33	U	1.0	0.33	ug/L			11/05/20 18:09	1
Ethylene Dibromide	0.44	U	1.0	0.44	ug/L			11/05/20 18:09	1
Hexachlorobutadiene	2.5	U	5.0	2.5	ug/L			11/05/20 18:09	1
Isopropylbenzene	0.35	U	1.0	0.35	ug/L			11/05/20 18:09	1
Methyl tert-butyl ether	0.30	U	10	0.30	ug/L			11/05/20 18:09	1
Methylene Chloride	2.5	U	5.0	2.5	ug/L			11/05/20 18:09	1
m-Xylene & p-Xylene	0.35	U	1.0	0.35	ug/L			11/05/20 18:09	1
Naphthalene	2.5	U	5.0	2.5	ug/L			11/05/20 18:09	1
n-Butylbenzene	0.47	U	1.0	0.47	ug/L			11/05/20 18:09	1
N-Propylbenzene	0.38	U	1.0	0.38	ug/L			11/05/20 18:09	1
o-Xylene	0.23	U	1.0	0.23	ug/L			11/05/20 18:09	1
sec-Butylbenzene	0.42	U	1.0	0.42	ug/L			11/05/20 18:09	1
Styrene	0.27	U	1.0	0.27	ug/L			11/05/20 18:09	1
tert-Butylbenzene	0.45	U	1.0	0.45	ug/L			11/05/20 18:09	1
Tetrachloroethene	0.74	U	1.0	0.74	ug/L			11/05/20 18:09	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 680-642552/8
Matrix: Water
Analysis Batch: 642552

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	0.48	U	1.0	0.48	ug/L			11/05/20 18:09	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/05/20 18:09	1
trans-1,3-Dichloropropene	0.42	U	1.0	0.42	ug/L			11/05/20 18:09	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/05/20 18:09	1
Trichlorofluoromethane	0.42	U	1.0	0.42	ug/L			11/05/20 18:09	1
Vinyl acetate	0.81	U	2.0	0.81	ug/L			11/05/20 18:09	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/05/20 18:09	1
Xylenes, Total	0.23	U	2.0	0.23	ug/L			11/05/20 18:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*85 - 114*		*11/05/20 18:09*	*1*
Dibromofluoromethane (Surr)	*89*		*80 - 119*		*11/05/20 18:09*	*1*
Toluene-d8 (Surr)	*92*		*89 - 112*		*11/05/20 18:09*	*1*
1,2-Dichloroethane-d4 (Surr)	*93*		*81 - 118*		*11/05/20 18:09*	*1*

Lab Sample ID: LCS 680-642552/3
Matrix: Water
Analysis Batch: 642552

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	50.0	46.2		ug/L		92	78 - 124
1,1,1-Trichloroethane	50.0	46.8		ug/L		94	74 - 131
1,1,2,2-Tetrachloroethane	50.0	50.9		ug/L		102	71 - 121
1,1,2-Trichloroethane	50.0	48.4		ug/L		97	80 - 119
1,1-Dichloroethane	50.0	50.2		ug/L		100	77 - 125
1,1-Dichloroethene	50.0	43.7		ug/L		87	71 - 131
1,1-Dichloropropene	50.0	49.3		ug/L		99	79 - 125
1,2,3-Trichlorobenzene	50.0	52.7		ug/L		105	69 - 129
1,2,3-Trichloropropane	50.0	51.4		ug/L		103	73 - 122
1,2,4-Trichlorobenzene	50.0	51.2		ug/L		102	69 - 130
1,2,4-Trimethylbenzene	50.0	48.1		ug/L		96	76 - 124
1,2-Dibromo-3-Chloropropane	50.0	51.7		ug/L		103	62 - 128
1,2-Dichlorobenzene	50.0	48.9		ug/L		98	80 - 119
1,2-Dichloroethane	50.0	51.5		ug/L		103	73 - 128
1,2-Dichloroethene, Total	100	97.2		ug/L		97	79 - 121
1,2-Dichloropropane	50.0	50.1		ug/L		100	78 - 122
1,3,5-Trimethylbenzene	50.0	47.8		ug/L		96	75 - 124
1,3-Dichlorobenzene	50.0	48.8		ug/L		98	80 - 119
1,3-Dichloropropane	50.0	50.6		ug/L		101	80 - 119
1,4-Dichlorobenzene	50.0	48.9		ug/L		98	79 - 118
2,2-Dichloropropane	50.0	47.1		ug/L		94	60 - 139
2-Butanone (MEK)	250	254		ug/L		102	56 - 143
2-Chlorotoluene	50.0	47.9		ug/L		96	79 - 122
2-Hexanone	250	275		ug/L		110	57 - 139
4-Chlorotoluene	50.0	46.5		ug/L		93	78 - 122
4-Isopropyltoluene	50.0	49.0		ug/L		98	77 - 127
4-Methyl-2-pentanone (MIBK)	250	271		ug/L		109	67 - 130
Acetone	250	281		ug/L		112	39 - 160

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 680-642552/3
Matrix: Water
Analysis Batch: 642552

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	46.2		ug/L		92	79 - 120
Bromobenzene	50.0	47.6		ug/L		95	80 - 120
Bromoform	50.0	44.1		ug/L		88	66 - 130
Bromomethane	50.0	44.9		ug/L		90	53 - 141
Carbon disulfide	50.0	46.9		ug/L		94	64 - 133
Carbon tetrachloride	50.0	45.5		ug/L		91	72 - 136
Chlorobenzene	50.0	47.7		ug/L		95	82 - 118
Chlorobromomethane	50.0	49.3		ug/L		99	78 - 123
Chlorodibromomethane	50.0	46.9		ug/L		94	74 - 126
Chloroethane	50.0	45.9		ug/L		92	60 - 138
Chloroform	50.0	47.5		ug/L		95	79 - 124
Chloromethane	50.0	45.7	M	ug/L		91	50 - 139
cis-1,2-Dichloroethene	50.0	50.9		ug/L		102	78 - 123
cis-1,3-Dichloropropene	50.0	48.7		ug/L		97	75 - 124
Dibromomethane	50.0	49.0		ug/L		98	79 - 123
Dichlorobromomethane	50.0	47.1		ug/L		94	79 - 125
Dichlorodifluoromethane	50.0	44.1		ug/L		88	32 - 152
Ethylbenzene	50.0	48.1		ug/L		96	79 - 121
Ethylene Dibromide	50.0	50.2		ug/L		100	75 - 127
Hexachlorobutadiene	50.0	48.7		ug/L		97	66 - 134
Isopropylbenzene	50.0	48.2		ug/L		96	72 - 131
Methyl tert-butyl ether	50.0	49.9		ug/L		100	71 - 124
Methylene Chloride	50.0	47.4		ug/L		95	74 - 124
m-Xylene & p-Xylene	50.0	47.6		ug/L		95	80 - 121
Naphthalene	50.0	54.4		ug/L		109	61 - 128
n-Butylbenzene	50.0	50.6		ug/L		101	75 - 128
N-Propylbenzene	50.0	47.9		ug/L		96	76 - 126
o-Xylene	50.0	47.5		ug/L		95	78 - 122
sec-Butylbenzene	50.0	48.5		ug/L		97	77 - 126
Styrene	50.0	49.0		ug/L		98	78 - 123
tert-Butylbenzene	50.0	48.0		ug/L		96	78 - 124
Tetrachloroethene	50.0	48.4		ug/L		97	74 - 129
Toluene	50.0	48.8		ug/L		98	80 - 121
trans-1,2-Dichloroethene	50.0	46.3		ug/L		93	75 - 124
trans-1,3-Dichloropropene	50.0	48.8		ug/L		98	73 - 127
Trichloroethene	50.0	48.1		ug/L		96	79 - 123
Trichlorofluoromethane	50.0	47.5		ug/L		95	65 - 141
Vinyl acetate	100	106		ug/L		106	54 - 146
Vinyl chloride	50.0	47.2		ug/L		94	58 - 137
Xylenes, Total	100	95.1		ug/L		95	79 - 121

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*94*		*85 - 114*
Dibromofluoromethane (Surr)	*94*		*80 - 119*
Toluene-d8 (Surr)	*96*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*97*		*81 - 118*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 680-642552/4
Matrix: Water
Analysis Batch: 642552

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane	50.0	46.4		ug/L		93	78 - 124	0	20
1,1,1-Trichloroethane	50.0	46.9		ug/L		94	74 - 131	0	20
1,1,2,2-Tetrachloroethane	50.0	50.0		ug/L		100	71 - 121	2	20
1,1,2-Trichloroethane	50.0	48.9		ug/L		98	80 - 119	1	20
1,1-Dichloroethane	50.0	49.7		ug/L		99	77 - 125	1	20
1,1-Dichloroethene	50.0	44.0		ug/L		88	71 - 131	1	20
1,1-Dichloropropene	50.0	49.0		ug/L		98	79 - 125	1	20
1,2,3-Trichlorobenzene	50.0	52.4		ug/L		105	69 - 129	0	20
1,2,3-Trichloropropane	50.0	50.8		ug/L		102	73 - 122	1	20
1,2,4-Trichlorobenzene	50.0	51.5		ug/L		103	69 - 130	1	20
1,2,4-Trimethylbenzene	50.0	47.8		ug/L		96	76 - 124	1	20
1,2-Dibromo-3-Chloropropane	50.0	51.6		ug/L		103	62 - 128	0	20
1,2-Dichlorobenzene	50.0	49.0		ug/L		98	80 - 119	0	20
1,2-Dichloroethane	50.0	51.2		ug/L		102	73 - 128	1	20
1,2-Dichloroethene, Total	100	96.9		ug/L		97	79 - 121	0	20
1,2-Dichloropropane	50.0	50.2		ug/L		100	78 - 122	0	20
1,3,5-Trimethylbenzene	50.0	48.1		ug/L		96	75 - 124	1	20
1,3-Dichlorobenzene	50.0	48.3		ug/L		97	80 - 119	1	20
1,3-Dichloropropane	50.0	50.4		ug/L		101	80 - 119	0	20
1,4-Dichlorobenzene	50.0	48.2		ug/L		96	79 - 118	1	20
2,2-Dichloropropane	50.0	46.7		ug/L		93	60 - 139	1	20
2-Butanone (MEK)	250	254		ug/L		101	56 - 143	0	20
2-Chlorotoluene	50.0	47.7		ug/L		95	79 - 122	0	20
2-Hexanone	250	273		ug/L		109	57 - 139	1	20
4-Chlorotoluene	50.0	46.5		ug/L		93	78 - 122	0	20
4-Isopropyltoluene	50.0	49.3		ug/L		99	77 - 127	1	20
4-Methyl-2-pentanone (MIBK)	250	267		ug/L		107	67 - 130	1	20
Acetone	250	274		ug/L		110	39 - 160	2	20
Benzene	50.0	45.9		ug/L		92	79 - 120	1	20
Bromobenzene	50.0	47.7		ug/L		95	80 - 120	0	20
Bromoform	50.0	43.7		ug/L		87	66 - 130	1	20
Bromomethane	50.0	46.3		ug/L		93	53 - 141	3	20
Carbon disulfide	50.0	46.9		ug/L		94	64 - 133	0	20
Carbon tetrachloride	50.0	45.6		ug/L		91	72 - 136	0	20
Chlorobenzene	50.0	48.0		ug/L		96	82 - 118	1	20
Chlorobromomethane	50.0	48.8		ug/L		98	78 - 123	1	20
Chlorodibromomethane	50.0	47.0		ug/L		94	74 - 126	0	20
Chloroethane	50.0	46.4		ug/L		93	60 - 138	1	20
Chloroform	50.0	47.6		ug/L		95	79 - 124	0	20
Chloromethane	50.0	44.9	M	ug/L		90	50 - 139	2	20
cis-1,2-Dichloroethene	50.0	50.4		ug/L		101	78 - 123	1	20
cis-1,3-Dichloropropene	50.0	48.6		ug/L		97	75 - 124	0	20
Dibromomethane	50.0	49.2		ug/L		98	79 - 123	0	20
Dichlorobromomethane	50.0	46.9		ug/L		94	79 - 125	0	20
Dichlorodifluoromethane	50.0	44.2		ug/L		88	32 - 152	0	20
Ethylbenzene	50.0	48.1		ug/L		96	79 - 121	0	20
Ethylene Dibromide	50.0	49.2		ug/L		98	75 - 127	2	20
Hexachlorobutadiene	50.0	49.2		ug/L		98	66 - 134	1	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 680-642552/4
Matrix: Water
Analysis Batch: 642552

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Isopropylbenzene			50.0	48.3		ug/L		97	72 - 131	0	20
Methyl tert-butyl ether			50.0	49.5		ug/L		99	71 - 124	1	20
Methylene Chloride			50.0	47.1		ug/L		94	74 - 124	1	20
m-Xylene & p-Xylene			50.0	47.4		ug/L		95	80 - 121	0	20
Naphthalene			50.0	55.1		ug/L		110	61 - 128	1	20
n-Butylbenzene			50.0	50.2		ug/L		100	75 - 128	1	20
N-Propylbenzene			50.0	48.0		ug/L		96	76 - 126	0	20
o-Xylene			50.0	47.7		ug/L		95	78 - 122	1	20
sec-Butylbenzene			50.0	48.6		ug/L		97	77 - 126	0	20
Styrene			50.0	48.5		ug/L		97	78 - 123	1	20
tert-Butylbenzene			50.0	47.6		ug/L		95	78 - 124	1	20
Tetrachloroethene			50.0	47.9		ug/L		96	74 - 129	1	20
Toluene			50.0	48.9		ug/L		98	80 - 121	0	20
trans-1,2-Dichloroethene			50.0	46.4		ug/L		93	75 - 124	0	20
trans-1,3-Dichloropropene			50.0	48.5		ug/L		97	73 - 127	1	20
Trichloroethene			50.0	48.1		ug/L		96	79 - 123	0	20
Trichlorofluoromethane			50.0	47.4		ug/L		95	65 - 141	0	20
Vinyl acetate			100	105		ug/L		105	54 - 146	1	20
Vinyl chloride			50.0	47.4		ug/L		95	58 - 137	1	20
Xylenes, Total			100	95.1		ug/L		95	79 - 121	0	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*94*		*85 - 114*
Dibromofluoromethane (Surr)	*94*		*80 - 119*
Toluene-d8 (Surr)	*96*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*97*		*81 - 118*

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 680-641401/8-A
Matrix: Water
Analysis Batch: 642132

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 641401

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	0.82	U	10	0.82	ug/L		10/29/20 14:18	11/03/20 16:50	1
2,4-Dichlorophenol	1.1	U	10	1.1	ug/L		10/29/20 14:18	11/03/20 16:50	1
2,4-Dimethylphenol	3.9	U	10	3.9	ug/L		10/29/20 14:18	11/03/20 16:50	1
2,4-Dinitrophenol	10	U	50	10	ug/L		10/29/20 14:18	11/03/20 16:50	1
2-Nitrophenol	0.74	U	10	0.74	ug/L		10/29/20 14:18	11/03/20 16:50	1
4,6-Dinitro-2-methylphenol	5.0	U	50	5.0	ug/L		10/29/20 14:18	11/03/20 16:50	1
4-Chloro-3-methylphenol	1.1	U	10	1.1	ug/L		10/29/20 14:18	11/03/20 16:50	1
4-Nitrophenol	10	U	50	10	ug/L		10/29/20 14:18	11/03/20 16:50	1
Pentachlorophenol	1.8	U	50	1.8	ug/L		10/29/20 14:18	11/03/20 16:50	1
2-Chlorophenol	0.90	U	10	0.90	ug/L		10/29/20 14:18	11/03/20 16:50	1
1,2,4-Trichlorobenzene	0.56	U	10	0.56	ug/L		10/29/20 14:18	11/03/20 16:50	1
1,2-Dichlorobenzene	0.56	U	10	0.56	ug/L		10/29/20 14:18	11/03/20 16:50	1
1,2-Diphenylhydrazine	0.86	U	10	0.86	ug/L		10/29/20 14:18	11/03/20 16:50	1
1,3-Dichlorobenzene	0.66	U	10	0.66	ug/L		10/29/20 14:18	11/03/20 16:50	1
1,4-Dichlorobenzene	0.58	U M	10	0.58	ug/L		10/29/20 14:18	11/03/20 16:50	1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 680-641401/8-A
Matrix: Water
Analysis Batch: 642132

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 641401

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloronaphthalene	0.78	U	10	0.78	ug/L		10/29/20 14:18	11/03/20 16:50	1
2,6-Dinitrotoluene	1.1	U	10	1.1	ug/L		10/29/20 14:18	11/03/20 16:50	1
2,4-Dinitrotoluene	1.2	U	10	1.2	ug/L		10/29/20 14:18	11/03/20 16:50	1
3,3'-Dichlorobenzidine	30	U	60	30	ug/L		10/29/20 14:18	11/03/20 16:50	1
4-Bromophenyl phenyl ether	0.80	U	10	0.80	ug/L		10/29/20 14:18	11/03/20 16:50	1
4-Chlorophenyl phenyl ether	0.81	U	10	0.81	ug/L		10/29/20 14:18	11/03/20 16:50	1
Acenaphthene	0.75	U	10	0.75	ug/L		10/29/20 14:18	11/03/20 16:50	1
Acenaphthylene	0.80	U	10	0.80	ug/L		10/29/20 14:18	11/03/20 16:50	1
Anthracene	0.73	U	10	0.73	ug/L		10/29/20 14:18	11/03/20 16:50	1
Benzidine	42	U	80	42	ug/L		10/29/20 14:18	11/03/20 16:50	1
Benzo[a]anthracene	0.94	U	10	0.94	ug/L		10/29/20 14:18	11/03/20 16:50	1
Benzo[a]pyrene	0.74	U	10	0.74	ug/L		10/29/20 14:18	11/03/20 16:50	1
Benzo[b]fluoranthene	2.5	U	10	2.5	ug/L		10/29/20 14:18	11/03/20 16:50	1
Benzo[g,h,i]perylene	0.89	U	10	0.89	ug/L		10/29/20 14:18	11/03/20 16:50	1
Benzo[k]fluoranthene	0.90	U	10	0.90	ug/L		10/29/20 14:18	11/03/20 16:50	1
Bis(2-chloroethoxy)methane	1.1	U	10	1.1	ug/L		10/29/20 14:18	11/03/20 16:50	1
Bis(2-chloroethyl)ether	1.1	U	10	1.1	ug/L		10/29/20 14:18	11/03/20 16:50	1
Bis(2-ethylhexyl) phthalate	1.6	U	10	1.6	ug/L		10/29/20 14:18	11/03/20 16:50	1
Butyl benzyl phthalate	1.2	U	10	1.2	ug/L		10/29/20 14:18	11/03/20 16:50	1
Chrysene	0.52	U	10	0.52	ug/L		10/29/20 14:18	11/03/20 16:50	1
Di-n-butyl phthalate	0.88	U	10	0.88	ug/L		10/29/20 14:18	11/03/20 16:50	1
Di-n-octyl phthalate	1.3	U	10	1.3	ug/L		10/29/20 14:18	11/03/20 16:50	1
Dibenz(a,h)anthracene	0.76	U	10	0.76	ug/L		10/29/20 14:18	11/03/20 16:50	1
Diethyl phthalate	0.86	U	10	0.86	ug/L		10/29/20 14:18	11/03/20 16:50	1
Dimethyl phthalate	0.97	U	10	0.97	ug/L		10/29/20 14:18	11/03/20 16:50	1
Fluoranthene	0.71	U	10	0.71	ug/L		10/29/20 14:18	11/03/20 16:50	1
Fluorene	0.93	U	10	0.93	ug/L		10/29/20 14:18	11/03/20 16:50	1
Hexachlorobenzene	0.81	U	10	0.81	ug/L		10/29/20 14:18	11/03/20 16:50	1
Hexachlorobutadiene	0.62	U	10	0.62	ug/L		10/29/20 14:18	11/03/20 16:50	1
Hexachlorocyclopentadiene	10	U	20	10	ug/L		10/29/20 14:18	11/03/20 16:50	1
Hexachloroethane	0.81	U	10	0.81	ug/L		10/29/20 14:18	11/03/20 16:50	1
Indeno[1,2,3-cd]pyrene	1.1	U	10	1.1	ug/L		10/29/20 14:18	11/03/20 16:50	1
Isophorone	0.90	U	10	0.90	ug/L		10/29/20 14:18	11/03/20 16:50	1
N-Nitrosodi-n-propylamine	0.74	U	10	0.74	ug/L		10/29/20 14:18	11/03/20 16:50	1
N-Nitrosodimethylamine	10	U	20	10	ug/L		10/29/20 14:18	11/03/20 16:50	1
N-Nitrosodiphenylamine	0.91	U	10	0.91	ug/L		10/29/20 14:18	11/03/20 16:50	1
Naphthalene	0.70	U	10	0.70	ug/L		10/29/20 14:18	11/03/20 16:50	1
Nitrobenzene	0.58	U	10	0.58	ug/L		10/29/20 14:18	11/03/20 16:50	1
Phenanthrene	0.81	U	10	0.81	ug/L		10/29/20 14:18	11/03/20 16:50	1
Pyrene	0.64	U	10	0.64	ug/L		10/29/20 14:18	11/03/20 16:50	1
bis (2-chloroisopropyl) ether	0.85	U	10	0.85	ug/L		10/29/20 14:18	11/03/20 16:50	1
Phenol	1.1	U	10	1.1	ug/L		10/29/20 14:18	11/03/20 16:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*72*		*34 - 132*	*10/29/20 14:18*	*11/03/20 16:50*	*1*
2-Fluorophenol (Surr)	*62*		*35 - 110*	*10/29/20 14:18*	*11/03/20 16:50*	*1*
Phenol-d5 (Surr)	*65*		*27 - 119*	*10/29/20 14:18*	*11/03/20 16:50*	*1*
2-Fluorobiphenyl (Surr)	*64*		*38 - 121*	*10/29/20 14:18*	*11/03/20 16:50*	*1*

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 680-641401/8-A
Matrix: Water
Analysis Batch: 642132

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 641401

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	73		44 - 119	10/29/20 14:18	11/03/20 16:50	1
Terphenyl-d14 (Surr)	80		10 - 165	10/29/20 14:18	11/03/20 16:50	1

Lab Sample ID: LCS 680-641401/9-A
Matrix: Water
Analysis Batch: 642132

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 641401

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4,6-Trichlorophenol	100	73.7		ug/L		74	37 - 144
2,4-Dichlorophenol	100	74.6		ug/L		75	39 - 135
2,4-Dimethylphenol	100	57.6		ug/L		58	32 - 119
2,4-Dinitrophenol	200	144		ug/L		72	1 - 191
2-Nitrophenol	100	71.3		ug/L		71	29 - 182
4,6-Dinitro-2-methylphenol	200	150		ug/L		75	1 - 181
4-Chloro-3-methylphenol	100	78.4		ug/L		78	22 - 147
4-Nitrophenol	200	155		ug/L		77	1 - 132
Pentachlorophenol	200	133		ug/L		67	14 - 176
2-Chlorophenol	100	71.9		ug/L		72	23 - 134
1,2,4-Trichlorobenzene	100	59.1		ug/L		59	44 - 142
1,2-Dichlorobenzene	100	60.5		ug/L		61	32 - 129
1,2-Diphenylhydrazine	100	78.7		ug/L		79	30 - 130
1,3-Dichlorobenzene	100	56.9		ug/L		57	1 - 172
1,4-Dichlorobenzene	100	56.7		ug/L		57	20 - 124
2-Chloronaphthalene	100	66.9		ug/L		67	60 - 118
2,6-Dinitrotoluene	100	73.7		ug/L		74	50 - 158
2,4-Dinitrotoluene	100	76.1		ug/L		76	39 - 139
3,3'-Dichlorobenzidine	100	78.4		ug/L		78	1 - 262
4-Bromophenyl phenyl ether	100	73.8		ug/L		74	53 - 127
4-Chlorophenyl phenyl ether	100	68.4		ug/L		68	25 - 158
Acenaphthene	100	69.3		ug/L		69	47 - 145
Acenaphthylene	100	71.9		ug/L		72	33 - 145
Anthracene	100	74.0		ug/L		74	27 - 133
Benzidine	100	53.1	J	ug/L		53	1 - 200
Benzo[a]anthracene	100	76.4		ug/L		76	33 - 143
Benzo[a]pyrene	100	72.6		ug/L		73	17 - 163
Benzo[b]fluoranthene	100	81.8		ug/L		82	24 - 159
Benzo[g,h,i]perylene	100	75.3		ug/L		75	1 - 219
Benzo[k]fluoranthene	100	69.2	M	ug/L		69	11 - 162
Bis(2-chloroethoxy)methane	100	72.9		ug/L		73	33 - 184
Bis(2-chloroethyl)ether	100	74.2		ug/L		74	12 - 158
Bis(2-ethylhexyl) phthalate	100	87.0		ug/L		87	8 - 158
Butyl benzyl phthalate	100	85.6	M	ug/L		86	1 - 152
Chrysene	100	76.0		ug/L		76	17 - 168
Di-n-butyl phthalate	100	83.0		ug/L		83	1 - 118
Di-n-octyl phthalate	100	87.9		ug/L		88	4 - 146
Dibenz(a,h)anthracene	100	75.3		ug/L		75	1 - 227
Diethyl phthalate	100	76.7		ug/L		77	1 - 114
Dimethyl phthalate	100	74.9		ug/L		75	1 - 112

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 680-641401/9-A
Matrix: Water
Analysis Batch: 642132

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 641401

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoranthene			100	77.2		ug/L		77	26 - 137		
Fluorene			100	70.0		ug/L		70	59 - 121		
Hexachlorobenzene			100	72.9		ug/L		73	1 - 152		
Hexachlorobutadiene			100	56.7		ug/L		57	24 - 116		
Hexachlorocyclopentadiene			100	14.7	J	ug/L		15	1 - 200		
Hexachloroethane			100	55.0		ug/L		55	40 - 113		
Indeno[1,2,3-cd]pyrene			100	77.2		ug/L		77	1 - 171		
Isophorone			100	78.8		ug/L		79	21 - 196		
N-Nitrosodi-n-propylamine			100	77.1		ug/L		77	1 - 230		
N-Nitrosodimethylamine			100	79.1		ug/L		79	10 - 150		
N-Nitrosodiphenylamine			100	70.5		ug/L		70	10 - 150		
Naphthalene			100	66.0		ug/L		66	21 - 133		
Nitrobenzene			100	71.6		ug/L		72	35 - 180		
Phenanthrene			100	74.4		ug/L		74	54 - 120		
Pyrene			100	76.8		ug/L		77	52 - 115		
bis (2-chloroisopropyl) ether			100	89.4		ug/L		89	36 - 166		
Phenol			100	74.4		ug/L		74	5 - 112		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*67*		*34 - 132*
2-Fluorophenol (Surr)	*61*		*35 - 110*
Phenol-d5 (Surr)	*67*		*27 - 119*
2-Fluorobiphenyl (Surr)	*62*		*38 - 121*
Nitrobenzene-d5 (Surr)	*67*		*44 - 119*
Terphenyl-d14 (Surr)	*78*		*10 - 165*

Lab Sample ID: LCSD 680-641401/10-A
Matrix: Water
Analysis Batch: 642132

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 641401

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4,6-Trichlorophenol			100	74.4		ug/L		74	37 - 144	1	40
2,4-Dichlorophenol			100	75.5		ug/L		75	39 - 135	1	40
2,4-Dimethylphenol			100	60.3		ug/L		60	32 - 119	5	40
2,4-Dinitrophenol			200	143		ug/L		72	1 - 191	1	40
2-Nitrophenol			100	72.3		ug/L		72	29 - 182	1	40
4,6-Dinitro-2-methylphenol			200	148		ug/L		74	1 - 181	1	40
4-Chloro-3-methylphenol			100	79.0		ug/L		79	22 - 147	1	40
4-Nitrophenol			200	153		ug/L		76	1 - 132	1	40
Pentachlorophenol			200	127		ug/L		63	14 - 176	5	40
2-Chlorophenol			100	72.4		ug/L		72	23 - 134	1	40
1,2,4-Trichlorobenzene			100	60.6		ug/L		61	44 - 142	3	40
1,2-Dichlorobenzene			100	61.9		ug/L		62	32 - 129	2	40
1,2-Diphenylhydrazine			100	78.5		ug/L		79	30 - 130	0	40
1,3-Dichlorobenzene			100	58.2		ug/L		58	1 - 172	2	40
1,4-Dichlorobenzene			100	58.8		ug/L		59	20 - 124	4	40
2-Chloronaphthalene			100	68.5		ug/L		69	60 - 118	2	40
2,6-Dinitrotoluene			100	72.9		ug/L		73	50 - 158	1	40

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 680-641401/10-A
Matrix: Water
Analysis Batch: 642132

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 641401

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4-Dinitrotoluene			100	74.7		ug/L		75	39 - 139	2	40
3,3'-Dichlorobenzidine			100	77.1		ug/L		77	1 - 262	2	40
4-Bromophenyl phenyl ether			100	73.2		ug/L		73	53 - 127	1	40
4-Chlorophenyl phenyl ether			100	70.3		ug/L		70	25 - 158	3	40
Acenaphthene			100	70.6		ug/L		71	47 - 145	2	40
Acenaphthylene			100	73.3		ug/L		73	33 - 145	2	40
Anthracene			100	72.2		ug/L		72	27 - 133	2	40
Benzidine			100	59.3	J	ug/L		59	1 - 200	11	40
Benzo[a]anthracene			100	73.0	M	ug/L		73	33 - 143	5	40
Benzo[a]pyrene			100	69.0		ug/L		69	17 - 163	5	40
Benzo[b]fluoranthene			100	75.1		ug/L		75	24 - 159	9	40
Benzo[g,h,i]perylene			100	71.9		ug/L		72	1 - 219	5	40
Benzo[k]fluoranthene			100	67.6	M	ug/L		68	11 - 162	2	40
Bis(2-chloroethoxy)methane			100	74.8		ug/L		75	33 - 184	2	40
Bis(2-chloroethyl)ether			100	75.6		ug/L		76	12 - 158	2	40
Bis(2-ethylhexyl) phthalate			100	82.3		ug/L		82	8 - 158	5	40
Butyl benzyl phthalate			100	83.6		ug/L		84	1 - 152	2	40
Chrysene			100	73.9	M	ug/L		74	17 - 168	3	40
Di-n-butyl phthalate			100	79.8		ug/L		80	1 - 118	4	40
Di-n-octyl phthalate			100	82.7		ug/L		83	4 - 146	6	40
Dibenz(a,h)anthracene			100	72.1		ug/L		72	1 - 227	4	40
Diethyl phthalate			100	77.1		ug/L		77	1 - 114	0	40
Dimethyl phthalate			100	75.1		ug/L		75	1 - 112	0	40
Fluoranthene			100	73.8		ug/L		74	26 - 137	5	40
Fluorene			100	70.6		ug/L		71	59 - 121	1	40
Hexachlorobenzene			100	69.3		ug/L		69	1 - 152	5	40
Hexachlorobutadiene			100	57.9		ug/L		58	24 - 116	2	40
Hexachlorocyclopentadiene			100	17.1	J	ug/L		17	1 - 200	15	40
Hexachloroethane			100	56.7		ug/L		57	40 - 113	3	40
Indeno[1,2,3-cd]pyrene			100	73.7		ug/L		74	1 - 171	5	40
Isophorone			100	80.8		ug/L		81	21 - 196	2	40
N-Nitrosodi-n-propylamine			100	78.1		ug/L		78	1 - 230	1	40
N-Nitrosodimethylamine			100	80.2		ug/L		80	10 - 150	1	40
N-Nitrosodiphenylamine			100	69.4		ug/L		69	10 - 150	2	40
Naphthalene			100	67.8		ug/L		68	21 - 133	3	40
Nitrobenzene			100	72.8		ug/L		73	35 - 180	2	40
Phenanthrene			100	73.9		ug/L		74	54 - 120	1	40
Pyrene			100	75.8		ug/L		76	52 - 115	1	40
bis (2-chloroisopropyl) ether			100	88.3		ug/L		88	36 - 166	1	40
Phenol			100	73.6		ug/L		74	5 - 112	1	40

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*68*		*34 - 132*
2-Fluorophenol (Surr)	*61*		*35 - 110*
Phenol-d5 (Surr)	*66*		*27 - 119*
2-Fluorobiphenyl (Surr)	*62*		*38 - 121*
Nitrobenzene-d5 (Surr)	*69*		*44 - 119*
Terphenyl-d14 (Surr)	*74*		*10 - 165*

Method: 8015C GRO - Gasoline Range Organics (GRO)

Lab Sample ID: MB 680-641093/6
Matrix: Water
Analysis Batch: 641093

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	0.050	U	0.10	0.050	mg/L			10/28/20 13:00	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene	*90*		*69 - 133*		*10/28/20 13:00*	*1*

Lab Sample ID: LCS 680-641093/4
Matrix: Water
Analysis Batch: 641093

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
C6-C10			0.500	0.486		mg/L		97	78 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
a,a,a-Trifluorotoluene	*103*		*69 - 133*

Lab Sample ID: LCSD 680-641093/5
Matrix: Water
Analysis Batch: 641093

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
C6-C10			0.500	0.482		mg/L		96	78 - 122	1	50

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
a,a,a-Trifluorotoluene	*100*		*69 - 133*

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)

Lab Sample ID: MB 680-640757/8-A
Matrix: Water
Analysis Batch: 640932

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 640757

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	0.050	U	0.10	0.050	mg/L		10/26/20 13:57	10/27/20 14:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl (Surr)	*68*		*43 - 130*	*10/26/20 13:57*	*10/27/20 14:49*	*1*

Lab Sample ID: LCS 680-640757/9-A
Matrix: Water
Analysis Batch: 640932

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 640757

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Diesel Range Organics [C10-C28]			1.00	0.727		mg/L		73	36 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl (Surr)	*75*		*43 - 130*

Method: 8015C - Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics) (Continued)

Lab Sample ID: LCSD 680-640757/10-A
Matrix: Water
Analysis Batch: 640932

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 640757

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]			1.00	0.643		mg/L		64	36 - 130	12	50

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl (Surr)	*68*		*43 - 130*

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Lab Sample ID: MB 680-641508/15-A
Matrix: Water
Analysis Batch: 641748

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 641508

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.0032	U	0.025	0.0032	ug/L		10/29/20 19:03	10/31/20 16:01	1
4,4'-DDE	0.0026	U	0.025	0.0026	ug/L		10/29/20 19:03	10/31/20 16:01	1
4,4'-DDT	0.0035	U	0.025	0.0035	ug/L		10/29/20 19:03	10/31/20 16:01	1
Aldrin	0.0036	U	0.025	0.0036	ug/L		10/29/20 19:03	10/31/20 16:01	1
alpha-BHC	0.0017	U	0.025	0.0017	ug/L		10/29/20 19:03	10/31/20 16:01	1
beta-BHC	0.0046	U	0.025	0.0046	ug/L		10/29/20 19:03	10/31/20 16:01	1
Chlordane (technical)	0.048	U M	0.25	0.048	ug/L		10/29/20 19:03	10/31/20 16:01	1
delta-BHC	0.0038	U	0.025	0.0038	ug/L		10/29/20 19:03	10/31/20 16:01	1
Dieldrin	0.0019	U	0.025	0.0019	ug/L		10/29/20 19:03	10/31/20 16:01	1
Endosulfan I	0.0018	U	0.025	0.0018	ug/L		10/29/20 19:03	10/31/20 16:01	1
Endosulfan II	0.0021	U	0.025	0.0021	ug/L		10/29/20 19:03	10/31/20 16:01	1
Endosulfan sulfate	0.0026	U	0.025	0.0026	ug/L		10/29/20 19:03	10/31/20 16:01	1
Endrin	0.0027	U	0.025	0.0027	ug/L		10/29/20 19:03	10/31/20 16:01	1
Endrin aldehyde	0.0031	U	0.025	0.0031	ug/L		10/29/20 19:03	10/31/20 16:01	1
Endrin ketone	0.0023	U	0.025	0.0023	ug/L		10/29/20 19:03	10/31/20 16:01	1
gamma-BHC (Lindane)	0.0018	U	0.025	0.0018	ug/L		10/29/20 19:03	10/31/20 16:01	1
Heptachlor	0.0036	U	0.025	0.0036	ug/L		10/29/20 19:03	10/31/20 16:01	1
Heptachlor epoxide	0.0019	U	0.025	0.0019	ug/L		10/29/20 19:03	10/31/20 16:01	1
Methoxychlor	0.0049	U	0.025	0.0049	ug/L		10/29/20 19:03	10/31/20 16:01	1
Toxaphene	0.20	U	2.5	0.20	ug/L		10/29/20 19:03	10/31/20 16:01	1
PCB-1221	0.095	U	0.50	0.095	ug/L		10/29/20 19:03	10/31/20 16:01	1
PCB-1242	0.095	U	0.50	0.095	ug/L		10/29/20 19:03	10/31/20 16:01	1
PCB-1254	0.055	U	0.50	0.055	ug/L		10/29/20 19:03	10/31/20 16:01	1
PCB-1260	0.060	U	0.50	0.060	ug/L		10/29/20 19:03	10/31/20 16:01	1
PCB-1016	0.090	U	0.50	0.090	ug/L		10/29/20 19:03	10/31/20 16:01	1
PCB-1248	0.11	U	0.50	0.11	ug/L		10/29/20 19:03	10/31/20 16:01	1
PCB-1232	0.13	U M	0.50	0.13	ug/L		10/29/20 19:03	10/31/20 16:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*37*		*14 - 130*	*10/29/20 19:03*	*10/31/20 16:01*	*1*
Tetrachloro-m-xylene	*90*		*44 - 124*	*10/29/20 19:03*	*10/31/20 16:01*	*1*

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: LCS 680-641508/16-A
Matrix: Water
Analysis Batch: 641748

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 641508

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
4,4'-DDD			0.0500	0.0615		ug/L		123	56 - 143		
4,4'-DDE			0.0500	0.0652		ug/L		130	57 - 135		
4,4'-DDT			0.0500	0.0678		ug/L		136	51 - 143		
Aldrin			0.0500	0.0528		ug/L		106	45 - 134		
alpha-BHC			0.0500	0.0612		ug/L		122	54 - 138		
beta-BHC			0.0500	0.0584		ug/L		117	56 - 136		
delta-BHC			0.0500	0.0657		ug/L		131	52 - 142		
Dieldrin			0.0500	0.0629		ug/L		126	60 - 136		
Endosulfan I			0.0500	0.0570		ug/L		114	62 - 126		
Endosulfan II			0.0500	0.0604		ug/L		121	52 - 135		
Endosulfan sulfate			0.0500	0.0640		ug/L		128	62 - 133		
Endrin			0.0500	0.0677		ug/L		135	60 - 138		
Endrin aldehyde			0.0500	0.0612		ug/L		122	51 - 132		
Endrin ketone			0.0500	0.0646		ug/L		129	58 - 134		
gamma-BHC (Lindane)			0.0500	0.0611		ug/L		122	59 - 134		
Heptachlor			0.0500	0.0474		ug/L		95	54 - 130		
Heptachlor epoxide			0.0500	0.0634		ug/L		127	61 - 133		
Methoxychlor			0.0500	0.0657		ug/L		131	54 - 145		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*64*		*14 - 130*
Tetrachloro-m-xylene	*105*		*44 - 124*

Lab Sample ID: LCS 680-641508/21-A
Matrix: Water
Analysis Batch: 641748

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 641508

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
PCB-1260			3.00	3.18		ug/L		106	45 - 134		
PCB-1016			3.00	2.56		ug/L		85	46 - 129		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*48*		*14 - 130*
Tetrachloro-m-xylene	*102*		*44 - 124*

Lab Sample ID: LCSD 680-641508/22-A
Matrix: Water
Analysis Batch: 641748

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 641508

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-1260			3.00	3.45		ug/L		115	45 - 134	8	30
PCB-1016			3.00	2.79		ug/L		93	46 - 129	9	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*53*		*14 - 130*
Tetrachloro-m-xylene	*107*		*44 - 124*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-641215/1-A
Matrix: Water
Analysis Batch: 641661

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 641215

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	24	U	200	24	ug/L		10/28/20 15:42	10/30/20 01:01	1
Cadmium	1.0	U	5.0	1.0	ug/L		10/28/20 15:42	10/30/20 01:01	1
Chromium	1.6	U	10	1.6	ug/L		10/28/20 15:42	10/30/20 01:01	1
Copper	1.8	U	20	1.8	ug/L		10/28/20 15:42	10/30/20 01:01	1
Lead	3.9	U	10	3.9	ug/L		10/28/20 15:42	10/30/20 01:01	1
Nickel	2.1	U	40	2.1	ug/L		10/28/20 15:42	10/30/20 01:01	1
Silver	0.60	U	10	0.60	ug/L		10/28/20 15:42	10/30/20 01:01	1
Zinc	7.0	U	20	7.0	ug/L		10/28/20 15:42	10/30/20 01:01	1

Lab Sample ID: LCS 680-641215/2-A
Matrix: Water
Analysis Batch: 641661

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 641215

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	5000	4830		ug/L		97	86 - 115
Barium	100	97.9		ug/L		98	88 - 113
Cadmium	50.0	48.9		ug/L		98	88 - 113
Chromium	100	99.4		ug/L		99	90 - 113
Copper	100	97.9		ug/L		98	86 - 114
Iron	5000	4930		ug/L		99	87 - 115
Lead	454	449		ug/L		99	86 - 113
Manganese	400	398		ug/L		99	90 - 114
Nickel	99.0	101		ug/L		102	88 - 113
Selenium	100	96.0		ug/L		96	83 - 114
Silver	50.0	48.8		ug/L		98	84 - 115
Zinc	100	100		ug/L		100	87 - 115

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-641119/1-A
Matrix: Water
Analysis Batch: 641311

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 641119

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		10/28/20 10:57	10/28/20 15:33	1

Lab Sample ID: LCS 680-641119/2-A
Matrix: Water
Analysis Batch: 641311

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 641119

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	100		ug/L		100	84 - 116

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 680-640802/1-A
Matrix: Water
Analysis Batch: 641187

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 640802

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	ug/L		10/26/20 14:46	10/27/20 19:35	1

Lab Sample ID: LCS 680-640802/2-A
Matrix: Water
Analysis Batch: 641187

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 640802

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	2.50	2.47		ug/L		99	80 - 124

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 680-641359/12-A
Matrix: Water
Analysis Batch: 641529

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 641359

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.0025	U	0.010	0.0025	mg/L		10/29/20 13:52	10/29/20 17:34	1

Lab Sample ID: LCS 680-641359/13-A
Matrix: Water
Analysis Batch: 641529

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 641359

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0500	0.0490		mg/L		98	83 - 116

Method: 9040C - pH

Lab Sample ID: LCS 680-640724/4
Matrix: Water
Analysis Batch: 640724

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.01	7.1		SU		101	63 - 158

Method: 9066 - Phenolics, Total Recoverable

Lab Sample ID: MB 280-515287/2-A
Matrix: Water
Analysis Batch: 515474

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 515287

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Phenols, Total	0.0068	U	0.020	0.0068	mg/L		11/03/20 17:35	11/04/20 19:49	1

Lab Sample ID: LCS 280-515287/1-A
Matrix: Water
Analysis Batch: 515474

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 515287

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Phenols, Total	0.201	0.204		mg/L		101	90 - 110

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190504-1

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-514394/1
Matrix: Water
Analysis Batch: 514394

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	1.1	U	4.0	1.1	mg/L			10/28/20 07:23	1

Lab Sample ID: LCS 280-514394/2
Matrix: Water
Analysis Batch: 514394

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Suspended Solids			100	102		mg/L		102	79 - 114		

Lab Sample ID: 680-190504-1 DU
Matrix: Water
Analysis Batch: 514394

Client Sample ID: DCL LEACHATE_FAL20
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Suspended Solids	10			11.2		mg/L				7	10

GC/MS VOA

Analysis Batch: 641993

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total/NA	Water	624	
MB 680-641993/8	Method Blank	Total/NA	Water	624	
LCS 680-641993/3	Lab Control Sample	Total/NA	Water	624	
LCSD 680-641993/4	Lab Control Sample Dup	Total/NA	Water	624	

Analysis Batch: 642552

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-2	TB2-FAL20	Total/NA	Water	8260B	
MB 680-642552/8	Method Blank	Total/NA	Water	8260B	
LCS 680-642552/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-642552/4	Lab Control Sample Dup	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 641401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total/NA	Water	625	
MB 680-641401/8-A	Method Blank	Total/NA	Water	625	
LCS 680-641401/9-A	Lab Control Sample	Total/NA	Water	625	
LCSD 680-641401/10-A	Lab Control Sample Dup	Total/NA	Water	625	

Analysis Batch: 642132

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total/NA	Water	625	641401
MB 680-641401/8-A	Method Blank	Total/NA	Water	625	641401
LCS 680-641401/9-A	Lab Control Sample	Total/NA	Water	625	641401
LCSD 680-641401/10-A	Lab Control Sample Dup	Total/NA	Water	625	641401

GC VOA

Analysis Batch: 641093

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total/NA	Water	8015C GRO	
MB 680-641093/6	Method Blank	Total/NA	Water	8015C GRO	
LCS 680-641093/4	Lab Control Sample	Total/NA	Water	8015C GRO	
LCSD 680-641093/5	Lab Control Sample Dup	Total/NA	Water	8015C GRO	

GC Semi VOA

Prep Batch: 640757

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total/NA	Water	3520C	
MB 680-640757/8-A	Method Blank	Total/NA	Water	3520C	
LCS 680-640757/9-A	Lab Control Sample	Total/NA	Water	3520C	
LCSD 680-640757/10-A	Lab Control Sample Dup	Total/NA	Water	3520C	

Analysis Batch: 640932

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total/NA	Water	8015C	640757
MB 680-640757/8-A	Method Blank	Total/NA	Water	8015C	640757
LCS 680-640757/9-A	Lab Control Sample	Total/NA	Water	8015C	640757
LCSD 680-640757/10-A	Lab Control Sample Dup	Total/NA	Water	8015C	640757

GC Semi VOA

Prep Batch: 641508

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total/NA	Water	3520C	
MB 680-641508/15-A	Method Blank	Total/NA	Water	3520C	
LCS 680-641508/16-A	Lab Control Sample	Total/NA	Water	3520C	
LCS 680-641508/21-A	Lab Control Sample	Total/NA	Water	3520C	
LCSD 680-641508/22-A	Lab Control Sample Dup	Total/NA	Water	3520C	

Analysis Batch: 641748

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total/NA	Water	8081B 8082A	641508
MB 680-641508/15-A	Method Blank	Total/NA	Water	8081B 8082A	641508
LCS 680-641508/16-A	Lab Control Sample	Total/NA	Water	8081B 8082A	641508
LCS 680-641508/21-A	Lab Control Sample	Total/NA	Water	8081B 8082A	641508
LCSD 680-641508/22-A	Lab Control Sample Dup	Total/NA	Water	8081B 8082A	641508

Metals

Prep Batch: 640802

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total/NA	Water	7470A	
MB 680-640802/1-A	Method Blank	Total/NA	Water	7470A	
LCS 680-640802/2-A	Lab Control Sample	Total/NA	Water	7470A	

Prep Batch: 641119

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total/NA	Water	3010A	
MB 680-641119/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-641119/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 641187

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total/NA	Water	7470A	640802
MB 680-640802/1-A	Method Blank	Total/NA	Water	7470A	640802
LCS 680-640802/2-A	Lab Control Sample	Total/NA	Water	7470A	640802

Prep Batch: 641215

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total Recoverable	Water	3005A	
MB 680-641215/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-641215/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 641311

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total/NA	Water	6020A	641119
MB 680-641119/1-A	Method Blank	Total/NA	Water	6020A	641119
LCS 680-641119/2-A	Lab Control Sample	Total/NA	Water	6020A	641119

Analysis Batch: 641661

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total Recoverable	Water	6010C	641215
MB 680-641215/1-A	Method Blank	Total Recoverable	Water	6010C	641215
LCS 680-641215/2-A	Lab Control Sample	Total Recoverable	Water	6010C	641215

QC Association Summary

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190504-1

General Chemistry

Analysis Batch: 514394

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total/NA	Water	SM 2540D	
MB 280-514394/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-514394/2	Lab Control Sample	Total/NA	Water	SM 2540D	
680-190504-1 DU	DCL LEACHATE_FAL20	Total/NA	Water	SM 2540D	

Prep Batch: 515287

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total/NA	Water	Distill/Phenol	
MB 280-515287/2-A	Method Blank	Total/NA	Water	Distill/Phenol	
LCS 280-515287/1-A	Lab Control Sample	Total/NA	Water	Distill/Phenol	

Analysis Batch: 515474

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total/NA	Water	9066	515287
MB 280-515287/2-A	Method Blank	Total/NA	Water	9066	515287
LCS 280-515287/1-A	Lab Control Sample	Total/NA	Water	9066	515287

Analysis Batch: 640724

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total/NA	Water	9040C	
LCS 680-640724/4	Lab Control Sample	Total/NA	Water	9040C	

Prep Batch: 641359

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total/NA	Water	9012B	
MB 680-641359/12-A	Method Blank	Total/NA	Water	9012B	
LCS 680-641359/13-A	Lab Control Sample	Total/NA	Water	9012B	

Analysis Batch: 641529

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-190504-1	DCL LEACHATE_FAL20	Total/NA	Water	9012B	641359
MB 680-641359/12-A	Method Blank	Total/NA	Water	9012B	641359
LCS 680-641359/13-A	Lab Control Sample	Total/NA	Water	9012B	641359

Lab Chronicle

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190504-1

Client Sample ID: DCL LEACHATE_FAL20

Lab Sample ID: 680-190504-1

Date Collected: 10/23/20 09:00

Matrix: Water

Date Received: 10/24/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	5 mL	5 mL	641993	11/03/20 17:42	P1C	TAL SAV
	Instrument ID: CMSAA									
Total/NA	Prep	625			1045.3 mL	1 mL	641401	10/29/20 14:18	EHS	TAL SAV
Total/NA	Analysis	625		1			642132	11/03/20 18:25	T1C	TAL SAV
	Instrument ID: CMSN									
Total/NA	Analysis	8015C GRO		1	5 mL	5 mL	641093	10/28/20 13:46	DBM	TAL SAV
	Instrument ID: CVGWFID1									
Total/NA	Prep	3520C			1041 mL	1 mL	640757	10/26/20 13:57	EHS	TAL SAV
Total/NA	Analysis	8015C		1			640932	10/27/20 17:16	JCK	TAL SAV
	Instrument ID: CSGAB1									
Total/NA	Prep	3520C			1049.4 mL	5 mL	641508	10/29/20 19:03	EHS	TAL SAV
Total/NA	Analysis	8081B 8082A		1			641748	10/31/20 18:24	JCK	TAL SAV
	Instrument ID: CSGJ									
Total Recoverable	Prep	3005A			50 mL	50 mL	641215	10/28/20 15:42	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			641661	10/30/20 02:29	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	641119	10/28/20 10:57	AJR	TAL SAV
Total/NA	Analysis	6020A		1			641311	10/28/20 16:13	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	640802	10/26/20 14:46	BCB	TAL SAV
Total/NA	Analysis	7470A		1			641187	10/27/20 21:18	BWR	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Prep	9012B			6 mL	6 mL	641359	10/29/20 13:52	CMR	TAL SAV
Total/NA	Analysis	9012B		1			641529	10/29/20 16:58	CMR	TAL SAV
	Instrument ID: KONELAB4									
Total/NA	Analysis	9040C		1			640724	10/26/20 10:00	DR	TAL SAV
	Instrument ID: MANTECH									
Total/NA	Prep	Distill/Phenol			50 mL	50 mL	515287	11/03/20 17:35	CKB	TAL DEN
Total/NA	Analysis	9066		1	100 mL	100 mL	515474	11/04/20 20:12	CKB	TAL DEN
	Instrument ID: WC_OI 3700									
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	514394	10/28/20 07:23	LEB	TAL DEN
	Instrument ID: NOEQUIP									

Client Sample ID: TB2-FAL20

Lab Sample ID: 680-190504-2

Date Collected: 10/23/20 00:00

Matrix: Water

Date Received: 10/24/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	642552	11/05/20 22:09	SMP	TAL SAV
	Instrument ID: CMSC									

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Accreditation/Certification Summary

Client: Seres Engineering & Services LLC
Job ID: 680-190504-1
Project/Site: Fort Devens - LTM

Laboratory: Eurofins TestAmerica, Savannah

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2463	09-22-22

Laboratory: Eurofins TestAmerica, Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-21

Method Summary

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens - LTM

Job ID: 680-190504-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL SAV
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL SAV
625	Semivolatile Organic Compounds (GC/MS)	40CFR136A	TAL SAV
8015C GRO	Gasoline Range Organics (GRO)	SW846	TAL SAV
8015C	Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)	SW846	TAL SAV
8081B 8082A	Organochlorine Pesticides & PCBs (GC)	SW846	TAL SAV
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
7470A	Mercury (CVAA)	SW846	TAL SAV
9012B	Cyanide, Total and/or Amenable	EPA	TAL SAV
9040C	pH	SW846	TAL SAV
9066	Phenolics, Total Recoverable	SW846	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL SAV
3010A	Preparation, Total Metals	SW846	TAL SAV
3520C	Liquid-Liquid Extraction (Continuous)	SW846	TAL SAV
5030B	Purge and Trap	SW846	TAL SAV
625	Liquid-Liquid Extraction	40CFR136A	TAL SAV
7470A	Preparation, Mercury	SW846	TAL SAV
9012B	Cyanide, Total and/or Amenable, Distillation	SW846	TAL SAV
Distill/Phenol	Distillation, Phenolics	None	TAL DEN

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater ", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.
EPA = US Environmental Protection Agency
None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

CHAIN-OF-CUSTODY RECORD

Seres-Arcadis JV
Nathan Mullens
669 Marina Drive, Suite B7, Charleston, SC 29492
(843) 478 0336, jennifer.singer@arcadis.com

COC #

Project Name: Former Fort Devens, Long Term Monitoring	Laboratory: Eurofins Environment Testing TestAmerica, Savannah, GA	Event: Seres-Arcadis JV, Long Term Monitoring, DCL Leach, Fall 2020
Project Number: DEVNS-LTM	Contact:	
WBS Code:	Ship to:	

Comments:
M8015D (A) = Diesel Range
SW6010C (F) = AL Cd Cr Cu Pb Ni Ag Zn
SW7470A (A) = Mercury
SW8081B (A) = Pesticides
SW9012B (A) = Cyanide
SW9065 (A) = Phenolics

Equipment:

Code	Matrix
WL	Leachate

Code	Container/Preservative
1	2x 1L amber glass bottles, Cool to <6degC
9	1x 250mL, plastic, HNO3, pH < 2; Cool < 6degC
21	2x 1 Liter, amber, glass, Cool to 0 - 6 degC
21	1x 2-1 Liter, amber, glass, Cool < 6degC
29	3x 40mL glass VOA Vials, Cool < 6degC; adjust pH <2
33	2x 1 liter, amber, glass, Cool < 6degC
45	1x 500mL plastic, Cool < 6degC
48	1x 250mL plastic, NaOH to pH >12; Cool < 6degC
11	1x 500mL, amber glass, H2SO4, Cool < 6degC

Boston #215

						Analytical Test Method	A2540D - TSS	E624 - VOCs	E625 - SVOCs	M8015D (A)	SW6010C (F)	SW6020A - As	SW7470A (A)	SW8081B (A)	SW8082A - PCB	SW9012B (A)	SW9040C - pH	SW9065 (A)				
Event: Seres-Arcadis JV, Long Term Monitoring, DCL Leach, Fall 2020							45	29	33	21	9	9	9	21	1	48	1	11				
	Sample ID	Matrix	Date	Time	Samp Init.														Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Cooler	Comments
1	DCL LEACHATE_FAL20	WL	10-23-20	900	DC		X	X	X	X	X	X	X	X	X	X	X	X	DCL LEACHATE	N1	0.00	0.00		

Turnaround Time: NA

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Trip Blank for VOC's



1.8/3.4/0.2/3.0/2.1/4.6(C)
2.1/3.7/0.5/3.3/2.4/4.9°c

Relinquished by: Dave Chrysene
Date 10-23-20
Time 1730
Received by: 10/23/20 17:30
DCL Leach_eCOC

Date 10/23/20
Time 18:00
Shipping Date:
Received by Laboratory: Bauder 10-24-20 0950
Condition:

11/17/2020 (Rev. 1)

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

SN8928

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Smith, Kathryn E	Carrier Tracking No(s):	COC No: 680-630635.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Kathy.Smith@Eurofinset.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Katahdin Analytical Services		Accreditations Required (See note): Dept. of Defense ELAP - A2LA; DoD - ANAB		Job #: 680-190504-1
Address: 600 Technology Way,	Due Date Requested: 11/4/2020			
City: Scarborough	TAT Requested (days):			
State, Zip: ME, 04074				
Phone:	PO #:			
Email:	WO #:			
Project Name: Fort Devens - LTM	Project #: 68023801			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Volatiles Method 624)/ Volatiles	SUB (Semivolatiles Method 625)/ Semivolatiles	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
DCL LEACHATE_FAL20 (680-190504-1)	10/23/20	09:00 Eastern		Water			X	X	4	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	C Bayuda	10-26-20 1119				
2					10/27/20 0935	KAS
3	J Hamme	10/28/20 1300	KAS	DLR	10-29-20 0950	SM
4						

Custody Seals Intact:	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
Δ Yes Δ No		2.5 / 2.2

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Seres Engineering & Services LLC

Job Number: 680-190504-1

Login Number: 190504

List Source: Eurofins TestAmerica, Savannah

List Number: 1

Creator: Banda, Christy S

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Seres Engineering & Services LLC

Job Number: 680-190504-1

Login Number: 190504
List Number: 2
Creator: O'Hara, Jake F

List Source: Eurofins TestAmerica, Denver
List Creation: 10/27/20 05:21 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-183912-1
Client Project/Site: JV, LTM, DCL Spring 2020

For:
Seres Engineering & Services LLC
669 Marina Drive
Suite B7
Charleston, South Carolina 29492

Attn: Nathan R Mullens

Kathryn Smith

Authorized for release by:
6/7/2020 3:27:00 PM

Kathryn Smith, Client Service Manager
(912)250-0275
kathy.smith@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
M	Manual integrated compound.
U	Undetected at the Limit of Detection.

HPLC/IC

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

General Chemistry

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM, DCL Spring 2020

Job ID: 680-183912-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-183912-1	DCL-DUP01-SPR20	Water	05/14/20 00:00	05/16/20 09:00	
680-183912-2	LFM-03-07-SPR20	Water	05/14/20 14:00	05/16/20 09:00	
680-183912-3	LFM-99-05A-SPR20	Water	05/14/20 16:00	05/16/20 09:00	
680-183912-4	LM-99-06ARP-SPR20	Water	05/14/20 16:00	05/16/20 09:00	

Job ID: 680-183912-1

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE
Client: Seres Engineering & Services LLC
Project: JV, LTM, DCL Spring 2020

Report Number: 680-183912-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT
The samples were received on 05/16/2020; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.0º C, 2.2º C and 3.4º C.

PESTICIDES AND PCBS
Samples DCL-DUP01-SPR20 (680-183912-1), LFM-03-07-SPR20 (680-183912-2), LFM-99-05A-SPR20 (680-183912-3) and LM-99-06ARP-SPR20 (680-183912-4) were analyzed for Pesticides and PCBs in accordance with EPA SW-846 Method 8081B_8082A. The samples were prepared on 05/21/2020 and analyzed on 06/04/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS (ICP)
Samples DCL-DUP01-SPR20 (680-183912-1), LFM-03-07-SPR20 (680-183912-2), LFM-99-05A-SPR20 (680-183912-3) and LM-99-06ARP-SPR20 (680-183912-4) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 05/26/2020 and analyzed on 05/27/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS
Samples DCL-DUP01-SPR20 (680-183912-1), LFM-03-07-SPR20 (680-183912-2), LFM-99-05A-SPR20 (680-183912-3) and LM-99-06ARP-SPR20 (680-183912-4) were analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 05/26/2020 and analyzed on 05/27/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY
Samples DCL-DUP01-SPR20 (680-183912-1), LFM-03-07-SPR20 (680-183912-2), LFM-99-05A-SPR20 (680-183912-3) and LM-99-06ARP-SPR20 (680-183912-4) were analyzed for mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared and analyzed on 05/18/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ALKALINITY
Samples DCL-DUP01-SPR20 (680-183912-1), LFM-03-07-SPR20 (680-183912-2), LFM-99-05A-SPR20 (680-183912-3) and LM-99-06ARP-SPR20 (680-183912-4) were analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 05/21/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS
Samples DCL-DUP01-SPR20 (680-183912-1), LFM-03-07-SPR20 (680-183912-2), LFM-99-05A-SPR20 (680-183912-3) and

Job ID: 680-183912-1 (Continued)

Laboratory: Eurofins TestAmerica, Savannah (Continued)

LM-99-06ARP-SPR20 (680-183912-4) were analyzed for total dissolved solids in accordance with SM 2540C. The samples were analyzed on 05/20/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NITRATE-NITRITE AS NITROGEN

Samples DCL-DUP01-SPR20 (680-183912-1), LFM-03-07-SPR20 (680-183912-2), LFM-99-05A-SPR20 (680-183912-3) and LM-99-06ARP-SPR20 (680-183912-4) were analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 05/21/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CHEMICAL OXYGEN DEMAND

Samples DCL-DUP01-SPR20 (680-183912-1), LFM-03-07-SPR20 (680-183912-2), LFM-99-05A-SPR20 (680-183912-3) and LM-99-06ARP-SPR20 (680-183912-4) were analyzed for chemical oxygen demand in accordance with EPA Method 410.4. The samples were analyzed on 05/20/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CYANIDE

Samples DCL-DUP01-SPR20 (680-183912-1), LFM-03-07-SPR20 (680-183912-2), LFM-99-05A-SPR20 (680-183912-3) and LM-99-06ARP-SPR20 (680-183912-4) were analyzed for cyanide in accordance with EPA SW-846 Method 9012B. The samples were prepared on 05/27/2020 and analyzed on 05/27/2020 and 05/28/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS BY ION CHROMATOGRAPHY (28 DAY)

Samples DCL-DUP01-SPR20 (680-183912-1), LFM-03-07-SPR20 (680-183912-2), LFM-99-05A-SPR20 (680-183912-3) and LM-99-06ARP-SPR20 (680-183912-4) were analyzed for Anions by Ion Chromatography (28 Day) in accordance with SW 846 9056A. The samples were analyzed on 05/24/2020 and 05/26/2020.

Samples LFM-03-07-SPR20 (680-183912-2)[5X] and LM-99-06ARP-SPR20 (680-183912-4)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample ID: DCL-DUP01-SPR20

Date Collected: 05/14/20 00:00
Date Received: 05/16/20 09:00

Lab Sample ID: 680-183912-1

Matrix: Water

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.0031	U	0.025	0.0031	ug/L		05/21/20 18:28	06/04/20 21:23	1
4,4'-DDE	0.0025	U M	0.025	0.0025	ug/L		05/21/20 18:28	06/04/20 21:23	1
4,4'-DDT	0.0035	U	0.025	0.0035	ug/L		05/21/20 18:28	06/04/20 21:23	1
Aldrin	0.0036	U	0.025	0.0036	ug/L		05/21/20 18:28	06/04/20 21:23	1
alpha-BHC	0.0017	U	0.025	0.0017	ug/L		05/21/20 18:28	06/04/20 21:23	1
beta-BHC	0.0045	U	0.025	0.0045	ug/L		05/21/20 18:28	06/04/20 21:23	1
Chlordane (technical)	0.047	U M	0.25	0.047	ug/L		05/21/20 18:28	06/04/20 21:23	1
delta-BHC	0.0037	U	0.025	0.0037	ug/L		05/21/20 18:28	06/04/20 21:23	1
Dieldrin	0.0019	U	0.025	0.0019	ug/L		05/21/20 18:28	06/04/20 21:23	1
Endosulfan I	0.0017	U	0.025	0.0017	ug/L		05/21/20 18:28	06/04/20 21:23	1
Endosulfan II	0.0021	U	0.025	0.0021	ug/L		05/21/20 18:28	06/04/20 21:23	1
Endosulfan sulfate	0.0025	U	0.025	0.0025	ug/L		05/21/20 18:28	06/04/20 21:23	1
Endrin	0.0026	U	0.025	0.0026	ug/L		05/21/20 18:28	06/04/20 21:23	1
Endrin aldehyde	0.0030	U	0.025	0.0030	ug/L		05/21/20 18:28	06/04/20 21:23	1
Endrin ketone	0.0023	U	0.025	0.0023	ug/L		05/21/20 18:28	06/04/20 21:23	1
gamma-BHC (Lindane)	0.0018	U	0.025	0.0018	ug/L		05/21/20 18:28	06/04/20 21:23	1
Heptachlor	0.0035	U	0.025	0.0035	ug/L		05/21/20 18:28	06/04/20 21:23	1
Heptachlor epoxide	0.0018	U	0.025	0.0018	ug/L		05/21/20 18:28	06/04/20 21:23	1
Methoxychlor	0.0049	U	0.025	0.0049	ug/L		05/21/20 18:28	06/04/20 21:23	1
Toxaphene	0.20	U	2.5	0.20	ug/L		05/21/20 18:28	06/04/20 21:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*31*		*14 - 130*	*05/21/20 18:28*	*06/04/20 21:23*	*1*
Tetrachloro-m-xylene	*45*		*44 - 124*	*05/21/20 18:28*	*06/04/20 21:23*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**130**		0.50	0.20	mg/L			05/24/20 00:56	1
Sulfate	**16**		1.0	0.40	mg/L			05/24/20 00:56	1

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**11**		10	1.7	ug/L		05/26/20 11:14	05/27/20 17:11	1
Cadmium	1.0	U	5.0	1.0	ug/L		05/26/20 11:14	05/27/20 17:11	1
Chromium	1.6	U	10	1.6	ug/L		05/26/20 11:14	05/27/20 17:11	1
Copper	1.8	U	20	1.8	ug/L		05/26/20 11:14	05/27/20 17:11	1
Iron	17	U	50	17	ug/L		05/26/20 11:14	05/27/20 17:11	1
Lead	3.9	U	10	3.9	ug/L		05/26/20 11:14	05/27/20 17:11	1
Manganese	1.0	U	10	1.0	ug/L		05/26/20 11:14	05/27/20 17:11	1
Selenium	9.9	U	20	9.9	ug/L		05/26/20 11:14	05/27/20 17:11	1
Silver	0.60	U	10	0.60	ug/L		05/26/20 11:14	05/27/20 17:11	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		05/26/20 13:18	05/27/20 14:07	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.089**	**J**	0.20	0.080	ug/L		05/18/20 12:46	05/18/20 21:47	1

Client Sample ID: DCL-DUP01-SPR20

Lab Sample ID: 680-183912-1
Date Collected: 05/14/20 00:00
Matrix: Water
Date Received: 05/16/20 09:00

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate/Nitrite-N	**0.47**		0.10	0.019	mg/L			05/21/20 20:07	1
Chemical Oxygen Demand	8.7	U	20	8.7	mg/L			05/20/20 10:33	1
Cyanide, Total	**0.0067**	**J**	0.010	0.0025	mg/L		05/27/20 10:49	05/28/20 14:43	1
Alkalinity	**92**		10	3.1	mg/L			05/21/20 11:05	1
Total Dissolved Solids (TDS)	**320**		10	4.7	mg/L			05/20/20 16:21	1

Client Sample ID: LFM-03-07-SPR20

Lab Sample ID: 680-183912-2
Date Collected: 05/14/20 14:00
Matrix: Water
Date Received: 05/16/20 09:00

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.0030	U	0.024	0.0030	ug/L		05/21/20 18:28	06/04/20 21:51	1
4,4'-DDE	0.0024	U M	0.024	0.0024	ug/L		05/21/20 18:28	06/04/20 21:51	1
4,4'-DDT	0.0033	U	0.024	0.0033	ug/L		05/21/20 18:28	06/04/20 21:51	1
Aldrin	0.0034	U	0.024	0.0034	ug/L		05/21/20 18:28	06/04/20 21:51	1
alpha-BHC	0.0016	U	0.024	0.0016	ug/L		05/21/20 18:28	06/04/20 21:51	1
beta-BHC	0.0043	U	0.024	0.0043	ug/L		05/21/20 18:28	06/04/20 21:51	1
Chlordane (technical)	0.045	U M	0.24	0.045	ug/L		05/21/20 18:28	06/04/20 21:51	1
delta-BHC	0.0036	U	0.024	0.0036	ug/L		05/21/20 18:28	06/04/20 21:51	1
Dieldrin	0.0018	U	0.024	0.0018	ug/L		05/21/20 18:28	06/04/20 21:51	1
Endosulfan I	0.0017	U	0.024	0.0017	ug/L		05/21/20 18:28	06/04/20 21:51	1
Endosulfan II	0.0020	U	0.024	0.0020	ug/L		05/21/20 18:28	06/04/20 21:51	1
Endosulfan sulfate	0.0024	U	0.024	0.0024	ug/L		05/21/20 18:28	06/04/20 21:51	1
Endrin	0.0025	U	0.024	0.0025	ug/L		05/21/20 18:28	06/04/20 21:51	1
Endrin aldehyde	0.0029	U	0.024	0.0029	ug/L		05/21/20 18:28	06/04/20 21:51	1
Endrin ketone	0.0022	U	0.024	0.0022	ug/L		05/21/20 18:28	06/04/20 21:51	1
gamma-BHC (Lindane)	0.0017	U	0.024	0.0017	ug/L		05/21/20 18:28	06/04/20 21:51	1
Heptachlor	0.0034	U M	0.024	0.0034	ug/L		05/21/20 18:28	06/04/20 21:51	1
Heptachlor epoxide	0.0018	U	0.024	0.0018	ug/L		05/21/20 18:28	06/04/20 21:51	1
Methoxychlor	0.0046	U	0.024	0.0046	ug/L		05/21/20 18:28	06/04/20 21:51	1
Toxaphene	0.19	U	2.4	0.19	ug/L		05/21/20 18:28	06/04/20 21:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*75*		*14 - 130*	*05/21/20 18:28*	*06/04/20 21:51*	*1*
Tetrachloro-m-xylene	*86*		*44 - 124*	*05/21/20 18:28*	*06/04/20 21:51*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**29**		1.0	0.40	mg/L			05/24/20 01:09	1

Method: 9056A - Anions, Ion Chromatography - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**240**		2.5	1.0	mg/L			05/26/20 23:13	5

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**14**		10	1.7	ug/L		05/26/20 11:14	05/27/20 17:16	1
Cadmium	1.0	U	5.0	1.0	ug/L		05/26/20 11:14	05/27/20 17:16	1
Chromium	1.6	U	10	1.6	ug/L		05/26/20 11:14	05/27/20 17:16	1
Copper	1.8	U	20	1.8	ug/L		05/26/20 11:14	05/27/20 17:16	1

Client Sample ID: LFM-03-07-SPR20

Lab Sample ID: 680-183912-2

Date Collected: 05/14/20 14:00
Matrix: Water
Date Received: 05/16/20 09:00

Method: 6010C - Metals (ICP) - Total Recoverable (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	17	U	50	17	ug/L		05/26/20 11:14	05/27/20 17:16	1
Lead	3.9	U	10	3.9	ug/L		05/26/20 11:14	05/27/20 17:16	1
Manganese	**1.3**	**J**	10	1.0	ug/L		05/26/20 11:14	05/27/20 17:16	1
Selenium	9.9	U	20	9.9	ug/L		05/26/20 11:14	05/27/20 17:16	1
Silver	0.60	U	10	0.60	ug/L		05/26/20 11:14	05/27/20 17:16	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		05/26/20 13:18	05/27/20 14:12	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.096**	**J**	0.20	0.080	ug/L		05/18/20 12:46	05/18/20 21:51	1

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate/Nitrite-N	**1.7**		0.10	0.019	mg/L			05/21/20 20:05	1
Chemical Oxygen Demand	8.7	U	20	8.7	mg/L			05/20/20 10:33	1
Cyanide, Total	**0.0059**	**J**	0.010	0.0025	mg/L		05/27/20 10:49	05/28/20 14:43	1
Alkalinity	**93**		10	3.1	mg/L			05/21/20 11:09	1
Total Dissolved Solids (TDS)	**490**		10	4.7	mg/L			05/20/20 16:21	1

Client Sample ID: LFM-99-05A-SPR20

Lab Sample ID: 680-183912-3

Date Collected: 05/14/20 16:00
Matrix: Water
Date Received: 05/16/20 09:00

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.0032	U	0.025	0.0032	ug/L		05/21/20 18:28	06/04/20 22:06	1
4,4'-DDE	0.0026	U M	0.025	0.0026	ug/L		05/21/20 18:28	06/04/20 22:06	1
4,4'-DDT	0.0035	U	0.025	0.0035	ug/L		05/21/20 18:28	06/04/20 22:06	1
Aldrin	0.0037	U	0.025	0.0037	ug/L		05/21/20 18:28	06/04/20 22:06	1
alpha-BHC	0.0017	U	0.025	0.0017	ug/L		05/21/20 18:28	06/04/20 22:06	1
beta-BHC	0.0046	U	0.025	0.0046	ug/L		05/21/20 18:28	06/04/20 22:06	1
Chlordane (technical)	0.048	U M	0.25	0.048	ug/L		05/21/20 18:28	06/04/20 22:06	1
delta-BHC	0.0038	U	0.025	0.0038	ug/L		05/21/20 18:28	06/04/20 22:06	1
Dieldrin	0.0019	U	0.025	0.0019	ug/L		05/21/20 18:28	06/04/20 22:06	1
Endosulfan I	0.0018	U	0.025	0.0018	ug/L		05/21/20 18:28	06/04/20 22:06	1
Endosulfan II	0.0021	U	0.025	0.0021	ug/L		05/21/20 18:28	06/04/20 22:06	1
Endosulfan sulfate	0.0026	U	0.025	0.0026	ug/L		05/21/20 18:28	06/04/20 22:06	1
Endrin	0.0027	U	0.025	0.0027	ug/L		05/21/20 18:28	06/04/20 22:06	1
Endrin aldehyde	0.0031	U	0.025	0.0031	ug/L		05/21/20 18:28	06/04/20 22:06	1
Endrin ketone	0.0023	U	0.025	0.0023	ug/L		05/21/20 18:28	06/04/20 22:06	1
gamma-BHC (Lindane)	0.0018	U	0.025	0.0018	ug/L		05/21/20 18:28	06/04/20 22:06	1
Heptachlor	0.0036	U M	0.025	0.0036	ug/L		05/21/20 18:28	06/04/20 22:06	1
Heptachlor epoxide	0.0019	U	0.025	0.0019	ug/L		05/21/20 18:28	06/04/20 22:06	1
Methoxychlor	0.0050	U	0.025	0.0050	ug/L		05/21/20 18:28	06/04/20 22:06	1
Toxaphene	0.20	U	2.5	0.20	ug/L		05/21/20 18:28	06/04/20 22:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*47*		*14 - 130*	*05/21/20 18:28*	*06/04/20 22:06*	*1*

Client Sample ID: LFM-99-05A-SPR20

Lab Sample ID: 680-183912-3

Date Collected: 05/14/20 16:00

Matrix: Water

Date Received: 05/16/20 09:00

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*65*		*44 - 124*	*05/21/20 18:28*	*06/04/20 22:06*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**130**		0.50	0.20	mg/L			05/24/20 01:22	1
Sulfate	**16**		1.0	0.40	mg/L			05/24/20 01:22	1

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**11**		10	1.7	ug/L		05/26/20 11:14	05/27/20 16:58	1
Cadmium	1.0	U	5.0	1.0	ug/L		05/26/20 11:14	05/27/20 16:58	1
Chromium	1.6	U	10	1.6	ug/L		05/26/20 11:14	05/27/20 16:58	1
Copper	1.8	U	20	1.8	ug/L		05/26/20 11:14	05/27/20 16:58	1
Iron	17	U	50	17	ug/L		05/26/20 11:14	05/27/20 16:58	1
Lead	**4.5**	**J**	10	3.9	ug/L		05/26/20 11:14	05/27/20 16:58	1
Manganese	**1.7**	**J**	10	1.0	ug/L		05/26/20 11:14	05/27/20 16:58	1
Selenium	9.9	U	20	9.9	ug/L		05/26/20 11:14	05/27/20 16:58	1
Silver	0.60	U	10	0.60	ug/L		05/26/20 11:14	05/27/20 16:58	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		05/26/20 13:18	05/27/20 14:09	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.094**	**J**	0.20	0.080	ug/L		05/18/20 12:46	05/18/20 21:56	1

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate/Nitrite-N	**0.44**		0.10	0.019	mg/L			05/21/20 20:03	1
Chemical Oxygen Demand	8.7	U	20	8.7	mg/L			05/20/20 10:33	1
Cyanide, Total	0.0025	U	0.010	0.0025	mg/L		05/27/20 10:49	05/27/20 15:05	1
Alkalinity	**92**		10	3.1	mg/L			05/21/20 11:14	1
Total Dissolved Solids (TDS)	**350**		10	4.7	mg/L			05/20/20 16:21	1

Client Sample ID: LM-99-06ARP-SPR20

Lab Sample ID: 680-183912-4

Date Collected: 05/14/20 16:00

Matrix: Water

Date Received: 05/16/20 09:00

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.0030	U	0.024	0.0030	ug/L		05/21/20 18:28	06/04/20 22:20	1
4,4'-DDE	0.0024	U	0.024	0.0024	ug/L		05/21/20 18:28	06/04/20 22:20	1
4,4'-DDT	0.0033	U	0.024	0.0033	ug/L		05/21/20 18:28	06/04/20 22:20	1
Aldrin	0.0034	U	0.024	0.0034	ug/L		05/21/20 18:28	06/04/20 22:20	1
alpha-BHC	0.0016	U	0.024	0.0016	ug/L		05/21/20 18:28	06/04/20 22:20	1
beta-BHC	0.0043	U	0.024	0.0043	ug/L		05/21/20 18:28	06/04/20 22:20	1
Chlordane (technical)	0.045	U M	0.24	0.045	ug/L		05/21/20 18:28	06/04/20 22:20	1
delta-BHC	0.0036	U	0.024	0.0036	ug/L		05/21/20 18:28	06/04/20 22:20	1
Dieldrin	0.0018	U	0.024	0.0018	ug/L		05/21/20 18:28	06/04/20 22:20	1
Endosulfan I	0.0017	U	0.024	0.0017	ug/L		05/21/20 18:28	06/04/20 22:20	1

Client Sample ID: LM-99-06ARP-SPR20

Date Collected: 05/14/20 16:00
Date Received: 05/16/20 09:00

Lab Sample ID: 680-183912-4

Matrix: Water

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Endosulfan II	0.0020	U	0.024	0.0020	ug/L		05/21/20 18:28	06/04/20 22:20	1
Endosulfan sulfate	0.0024	U	0.024	0.0024	ug/L		05/21/20 18:28	06/04/20 22:20	1
Endrin	0.0025	U	0.024	0.0025	ug/L		05/21/20 18:28	06/04/20 22:20	1
Endrin aldehyde	0.0029	U	0.024	0.0029	ug/L		05/21/20 18:28	06/04/20 22:20	1
Endrin ketone	0.0022	U	0.024	0.0022	ug/L		05/21/20 18:28	06/04/20 22:20	1
gamma-BHC (Lindane)	0.0017	U	0.024	0.0017	ug/L		05/21/20 18:28	06/04/20 22:20	1
Heptachlor	0.0034	U	0.024	0.0034	ug/L		05/21/20 18:28	06/04/20 22:20	1
Heptachlor epoxide	0.0018	U	0.024	0.0018	ug/L		05/21/20 18:28	06/04/20 22:20	1
Methoxychlor	0.0046	U	0.024	0.0046	ug/L		05/21/20 18:28	06/04/20 22:20	1
Toxaphene	0.19	U	2.4	0.19	ug/L		05/21/20 18:28	06/04/20 22:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*49*		*14 - 130*	*05/21/20 18:28*	*06/04/20 22:20*	*1*
Tetrachloro-m-xylene	*47*		*44 - 124*	*05/21/20 18:28*	*06/04/20 22:20*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**27**		1.0	0.40	mg/L			05/24/20 01:35	1

Method: 9056A - Anions, Ion Chromatography - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**310**		2.5	1.0	mg/L			05/26/20 23:26	5

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**6.0**	**J**	10	1.7	ug/L		05/26/20 11:14	05/27/20 17:07	1
Cadmium	1.0	U	5.0	1.0	ug/L		05/26/20 11:14	05/27/20 17:07	1
Chromium	1.6	U	10	1.6	ug/L		05/26/20 11:14	05/27/20 17:07	1
Copper	1.8	U	20	1.8	ug/L		05/26/20 11:14	05/27/20 17:07	1
Iron	17	U	50	17	ug/L		05/26/20 11:14	05/27/20 17:07	1
Lead	3.9	U	10	3.9	ug/L		05/26/20 11:14	05/27/20 17:07	1
Manganese	1.0	U	10	1.0	ug/L		05/26/20 11:14	05/27/20 17:07	1
Selenium	9.9	U	20	9.9	ug/L		05/26/20 11:14	05/27/20 17:07	1
Silver	0.60	U	10	0.60	ug/L		05/26/20 11:14	05/27/20 17:07	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		05/26/20 13:18	05/27/20 14:04	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.089**	**J**	0.20	0.080	ug/L		05/18/20 12:46	05/18/20 22:00	1

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate/Nitrite-N	**1.3**		0.10	0.019	mg/L			05/21/20 20:01	1
Chemical Oxygen Demand	8.7	U	20	8.7	mg/L			05/20/20 10:33	1
Cyanide, Total	**0.0026**	**J**	0.010	0.0025	mg/L		05/27/20 10:49	05/27/20 15:05	1
Alkalinity	**91**		10	3.1	mg/L			05/21/20 11:19	1
Total Dissolved Solids (TDS)	**630**		10	4.7	mg/L			05/20/20 16:21	1

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Lab Sample ID: MB 680-619600/15-A
Matrix: Water
Analysis Batch: 621247

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 619600

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.0032	U	0.025	0.0032	ug/L		05/21/20 18:28	06/04/20 15:10	1
4,4'-DDE	0.0026	U	0.025	0.0026	ug/L		05/21/20 18:28	06/04/20 15:10	1
4,4'-DDT	0.0035	U	0.025	0.0035	ug/L		05/21/20 18:28	06/04/20 15:10	1
Aldrin	0.0036	U	0.025	0.0036	ug/L		05/21/20 18:28	06/04/20 15:10	1
alpha-BHC	0.0017	U	0.025	0.0017	ug/L		05/21/20 18:28	06/04/20 15:10	1
beta-BHC	0.0046	U	0.025	0.0046	ug/L		05/21/20 18:28	06/04/20 15:10	1
Chlordane (technical)	0.048	U M	0.25	0.048	ug/L		05/21/20 18:28	06/04/20 15:10	1
delta-BHC	0.0038	U	0.025	0.0038	ug/L		05/21/20 18:28	06/04/20 15:10	1
Dieldrin	0.0019	U	0.025	0.0019	ug/L		05/21/20 18:28	06/04/20 15:10	1
Endosulfan I	0.0018	U	0.025	0.0018	ug/L		05/21/20 18:28	06/04/20 15:10	1
Endosulfan II	0.0021	U	0.025	0.0021	ug/L		05/21/20 18:28	06/04/20 15:10	1
Endosulfan sulfate	0.0026	U	0.025	0.0026	ug/L		05/21/20 18:28	06/04/20 15:10	1
Endrin	0.0027	U	0.025	0.0027	ug/L		05/21/20 18:28	06/04/20 15:10	1
Endrin aldehyde	0.0031	U	0.025	0.0031	ug/L		05/21/20 18:28	06/04/20 15:10	1
Endrin ketone	0.0023	U	0.025	0.0023	ug/L		05/21/20 18:28	06/04/20 15:10	1
gamma-BHC (Lindane)	0.0018	U	0.025	0.0018	ug/L		05/21/20 18:28	06/04/20 15:10	1
Heptachlor	0.0036	U	0.025	0.0036	ug/L		05/21/20 18:28	06/04/20 15:10	1
Heptachlor epoxide	0.0019	U	0.025	0.0019	ug/L		05/21/20 18:28	06/04/20 15:10	1
Methoxychlor	0.0049	U	0.025	0.0049	ug/L		05/21/20 18:28	06/04/20 15:10	1
Toxaphene	0.20	U	2.5	0.20	ug/L		05/21/20 18:28	06/04/20 15:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*71*		*14 - 130*	*05/21/20 18:28*	*06/04/20 15:10*	*1*
Tetrachloro-m-xylene	*71*		*44 - 124*	*05/21/20 18:28*	*06/04/20 15:10*	*1*

Lab Sample ID: LCS 680-619600/16-A
Matrix: Water
Analysis Batch: 621247

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 619600

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	0.0500	0.0564		ug/L		113	56 - 143
4,4'-DDE	0.0500	0.0434		ug/L		87	57 - 135
4,4'-DDT	0.0500	0.0550		ug/L		110	51 - 143
Aldrin	0.0500	0.0340		ug/L		68	45 - 134
alpha-BHC	0.0500	0.0547		ug/L		109	54 - 138
beta-BHC	0.0500	0.0532		ug/L		106	56 - 136
delta-BHC	0.0500	0.0600		ug/L		120	52 - 142
Dieldrin	0.0500	0.0584		ug/L		117	60 - 136
Endosulfan I	0.0500	0.0482		ug/L		96	62 - 126
Endosulfan II	0.0500	0.0552		ug/L		110	52 - 135
Endosulfan sulfate	0.0500	0.0616		ug/L		123	62 - 133
Endrin	0.0500	0.0522		ug/L		104	60 - 138
Endrin aldehyde	0.0500	0.0600		ug/L		120	51 - 132
Endrin ketone	0.0500	0.0651		ug/L		130	58 - 134
gamma-BHC (Lindane)	0.0500	0.0547		ug/L		109	59 - 134
Heptachlor	0.0500	0.0370		ug/L		74	54 - 130
Heptachlor epoxide	0.0500	0.0547		ug/L		109	61 - 133
Methoxychlor	0.0500	0.0595		ug/L		119	54 - 145

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: LCS 680-619600/16-A
Matrix: Water
Analysis Batch: 621247

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 619600

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*57*		*14 - 130*
Tetrachloro-m-xylene	*71*		*44 - 124*

Lab Sample ID: LCSD 680-619600/17-A
Matrix: Water
Analysis Batch: 621247

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 619600

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4,4'-DDD			0.0500	0.0563		ug/L		113	56 - 143	0	30
4,4'-DDE			0.0500	0.0445		ug/L		89	57 - 135	3	30
4,4'-DDT			0.0500	0.0581		ug/L		116	51 - 143	6	30
Aldrin			0.0500	0.0328		ug/L		66	45 - 134	3	30
alpha-BHC			0.0500	0.0521		ug/L		104	54 - 138	5	30
beta-BHC			0.0500	0.0524		ug/L		105	56 - 136	2	30
delta-BHC			0.0500	0.0581		ug/L		116	52 - 142	3	30
Dieldrin			0.0500	0.0577		ug/L		115	60 - 136	1	30
Endosulfan I			0.0500	0.0472		ug/L		94	62 - 126	2	30
Endosulfan II			0.0500	0.0529		ug/L		106	52 - 135	4	30
Endosulfan sulfate			0.0500	0.0590		ug/L		118	62 - 133	4	30
Endrin			0.0500	0.0565		ug/L		113	60 - 138	8	30
Endrin aldehyde			0.0500	0.0561		ug/L		112	51 - 132	7	30
Endrin ketone			0.0500	0.0604		ug/L		121	58 - 134	8	30
gamma-BHC (Lindane)			0.0500	0.0519		ug/L		104	59 - 134	5	30
Heptachlor			0.0500	0.0355		ug/L		71	54 - 130	4	30
Heptachlor epoxide			0.0500	0.0537		ug/L		107	61 - 133	2	30
Methoxychlor			0.0500	0.0586		ug/L		117	54 - 145	1	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*61*		*14 - 130*
Tetrachloro-m-xylene	*68*		*44 - 124*

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 680-619811/33
Matrix: Water
Analysis Batch: 619811

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.20	U	0.50	0.20	mg/L			05/23/20 23:39	1
Sulfate	0.40	U	1.0	0.40	mg/L			05/23/20 23:39	1

Lab Sample ID: LCS 680-619811/34
Matrix: Water
Analysis Batch: 619811

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			10.0	10.1		mg/L		101	87 - 111		
Sulfate			10.0	9.86		mg/L		99	87 - 112		

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCSD 680-619811/35
Matrix: Water
Analysis Batch: 619811

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride			10.0	10.1		mg/L		101	87 - 111	0	15
Sulfate			10.0	9.89		mg/L		99	87 - 112	0	15

Lab Sample ID: MB 680-619964/33
Matrix: Water
Analysis Batch: 619964

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.20	U	0.50	0.20	mg/L			05/26/20 21:29	1
Sulfate	0.40	U	1.0	0.40	mg/L			05/26/20 21:29	1

Lab Sample ID: LCS 680-619964/34
Matrix: Water
Analysis Batch: 619964

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			10.0	9.98		mg/L		100	87 - 111		
Sulfate			10.0	9.69		mg/L		97	87 - 112		

Lab Sample ID: LCSD 680-619964/35
Matrix: Water
Analysis Batch: 619964

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride			10.0	9.98		mg/L		100	87 - 111	0	15
Sulfate			10.0	9.76		mg/L		98	87 - 112	1	15

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-619912/1-A
Matrix: Water
Analysis Batch: 620265

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 619912

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	1.7	U	10	1.7	ug/L		05/26/20 11:14	05/27/20 16:16	1
Cadmium	1.0	U	5.0	1.0	ug/L		05/26/20 11:14	05/27/20 16:16	1
Chromium	1.6	U	10	1.6	ug/L		05/26/20 11:14	05/27/20 16:16	1
Copper	1.8	U	20	1.8	ug/L		05/26/20 11:14	05/27/20 16:16	1
Iron	17	U	50	17	ug/L		05/26/20 11:14	05/27/20 16:16	1
Lead	3.9	U	10	3.9	ug/L		05/26/20 11:14	05/27/20 16:16	1
Manganese	1.0	U	10	1.0	ug/L		05/26/20 11:14	05/27/20 16:16	1
Selenium	9.9	U	20	9.9	ug/L		05/26/20 11:14	05/27/20 16:16	1
Silver	0.60	U	10	0.60	ug/L		05/26/20 11:14	05/27/20 16:16	1

Lab Sample ID: LCS 680-619912/2-A
Matrix: Water
Analysis Batch: 620265

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 619912

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Barium			100	102		ug/L		102	88 - 113		

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 680-619912/2-A
Matrix: Water
Analysis Batch: 620265

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 619912

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	50.0	52.3		ug/L		105	88 - 113
Chromium	100	98.9		ug/L		99	90 - 113
Copper	100	98.8		ug/L		99	86 - 114
Iron	5010	4840		ug/L		97	87 - 115
Lead	454	438		ug/L		96	86 - 113
Manganese	400	394		ug/L		98	90 - 114
Selenium	100	96.0		ug/L		96	83 - 114
Silver	50.0	50.6		ug/L		101	84 - 115

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-619931/1-A
Matrix: Water
Analysis Batch: 620235

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 619931

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		05/26/20 13:18	05/27/20 13:24	1

Lab Sample ID: LCS 680-619931/2-A
Matrix: Water
Analysis Batch: 620235

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 619931

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	102		ug/L		102	84 - 116

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 680-619076/1-A
Matrix: Water
Analysis Batch: 619198

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 619076

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	ug/L		05/18/20 12:46	05/18/20 20:20	1

Lab Sample ID: LCS 680-619076/2-A
Matrix: Water
Analysis Batch: 619198

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 619076

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	2.50	2.60		ug/L		104	80 - 124

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 280-495813/60
Matrix: Water
Analysis Batch: 495813

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate/Nitrite-N	0.019	U	0.10	0.019	mg/L			05/21/20 18:55	1

Method: 353.2 - Nitrogen, Nitrate-Nitrite (Continued)

Lab Sample ID: LCS 280-495813/59
Matrix: Water
Analysis Batch: 495813

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Nitrate/Nitrite-N			5.00	4.53		mg/L		91	90 - 110		

Method: 410.4 - COD

Lab Sample ID: MB 280-495553/5
Matrix: Water
Analysis Batch: 495553

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	8.7	U	20	8.7	mg/L			05/20/20 10:33	1

Lab Sample ID: LCS 280-495553/3
Matrix: Water
Analysis Batch: 495553

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chemical Oxygen Demand			100	93.4		mg/L		93	90 - 110		

Lab Sample ID: LCSD 280-495553/4
Matrix: Water
Analysis Batch: 495553

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chemical Oxygen Demand			100	95.6		mg/L		96	90 - 110	2	11

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 680-620066/12-A
Matrix: Water
Analysis Batch: 620335

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 620066

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.0025	U	0.010	0.0025	mg/L		05/27/20 10:49	05/28/20 14:43	1

Lab Sample ID: LCS 680-620066/13-A
Matrix: Water
Analysis Batch: 620335

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 620066

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Total			0.0500	0.0460		mg/L		92	83 - 116		

Lab Sample ID: MB 680-620069/1-A
Matrix: Water
Analysis Batch: 620335

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 620069

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.0025	U	0.010	0.0025	mg/L		05/27/20 10:49	05/28/20 14:43	1

Method: 9012B - Cyanide, Total and/or Amenable (Continued)

Lab Sample ID: LCS 680-620069/2-A
Matrix: Water
Analysis Batch: 620335

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 620069

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0500	0.0476		mg/L		95	83 - 116

Lab Sample ID: 680-183912-3 MS
Matrix: Water
Analysis Batch: 620335

Client Sample ID: LFM-99-05A-SPR20
Prep Type: Total/NA
Prep Batch: 620069

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0025	U	0.0500	0.0492		mg/L		98	83 - 116

Lab Sample ID: 680-183912-3 MSD
Matrix: Water
Analysis Batch: 620335

Client Sample ID: LFM-99-05A-SPR20
Prep Type: Total/NA
Prep Batch: 620069

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	0.0025	U	0.0500	0.0506		mg/L		101	83 - 116	3	20

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-495774/5
Matrix: Water
Analysis Batch: 495774

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	3.1	U	10	3.1	mg/L			05/21/20 09:44	1

Lab Sample ID: LCS 280-495774/4
Matrix: Water
Analysis Batch: 495774

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	200	213		mg/L		107	89 - 109

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-495643/1
Matrix: Water
Analysis Batch: 495643

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	4.7	U	10	4.7	mg/L			05/20/20 16:21	1

Lab Sample ID: LCS 280-495643/2
Matrix: Water
Analysis Batch: 495643

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	511		mg/L		102	93 - 110

GC Semi VOA

Prep Batch: 619600

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183912-1	DCL-DUP01-SPR20	Total/NA	Water	3520C	
680-183912-2	LFM-03-07-SPR20	Total/NA	Water	3520C	
680-183912-3	LFM-99-05A-SPR20	Total/NA	Water	3520C	
680-183912-4	LM-99-06ARP-SPR20	Total/NA	Water	3520C	
MB 680-619600/15-A	Method Blank	Total/NA	Water	3520C	
LCS 680-619600/16-A	Lab Control Sample	Total/NA	Water	3520C	
LCSD 680-619600/17-A	Lab Control Sample Dup	Total/NA	Water	3520C	

Analysis Batch: 621247

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 680-619600/15-A	Method Blank	Total/NA	Water	8081B 8082A	619600
LCS 680-619600/16-A	Lab Control Sample	Total/NA	Water	8081B 8082A	619600
LCSD 680-619600/17-A	Lab Control Sample Dup	Total/NA	Water	8081B 8082A	619600

Analysis Batch: 621270

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183912-1	DCL-DUP01-SPR20	Total/NA	Water	8081B 8082A	619600
680-183912-2	LFM-03-07-SPR20	Total/NA	Water	8081B 8082A	619600
680-183912-3	LFM-99-05A-SPR20	Total/NA	Water	8081B 8082A	619600
680-183912-4	LM-99-06ARP-SPR20	Total/NA	Water	8081B 8082A	619600

HPLC/IC

Analysis Batch: 619811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183912-1	DCL-DUP01-SPR20	Total/NA	Water	9056A	
680-183912-2	LFM-03-07-SPR20	Total/NA	Water	9056A	
680-183912-3	LFM-99-05A-SPR20	Total/NA	Water	9056A	
680-183912-4	LM-99-06ARP-SPR20	Total/NA	Water	9056A	
MB 680-619811/33	Method Blank	Total/NA	Water	9056A	
LCS 680-619811/34	Lab Control Sample	Total/NA	Water	9056A	
LCSD 680-619811/35	Lab Control Sample Dup	Total/NA	Water	9056A	

Analysis Batch: 619964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183912-2 - DL	LFM-03-07-SPR20	Total/NA	Water	9056A	
680-183912-4 - DL	LM-99-06ARP-SPR20	Total/NA	Water	9056A	
MB 680-619964/33	Method Blank	Total/NA	Water	9056A	
LCS 680-619964/34	Lab Control Sample	Total/NA	Water	9056A	
LCSD 680-619964/35	Lab Control Sample Dup	Total/NA	Water	9056A	

Metals

Prep Batch: 619076

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183912-1	DCL-DUP01-SPR20	Total/NA	Water	7470A	
680-183912-2	LFM-03-07-SPR20	Total/NA	Water	7470A	
680-183912-3	LFM-99-05A-SPR20	Total/NA	Water	7470A	
680-183912-4	LM-99-06ARP-SPR20	Total/NA	Water	7470A	
MB 680-619076/1-A	Method Blank	Total/NA	Water	7470A	
LCS 680-619076/2-A	Lab Control Sample	Total/NA	Water	7470A	

Metals

Analysis Batch: 619198

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183912-1	DCL-DUP01-SPR20	Total/NA	Water	7470A	619076
680-183912-2	LFM-03-07-SPR20	Total/NA	Water	7470A	619076
680-183912-3	LFM-99-05A-SPR20	Total/NA	Water	7470A	619076
680-183912-4	LM-99-06ARP-SPR20	Total/NA	Water	7470A	619076
MB 680-619076/1-A	Method Blank	Total/NA	Water	7470A	619076
LCS 680-619076/2-A	Lab Control Sample	Total/NA	Water	7470A	619076

Prep Batch: 619912

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183912-1	DCL-DUP01-SPR20	Total Recoverable	Water	3005A	
680-183912-2	LFM-03-07-SPR20	Total Recoverable	Water	3005A	
680-183912-3	LFM-99-05A-SPR20	Total Recoverable	Water	3005A	
680-183912-4	LM-99-06ARP-SPR20	Total Recoverable	Water	3005A	
MB 680-619912/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-619912/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 619931

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183912-1	DCL-DUP01-SPR20	Total/NA	Water	3010A	
680-183912-2	LFM-03-07-SPR20	Total/NA	Water	3010A	
680-183912-3	LFM-99-05A-SPR20	Total/NA	Water	3010A	
680-183912-4	LM-99-06ARP-SPR20	Total/NA	Water	3010A	
MB 680-619931/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-619931/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 620235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183912-1	DCL-DUP01-SPR20	Total/NA	Water	6020A	619931
680-183912-2	LFM-03-07-SPR20	Total/NA	Water	6020A	619931
680-183912-3	LFM-99-05A-SPR20	Total/NA	Water	6020A	619931
680-183912-4	LM-99-06ARP-SPR20	Total/NA	Water	6020A	619931
MB 680-619931/1-A	Method Blank	Total/NA	Water	6020A	619931
LCS 680-619931/2-A	Lab Control Sample	Total/NA	Water	6020A	619931

Analysis Batch: 620265

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183912-1	DCL-DUP01-SPR20	Total Recoverable	Water	6010C	619912
680-183912-2	LFM-03-07-SPR20	Total Recoverable	Water	6010C	619912
680-183912-3	LFM-99-05A-SPR20	Total Recoverable	Water	6010C	619912
680-183912-4	LM-99-06ARP-SPR20	Total Recoverable	Water	6010C	619912
MB 680-619912/1-A	Method Blank	Total Recoverable	Water	6010C	619912
LCS 680-619912/2-A	Lab Control Sample	Total Recoverable	Water	6010C	619912

General Chemistry

Analysis Batch: 495553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183912-1	DCL-DUP01-SPR20	Total/NA	Water	410.4	
680-183912-2	LFM-03-07-SPR20	Total/NA	Water	410.4	
680-183912-3	LFM-99-05A-SPR20	Total/NA	Water	410.4	
680-183912-4	LM-99-06ARP-SPR20	Total/NA	Water	410.4	

General Chemistry (Continued)

Analysis Batch: 495553 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-495553/5	Method Blank	Total/NA	Water	410.4	
LCS 280-495553/3	Lab Control Sample	Total/NA	Water	410.4	
LCSD 280-495553/4	Lab Control Sample Dup	Total/NA	Water	410.4	

Analysis Batch: 495643

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183912-1	DCL-DUP01-SPR20	Total/NA	Water	SM 2540C	
680-183912-2	LFM-03-07-SPR20	Total/NA	Water	SM 2540C	
680-183912-3	LFM-99-05A-SPR20	Total/NA	Water	SM 2540C	
680-183912-4	LM-99-06ARP-SPR20	Total/NA	Water	SM 2540C	
MB 280-495643/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-495643/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 495774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183912-1	DCL-DUP01-SPR20	Total/NA	Water	SM 2320B	
680-183912-2	LFM-03-07-SPR20	Total/NA	Water	SM 2320B	
680-183912-3	LFM-99-05A-SPR20	Total/NA	Water	SM 2320B	
680-183912-4	LM-99-06ARP-SPR20	Total/NA	Water	SM 2320B	
MB 280-495774/5	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-495774/4	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 495813

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183912-1	DCL-DUP01-SPR20	Total/NA	Water	353.2	
680-183912-2	LFM-03-07-SPR20	Total/NA	Water	353.2	
680-183912-3	LFM-99-05A-SPR20	Total/NA	Water	353.2	
680-183912-4	LM-99-06ARP-SPR20	Total/NA	Water	353.2	
MB 280-495813/60	Method Blank	Total/NA	Water	353.2	
LCS 280-495813/59	Lab Control Sample	Total/NA	Water	353.2	

Prep Batch: 620066

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183912-1	DCL-DUP01-SPR20	Total/NA	Water	9012B	
680-183912-2	LFM-03-07-SPR20	Total/NA	Water	9012B	
MB 680-620066/12-A	Method Blank	Total/NA	Water	9012B	
LCS 680-620066/13-A	Lab Control Sample	Total/NA	Water	9012B	

Prep Batch: 620069

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183912-3	LFM-99-05A-SPR20	Total/NA	Water	9012B	
680-183912-4	LM-99-06ARP-SPR20	Total/NA	Water	9012B	
MB 680-620069/1-A	Method Blank	Total/NA	Water	9012B	
LCS 680-620069/2-A	Lab Control Sample	Total/NA	Water	9012B	
680-183912-3 MS	LFM-99-05A-SPR20	Total/NA	Water	9012B	
680-183912-3 MSD	LFM-99-05A-SPR20	Total/NA	Water	9012B	

Analysis Batch: 620335

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183912-1	DCL-DUP01-SPR20	Total/NA	Water	9012B	620066
680-183912-2	LFM-03-07-SPR20	Total/NA	Water	9012B	620066

General Chemistry (Continued)

Analysis Batch: 620335 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183912-3	LFM-99-05A-SPR20	Total/NA	Water	9012B	620069
680-183912-4	LM-99-06ARP-SPR20	Total/NA	Water	9012B	620069
MB 680-620066/12-A	Method Blank	Total/NA	Water	9012B	620066
MB 680-620069/1-A	Method Blank	Total/NA	Water	9012B	620069
LCS 680-620066/13-A	Lab Control Sample	Total/NA	Water	9012B	620066
LCS 680-620069/2-A	Lab Control Sample	Total/NA	Water	9012B	620069
680-183912-3 MS	LFM-99-05A-SPR20	Total/NA	Water	9012B	620069
680-183912-3 MSD	LFM-99-05A-SPR20	Total/NA	Water	9012B	620069

Lab Chronicle

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM, DCL Spring 2020

Job ID: 680-183912-1

Client Sample ID: DCL-DUP01-SPR20

Lab Sample ID: 680-183912-1

Date Collected: 05/14/20 00:00
Date Received: 05/16/20 09:00

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1003.8 mL	5 mL	619600	05/21/20 18:28	EHS	TAL SAV
Total/NA	Analysis	8081B 8082A		1			621270	06/04/20 21:23	JCK	TAL SAV
	Instrument ID: CSGJ									
Total/NA	Analysis	9056A		1	5 mL	5 mL	619811	05/24/20 00:56	UI	TAL SAV
	Instrument ID: CICH									
Total Recoverable	Prep	3005A			50 mL	50 mL	619912	05/26/20 11:14	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			620265	05/27/20 17:11	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	619931	05/26/20 13:18	AJR	TAL SAV
Total/NA	Analysis	6020A		1			620235	05/27/20 14:07	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	619076	05/18/20 12:46	BCB	TAL SAV
Total/NA	Analysis	7470A		1			619198	05/18/20 21:47	BWR	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	495813	05/21/20 20:07	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	495553	05/20/20 10:33	SGB	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			6 mL	6 mL	620066	05/27/20 10:49	JER	TAL SAV
Total/NA	Analysis	9012B		1			620335	05/28/20 14:43	JER	TAL SAV
	Instrument ID: KONELAB4									
Total/NA	Analysis	SM 2320B		1			495774	05/21/20 11:05	SPG	TAL DEN
	Instrument ID: WC-AT3									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	495643	05/20/20 16:21	ILC	TAL DEN
	Instrument ID: NOEQUIP									

Client Sample ID: LFM-03-07-SPR20

Lab Sample ID: 680-183912-2

Date Collected: 05/14/20 14:00
Date Received: 05/16/20 09:00

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1055.8 mL	5 mL	619600	05/21/20 18:28	EHS	TAL SAV
Total/NA	Analysis	8081B 8082A		1			621270	06/04/20 21:51	JCK	TAL SAV
	Instrument ID: CSGJ									
Total/NA	Analysis	9056A		1	5 mL	5 mL	619811	05/24/20 01:09	UI	TAL SAV
	Instrument ID: CICH									
Total/NA	Analysis	9056A	DL	5	5 mL	5 mL	619964	05/26/20 23:13	UI	TAL SAV
	Instrument ID: CICH									
Total Recoverable	Prep	3005A			50 mL	50 mL	619912	05/26/20 11:14	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			620265	05/27/20 17:16	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	619931	05/26/20 13:18	AJR	TAL SAV
Total/NA	Analysis	6020A		1			620235	05/27/20 14:12	BJB	TAL SAV
	Instrument ID: ICPMSD									

Lab Chronicle

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM, DCL Spring 2020

Job ID: 680-183912-1

Client Sample ID: LFM-03-07-SPR20

Lab Sample ID: 680-183912-2

Date Collected: 05/14/20 14:00

Matrix: Water

Date Received: 05/16/20 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7470A			50 mL	50 mL	619076	05/18/20 12:46	BCB	TAL SAV
Total/NA	Analysis	7470A		1			619198	05/18/20 21:51	BWR	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	495813	05/21/20 20:05	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	495553	05/20/20 10:33	SGB	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			6 mL	6 mL	620066	05/27/20 10:49	JER	TAL SAV
Total/NA	Analysis	9012B		1			620335	05/28/20 14:43	JER	TAL SAV
	Instrument ID: KONELAB4									
Total/NA	Analysis	SM 2320B		1			495774	05/21/20 11:09	SPG	TAL DEN
	Instrument ID: WC-AT3									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	495643	05/20/20 16:21	ILC	TAL DEN
	Instrument ID: NOEQUIP									

Client Sample ID: LFM-99-05A-SPR20

Lab Sample ID: 680-183912-3

Date Collected: 05/14/20 16:00

Matrix: Water

Date Received: 05/16/20 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			986.1 mL	5 mL	619600	05/21/20 18:28	EHS	TAL SAV
Total/NA	Analysis	8081B 8082A		1			621270	06/04/20 22:06	JCK	TAL SAV
	Instrument ID: CSGJ									
Total/NA	Analysis	9056A		1	5 mL	5 mL	619811	05/24/20 01:22	UI	TAL SAV
	Instrument ID: CICH									
Total Recoverable	Prep	3005A			50 mL	50 mL	619912	05/26/20 11:14	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			620265	05/27/20 16:58	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	619931	05/26/20 13:18	AJR	TAL SAV
Total/NA	Analysis	6020A		1			620235	05/27/20 14:09	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	619076	05/18/20 12:46	BCB	TAL SAV
Total/NA	Analysis	7470A		1			619198	05/18/20 21:56	BWR	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	495813	05/21/20 20:03	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	495553	05/20/20 10:33	SGB	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			6 mL	6 mL	620069	05/27/20 10:49	JER	TAL SAV
Total/NA	Analysis	9012B		1			620335	05/27/20 15:05	JER	TAL SAV
	Instrument ID: KONELAB4									
Total/NA	Analysis	SM 2320B		1			495774	05/21/20 11:14	SPG	TAL DEN
	Instrument ID: WC-AT3									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	495643	05/20/20 16:21	ILC	TAL DEN
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM, DCL Spring 2020

Job ID: 680-183912-1

Client Sample ID: LM-99-06ARP-SPR20

Date Collected: 05/14/20 16:00
Date Received: 05/16/20 09:00

Lab Sample ID: 680-183912-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1055.2 mL	5 mL	619600	05/21/20 18:28	EHS	TAL SAV
Total/NA	Analysis	8081B 8082A		1			621270	06/04/20 22:20	JCK	TAL SAV
	Instrument ID: CSGJ									
Total/NA	Analysis	9056A		1	5 mL	5 mL	619811	05/24/20 01:35	UI	TAL SAV
	Instrument ID: CICH									
Total/NA	Analysis	9056A	DL	5	5 mL	5 mL	619964	05/26/20 23:26	UI	TAL SAV
	Instrument ID: CICH									
Total Recoverable	Prep	3005A			50 mL	50 mL	619912	05/26/20 11:14	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			620265	05/27/20 17:07	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	619931	05/26/20 13:18	AJR	TAL SAV
Total/NA	Analysis	6020A		1			620235	05/27/20 14:04	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	619076	05/18/20 12:46	BCB	TAL SAV
Total/NA	Analysis	7470A		1			619198	05/18/20 22:00	BWR	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	495813	05/21/20 20:01	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	495553	05/20/20 10:33	SGB	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			6 mL	6 mL	620069	05/27/20 10:49	JER	TAL SAV
Total/NA	Analysis	9012B		1			620335	05/27/20 15:05	JER	TAL SAV
	Instrument ID: KONELAB4									
Total/NA	Analysis	SM 2320B		1			495774	05/21/20 11:19	SPG	TAL DEN
	Instrument ID: WC-AT3									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	495643	05/20/20 16:21	ILC	TAL DEN
	Instrument ID: NOEQUIP									

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Accreditation/Certification Summary

Client: Seres Engineering & Services LLC
Job ID: 680-183912-1
Project/Site: JV, LTM, DCL Spring 2020

Laboratory: Eurofins TestAmerica, Savannah

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2463	09-22-22

Laboratory: Eurofins TestAmerica, Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-21

Method Summary

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM, DCL Spring 2020

Job ID: 680-183912-1

Method	Method Description	Protocol	Laboratory
8081B 8082A	Organochlorine Pesticides & PCBs (GC)	SW846	TAL SAV
9056A	Anions, Ion Chromatography	SW846	TAL SAV
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
7470A	Mercury (CVAA)	SW846	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL DEN
410.4	COD	MCAWW	TAL DEN
9012B	Cyanide, Total and/or Amenable	EPA	TAL SAV
SM 2320B	Alkalinity	SM	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL SAV
3010A	Preparation, Total Metals	SW846	TAL SAV
3520C	Liquid-Liquid Extraction (Continuous)	SW846	TAL SAV
7470A	Preparation, Mercury	SW846	TAL SAV
9012B	Cyanide, Total and/or Amenable, Distillation	SW846	TAL SAV

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

CHAIN-OF-CUSTODY RECORD

Seres-Arcadis JV
Corey Caulkins
Arcadis U.S., Inc. 410 North 44th Street, Suite 1000 Phoenix, AZ 85008
United States

Bostor #215

COC # DCL_5.13.202

ARCADIS

Project Name: Long Term Monitoring	Laboratory: Eurofins Environment Testing TestAmerica, Savannah, GA	Event: JV, Long Term Monitoring, DCL, Spring 2020
Project Number: DEVNS-LTM	POC: Jon Lawhon; 912-250-0283; jon.lawhon@testamericainc.com	
WBS Code:	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:
A2320B (A) = Alkalinity
E353.2 (A) = Nitrite Nitrate as N
MADEPEP (A) = EPH with PAHs
MADEPVP (A) = VPH with targets
SW6010C (D) = Ba Cd Cr Cu Fe Pb Mn Se Ag
SW7470A (A) = Mercury
SW8081B (A) = Pesticides
SW9012B (A) = Cyanide
SW9056A (A) = Cl SO4

Equipment:

Code	Matrix
WG	Ground Water

Code	pg
2	2x 1 Liter, amber, glass, 1:1 HCl to pH =2; Cool < 6degC
4	3x 40mL glass VOA Vials, HCl, pH < 2; Cool < 6degC
6	1x 125mL, plastic, Cool < 6degC
9	1x 250mL, plastic, HNO3, pH < 2; Cool < 6degC
21	1x 2-1 Liter, amber, glass, Cool < 6degC
46	1x 250mL, plastic, Cool < 6degC
47	1x 500mL, amber glass, H2SO4; Cool < 6degC
49	1x 500mL plastic, Cool < 6degC

#215 Bostor

Event: JV, Long Term Monitoring, DCL, Spring 2020

	Sample ID	Matrix	Date	Time	Samp Init	A2320B (A) 46	A2540C - TDS 49	E353.2 (A) 47	E410.4 - COD 6	MADEPEP (A) 2	MADEPVP (A) 4	SW6010C (D) 9	SW6020A - As 9	SW7470A (A) 9	SW8081B (A) 21	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Cooler	Comments
1	DCL-DUP01-SPR20	WG	5-14-20	No time	GC	X	X	X	X	X	X	X	X	X	X	LFM-99-05A	FD1	19.00	29.98		
2	LFM-03-07-SPR20	WG	5-14-20	1400	DC	X	X	X	X	X	X	X	X	X	X	LFM-03-07	N1	10.90	20.90		
3	LFM-99-05A-SPR20	WG	5-14-20	1600	GC	X	X	X	X	X	X	X	X	X	X	LFM-99-05A	N1	19.00	29.98		
4	LFM-99-06ARP-SPR20	WG	5-14-20	1600	DC	X	X	X	X	X	X	X	X	X	X	LFM-99-06ARP	N1	10.09	19.39		
5	~~LFM-99-02B-SPR20~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~LFM-99-02B~~	~~N1~~	~~14.50~~	~~28.83~~		
6																					
7																					
8																					
9																					
10																					

Turnaround Time: NA


680-183912 Chain of Custody

Relinquished by: *(Signature)* Jennord Pickard 5-15-20 1500
Date 05/14/20
Time 18:10
Received by: *(Signature)* 5-14-20 1815
Devens eCOCs Spring 2020

5-16-20 700

Date
Time
Shipping Date:
Received by Laboratory *(Signature, Date, Time)* & conditio 1.0/1.0 1.8/2.2 3.0/3.4

6/7/2020

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lawhon, Jon K	Carrier Tracking No(s):	COC No: 680-611410.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jon.lawhon@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): Dept. of Defense ELAP - A2LA; DoD - ANAB		Job #: 680-183912-1
Address: 4955 Yarrow Street,	Due Date Requested: 5/28/2020			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: JV, LTM, DCL Spring 2020	Project #: 68023801			
Site:	SSOW#:			

Analysis Requested

680-183912 Chain of Custody

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2320B/ Alkalinity	410.4/ COD	353.2_Pres	2540C_Calcd/ TDS	Total Number of containers	Special Instructions/Note:
			Preservation Code:									
DCL-DUP01-SPR20 (680-183912-1)	5/14/20	Eastern		Water			X	X	X	X	3	
LFM-03-07-SPR20 (680-183912-2)	5/14/20	14:00 Eastern		Water			X	X	X	X	3	
LFM-99-05A-SPR20 (680-183912-3)	5/14/20	16:00 Eastern		Water			X	X	X	X	3	
LM-99-06ARP-SPR20 (680-183912-4)	5/14/20	16:00 Eastern		Water			X	X	X	X	3	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	5/18/2020 1147			5/19/20 0900	ETADEW
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.: 1163987	Cooler Temperature(s) °C and Other Remarks: 2.0, IR8, +0.6, DS 5/19/20

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Seres Engineering & Services LLC

Job Number: 680-183912-1

Login Number: 183912
List Number: 1
Creator: Sims, Robert D

List Source: Eurofins TestAmerica, Savannah

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Seres Engineering & Services LLC

Job Number: 680-183912-1

Login Number: 183912
List Number: 2
Creator: Schade, Daniel B

List Source: Eurofins TestAmerica, Denver
List Creation: 05/19/20 11:08 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	True	

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ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-183925-1
Client Project/Site: JV,LTM, DCI Spring 2020

For:
Seres Engineering & Services LLC
669 Marina Drive
Suite B7
Charleston, South Carolina 29492

Attn: Nathan R Mullens

Kathryn Smith

Authorized for release by:
6/4/2020 10:25:05 AM

Kathryn Smith, Client Service Manager
(912)250-0275
kathy.smith@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

HPLC/IC

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

General Chemistry

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: Seres Engineering & Services LLC
Project/Site: JV,LTM, DCI Spring 2020

Job ID: 680-183925-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-183925-1	LFM-99-O2B-SPR20	Water	05/15/20 11:10	05/16/20 09:00	

Job ID: 680-183925-1

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE
Client: Seres Engineering & Services LLC
Project: JV,LTM, DCI Spring 2020

Report Number: 680-183925-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT

The samples were received on 05/16/2020; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 3.2 C.

PESTICIDES AND PCBS

Sample LFM-99-O2B-SPR20 (680-183925-1) was analyzed for Pesticides and PCBs in accordance with EPA SW-846 Method 8081B_8082A. The samples were prepared on 05/22/2020 and analyzed on 06/02/2020.

The laboratory control sample (LCS) for preparation batch 680-619717 and analytical batch 680-620937 recovered outside control limits for the following analytes: Endosulfan sulfate and Endrin ketone. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 680-619717 and analytical batch 680-620937 recovered outside control limits for the following analytes: alpha-Chlordane, gamma-Chlordane, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, Aldrin, alpha-BHC, beta-BHC, delta-BHC, Dieldrin, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin aldehyde, Endrin ketone, gamma-BHC (Lindane), Heptachlor, Heptachlor epoxide and Methoxychlor.

The following analytes recovered outside control limits for the LCSD associated with preparation batch 680-619717 and analytical batch 680-620937: Aldrin and Heptachlor. This is not indicative of a systematic control problem because these were random marginal exceedances. Qualified results have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS (ICP)

Sample LFM-99-O2B-SPR20 (680-183925-1) was analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 05/26/2020 and analyzed on 05/27/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS

Sample LFM-99-O2B-SPR20 (680-183925-1) was analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 05/26/2020 and analyzed on 05/27/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY

Sample LFM-99-O2B-SPR20 (680-183925-1) was analyzed for mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared on 05/18/2020 and analyzed on 05/19/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Job ID: 680-183925-1 (Continued)

Laboratory: Eurofins TestAmerica, Savannah (Continued)

ALKALINITY
Sample LFM-99-O2B-SPR20 (680-183925-1) was analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 05/21/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS
Sample LFM-99-O2B-SPR20 (680-183925-1) was analyzed for total dissolved solids in accordance with SM 2540C. The samples were analyzed on 05/21/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NITRATE-NITRITE AS NITROGEN
Sample LFM-99-O2B-SPR20 (680-183925-1) was analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 05/21/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CHEMICAL OXYGEN DEMAND
Sample LFM-99-O2B-SPR20 (680-183925-1) was analyzed for chemical oxygen demand in accordance with EPA Method 410.4. The samples were analyzed on 05/20/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CYANIDE
Sample LFM-99-O2B-SPR20 (680-183925-1) was analyzed for cyanide in accordance with EPA SW-846 Method 9012B. The samples were prepared and analyzed on 05/27/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS BY ION CHROMATOGRAPHY (28 DAY)
Sample LFM-99-O2B-SPR20 (680-183925-1) was analyzed for Anions by Ion Chromatography (28 Day) in accordance with SW 846 9056A. The samples were analyzed on 05/24/2020 and 05/26/2020.

Sample LFM-99-O2B-SPR20 (680-183925-1)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client: Seres Engineering & Services LLC
Project/Site: JV,LTM, DCI Spring 2020

Job ID: 680-183925-1

Client Sample ID: LFM-99-O2B-SPR20
Date Collected: 05/15/20 11:10
Date Received: 05/16/20 09:00

Lab Sample ID: 680-183925-1
Matrix: Water

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.0030	U M Q	0.024	0.0030	ug/L		05/22/20 18:50	06/02/20 20:59	1
4,4'-DDE	0.0024	U Q	0.024	0.0024	ug/L		05/22/20 18:50	06/02/20 20:59	1
4,4'-DDT	0.0033	U Q	0.024	0.0033	ug/L		05/22/20 18:50	06/02/20 20:59	1
Aldrin	0.0034	U Q	0.024	0.0034	ug/L		05/22/20 18:50	06/02/20 20:59	1
alpha-BHC	0.0016	U Q	0.024	0.0016	ug/L		05/22/20 18:50	06/02/20 20:59	1
beta-BHC	0.0044	U Q	0.024	0.0044	ug/L		05/22/20 18:50	06/02/20 20:59	1
Chlordane (technical)	0.045	U M	0.24	0.045	ug/L		05/22/20 18:50	06/02/20 20:59	1
delta-BHC	0.0036	U Q	0.024	0.0036	ug/L		05/22/20 18:50	06/02/20 20:59	1
Dieldrin	0.0018	U Q	0.024	0.0018	ug/L		05/22/20 18:50	06/02/20 20:59	1
Endosulfan I	0.0017	U Q	0.024	0.0017	ug/L		05/22/20 18:50	06/02/20 20:59	1
Endosulfan II	0.0020	U Q	0.024	0.0020	ug/L		05/22/20 18:50	06/02/20 20:59	1
Endosulfan sulfate	0.0024	U Q	0.024	0.0024	ug/L		05/22/20 18:50	06/02/20 20:59	1
Endrin	0.0025	U Q	0.024	0.0025	ug/L		05/22/20 18:50	06/02/20 20:59	1
Endrin aldehyde	0.0029	U Q	0.024	0.0029	ug/L		05/22/20 18:50	06/02/20 20:59	1
Endrin ketone	0.0022	U Q	0.024	0.0022	ug/L		05/22/20 18:50	06/02/20 20:59	1
gamma-BHC (Lindane)	0.0017	U Q	0.024	0.0017	ug/L		05/22/20 18:50	06/02/20 20:59	1
Heptachlor	0.0034	U Q	0.024	0.0034	ug/L		05/22/20 18:50	06/02/20 20:59	1
Heptachlor epoxide	0.0018	U Q	0.024	0.0018	ug/L		05/22/20 18:50	06/02/20 20:59	1
Methoxychlor	0.0047	U Q	0.024	0.0047	ug/L		05/22/20 18:50	06/02/20 20:59	1
Toxaphene	0.19	U	2.4	0.19	ug/L		05/22/20 18:50	06/02/20 20:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*50*		*14 - 130*	*05/22/20 18:50*	*06/02/20 20:59*	*1*
Tetrachloro-m-xylene	*49*		*44 - 124*	*05/22/20 18:50*	*06/02/20 20:59*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**16**		1.0	0.40	mg/L			05/24/20 02:39	1

Method: 9056A - Anions, Ion Chromatography - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**260**		2.5	1.0	mg/L			05/26/20 23:38	5

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**13**		10	1.7	ug/L		05/26/20 11:14	05/27/20 17:02	1
Cadmium	1.0	U	5.0	1.0	ug/L		05/26/20 11:14	05/27/20 17:02	1
Chromium	1.6	U	10	1.6	ug/L		05/26/20 11:14	05/27/20 17:02	1
Copper	1.8	U	20	1.8	ug/L		05/26/20 11:14	05/27/20 17:02	1
Iron	17	U	50	17	ug/L		05/26/20 11:14	05/27/20 17:02	1
Lead	3.9	U	10	3.9	ug/L		05/26/20 11:14	05/27/20 17:02	1
Manganese	1.0	U	10	1.0	ug/L		05/26/20 11:14	05/27/20 17:02	1
Selenium	9.9	U	20	9.9	ug/L		05/26/20 11:14	05/27/20 17:02	1
Silver	0.60	U	10	0.60	ug/L		05/26/20 11:14	05/27/20 17:02	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		05/26/20 13:18	05/27/20 14:34	1

Client: Seres Engineering & Services LLC
Project/Site: JV,LTM, DCI Spring 2020

Job ID: 680-183925-1

Client Sample ID: LFM-99-O2B-SPR20
Date Collected: 05/15/20 11:10
Date Received: 05/16/20 09:00

Lab Sample ID: 680-183925-1
Matrix: Water

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	ug/L		05/18/20 14:03	05/19/20 00:24	1

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate/Nitrite-N	**0.47**		0.10	0.019	mg/L			05/21/20 17:51	1
Chemical Oxygen Demand	8.7	U	20	8.7	mg/L			05/20/20 10:33	1
Cyanide, Total	**0.0027**	**J**	0.010	0.0025	mg/L		05/27/20 10:49	05/27/20 15:05	1
Alkalinity	**70**		10	3.1	mg/L			05/21/20 11:32	1
Total Dissolved Solids (TDS)	**500**		20	9.4	mg/L			05/21/20 08:57	1

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Lab Sample ID: MB 680-619717/21-A
Matrix: Water
Analysis Batch: 620937

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 619717

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.0032	U	0.025	0.0032	ug/L		05/22/20 18:50	06/02/20 19:04	1
4,4'-DDE	0.0026	U	0.025	0.0026	ug/L		05/22/20 18:50	06/02/20 19:04	1
4,4'-DDT	0.0035	U	0.025	0.0035	ug/L		05/22/20 18:50	06/02/20 19:04	1
Aldrin	0.0036	U	0.025	0.0036	ug/L		05/22/20 18:50	06/02/20 19:04	1
alpha-BHC	0.0017	U	0.025	0.0017	ug/L		05/22/20 18:50	06/02/20 19:04	1
beta-BHC	0.0046	U	0.025	0.0046	ug/L		05/22/20 18:50	06/02/20 19:04	1
Chlordane (technical)	0.048	U M	0.25	0.048	ug/L		05/22/20 18:50	06/02/20 19:04	1
delta-BHC	0.0038	U	0.025	0.0038	ug/L		05/22/20 18:50	06/02/20 19:04	1
Dieldrin	0.0019	U	0.025	0.0019	ug/L		05/22/20 18:50	06/02/20 19:04	1
Endosulfan I	0.0018	U	0.025	0.0018	ug/L		05/22/20 18:50	06/02/20 19:04	1
Endosulfan II	0.0021	U	0.025	0.0021	ug/L		05/22/20 18:50	06/02/20 19:04	1
Endosulfan sulfate	0.0026	U	0.025	0.0026	ug/L		05/22/20 18:50	06/02/20 19:04	1
Endrin	0.0027	U	0.025	0.0027	ug/L		05/22/20 18:50	06/02/20 19:04	1
Endrin aldehyde	0.0031	U	0.025	0.0031	ug/L		05/22/20 18:50	06/02/20 19:04	1
Endrin ketone	0.0023	U	0.025	0.0023	ug/L		05/22/20 18:50	06/02/20 19:04	1
gamma-BHC (Lindane)	0.0018	U	0.025	0.0018	ug/L		05/22/20 18:50	06/02/20 19:04	1
Heptachlor	0.0036	U	0.025	0.0036	ug/L		05/22/20 18:50	06/02/20 19:04	1
Heptachlor epoxide	0.0019	U	0.025	0.0019	ug/L		05/22/20 18:50	06/02/20 19:04	1
Methoxychlor	0.0049	U	0.025	0.0049	ug/L		05/22/20 18:50	06/02/20 19:04	1
Toxaphene	0.20	U	2.5	0.20	ug/L		05/22/20 18:50	06/02/20 19:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*58*		*14 - 130*	*05/22/20 18:50*	*06/02/20 19:04*	*1*
Tetrachloro-m-xylene	*68*		*44 - 124*	*05/22/20 18:50*	*06/02/20 19:04*	*1*

Lab Sample ID: LCS 680-619717/22-A
Matrix: Water
Analysis Batch: 620937

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 619717

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	0.0500	0.0600		ug/L		120	56 - 143
4,4'-DDE	0.0500	0.0446		ug/L		89	57 - 135
4,4'-DDT	0.0500	0.0604		ug/L		121	51 - 143
Aldrin	0.0500	0.0290		ug/L		58	45 - 134
alpha-BHC	0.0500	0.0599		ug/L		120	54 - 138
beta-BHC	0.0500	0.0624		ug/L		125	56 - 136
delta-BHC	0.0500	0.0659		ug/L		132	52 - 142
Dieldrin	0.0500	0.0635		ug/L		127	60 - 136
Endosulfan I	0.0500	0.0579		ug/L		116	62 - 126
Endosulfan II	0.0500	0.0664		ug/L		133	52 - 135
Endosulfan sulfate	0.0500	0.0676	Q	ug/L		135	62 - 133
Endrin	0.0500	0.0633		ug/L		127	60 - 138
Endrin aldehyde	0.0500	0.0624		ug/L		125	51 - 132
Endrin ketone	0.0500	0.0678	Q	ug/L		136	58 - 134
gamma-BHC (Lindane)	0.0500	0.0595		ug/L		119	59 - 134
Heptachlor	0.0500	0.0324		ug/L		65	54 - 130
Heptachlor epoxide	0.0500	0.0586		ug/L		117	61 - 133
Methoxychlor	0.0500	0.0658		ug/L		132	54 - 145

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: LCS 680-619717/22-A
Matrix: Water
Analysis Batch: 620937

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 619717

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	69		14 - 130
Tetrachloro-m-xylene	78		44 - 124

Lab Sample ID: LCSD 680-619717/23-A
Matrix: Water
Analysis Batch: 620937

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 619717

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4,4'-DDD			0.0500	0.0340	Q	ug/L		68	56 - 143	55	30
4,4'-DDE			0.0500	0.0273	Q	ug/L		55	57 - 135	48	30
4,4'-DDT			0.0500	0.0338	Q	ug/L		68	51 - 143	56	30
Aldrin			0.0500	0.0187	J Q	ug/L		37	45 - 134	43	30
alpha-BHC			0.0500	0.0343	Q	ug/L		69	54 - 138	55	30
beta-BHC			0.0500	0.0358	Q	ug/L		72	56 - 136	54	30
delta-BHC			0.0500	0.0352	Q	ug/L		70	52 - 142	61	30
Dieldrin			0.0500	0.0353	Q	ug/L		71	60 - 136	57	30
Endosulfan I			0.0500	0.0331	Q	ug/L		66	62 - 126	55	30
Endosulfan II			0.0500	0.0376	Q	ug/L		75	52 - 135	55	30
Endosulfan sulfate			0.0500	0.0374	Q	ug/L		75	62 - 133	58	30
Endrin			0.0500	0.0351	Q	ug/L		70	60 - 138	57	30
Endrin aldehyde			0.0500	0.0362	Q	ug/L		72	51 - 132	53	30
Endrin ketone			0.0500	0.0379	Q	ug/L		76	58 - 134	56	30
gamma-BHC (Lindane)			0.0500	0.0335	Q	ug/L		67	59 - 134	56	30
Heptachlor			0.0500	0.0196	J Q	ug/L		39	54 - 130	49	30
Heptachlor epoxide			0.0500	0.0330	Q	ug/L		66	61 - 133	56	30
Methoxychlor			0.0500	0.0379	Q	ug/L		76	54 - 145	54	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
DCB Decachlorobiphenyl	49		14 - 130
Tetrachloro-m-xylene	44		44 - 124

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 680-619811/33
Matrix: Water
Analysis Batch: 619811

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.20	U	0.50	0.20	mg/L			05/23/20 23:39	1
Sulfate	0.40	U	1.0	0.40	mg/L			05/23/20 23:39	1

Lab Sample ID: LCS 680-619811/34
Matrix: Water
Analysis Batch: 619811

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			10.0	10.1		mg/L		101	87 - 111		
Sulfate			10.0	9.86		mg/L		99	87 - 112		

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCSD 680-619811/35
Matrix: Water
Analysis Batch: 619811

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride			10.0	10.1		mg/L		101	87 - 111	0	15
Sulfate			10.0	9.89		mg/L		99	87 - 112	0	15

Lab Sample ID: MB 680-619964/33
Matrix: Water
Analysis Batch: 619964

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.20	U	0.50	0.20	mg/L			05/26/20 21:29	1
Sulfate	0.40	U	1.0	0.40	mg/L			05/26/20 21:29	1

Lab Sample ID: LCS 680-619964/34
Matrix: Water
Analysis Batch: 619964

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			10.0	9.98		mg/L		100	87 - 111		
Sulfate			10.0	9.69		mg/L		97	87 - 112		

Lab Sample ID: LCSD 680-619964/35
Matrix: Water
Analysis Batch: 619964

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride			10.0	9.98		mg/L		100	87 - 111	0	15
Sulfate			10.0	9.76		mg/L		98	87 - 112	1	15

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-619912/1-A
Matrix: Water
Analysis Batch: 620265

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 619912

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	1.7	U	10	1.7	ug/L		05/26/20 11:14	05/27/20 16:16	1
Cadmium	1.0	U	5.0	1.0	ug/L		05/26/20 11:14	05/27/20 16:16	1
Chromium	1.6	U	10	1.6	ug/L		05/26/20 11:14	05/27/20 16:16	1
Copper	1.8	U	20	1.8	ug/L		05/26/20 11:14	05/27/20 16:16	1
Iron	17	U	50	17	ug/L		05/26/20 11:14	05/27/20 16:16	1
Lead	3.9	U	10	3.9	ug/L		05/26/20 11:14	05/27/20 16:16	1
Manganese	1.0	U	10	1.0	ug/L		05/26/20 11:14	05/27/20 16:16	1
Selenium	9.9	U	20	9.9	ug/L		05/26/20 11:14	05/27/20 16:16	1
Silver	0.60	U	10	0.60	ug/L		05/26/20 11:14	05/27/20 16:16	1

Lab Sample ID: LCS 680-619912/2-A
Matrix: Water
Analysis Batch: 620265

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 619912

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Barium			100	102		ug/L		102	88 - 113		

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 680-619912/2-A
Matrix: Water
Analysis Batch: 620265

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 619912

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	50.0	52.3		ug/L		105	88 - 113
Chromium	100	98.9		ug/L		99	90 - 113
Copper	100	98.8		ug/L		99	86 - 114
Iron	5010	4840		ug/L		97	87 - 115
Lead	454	438		ug/L		96	86 - 113
Manganese	400	394		ug/L		98	90 - 114
Selenium	100	96.0		ug/L		96	83 - 114
Silver	50.0	50.6		ug/L		101	84 - 115

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-619931/1-A
Matrix: Water
Analysis Batch: 620235

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 619931

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	U	3.0	1.5	ug/L		05/26/20 13:18	05/27/20 13:24	1

Lab Sample ID: LCS 680-619931/2-A
Matrix: Water
Analysis Batch: 620235

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 619931

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	102		ug/L		102	84 - 116

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 680-619087/1-A
Matrix: Water
Analysis Batch: 619198

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 619087

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.080	ug/L		05/18/20 14:03	05/18/20 23:31	1

Lab Sample ID: LCS 680-619087/2-A
Matrix: Water
Analysis Batch: 619198

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 619087

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	2.50	2.47		ug/L		99	80 - 124

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 280-495813/22
Matrix: Water
Analysis Batch: 495813

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate/Nitrite-N	0.019	U	0.10	0.019	mg/L			05/21/20 17:39	1

Method: 353.2 - Nitrogen, Nitrate-Nitrite (Continued)

Lab Sample ID: LCS 280-495813/21
Matrix: Water
Analysis Batch: 495813

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate/Nitrite-N	5.00	5.14		mg/L		103	90 - 110

Method: 410.4 - COD

Lab Sample ID: MB 280-495553/5
Matrix: Water
Analysis Batch: 495553

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	8.7	U	20	8.7	mg/L			05/20/20 10:33	1

Lab Sample ID: LCS 280-495553/3
Matrix: Water
Analysis Batch: 495553

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	100	93.4		mg/L		93	90 - 110

Lab Sample ID: LCSD 280-495553/4
Matrix: Water
Analysis Batch: 495553

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chemical Oxygen Demand	100	95.6		mg/L		96	90 - 110	2	11

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 680-620069/1-A
Matrix: Water
Analysis Batch: 620335

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 620069

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.0025	U	0.010	0.0025	mg/L		05/27/20 10:49	05/28/20 14:43	1

Lab Sample ID: LCS 680-620069/2-A
Matrix: Water
Analysis Batch: 620335

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 620069

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0500	0.0476		mg/L		95	83 - 116

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-495774/5
Matrix: Water
Analysis Batch: 495774

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	3.1	U	10	3.1	mg/L			05/21/20 09:44	1

Method: SM 2320B - Alkalinity (Continued)

Lab Sample ID: LCS 280-495774/4
Matrix: Water
Analysis Batch: 495774

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Alkalinity			200	213		mg/L		107	89 - 109		

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-495718/1
Matrix: Water
Analysis Batch: 495718

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	4.7	U	10	4.7	mg/L			05/21/20 08:57	1

Lab Sample ID: LCS 280-495718/2
Matrix: Water
Analysis Batch: 495718

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)			501	550		mg/L		110	93 - 110		

Lab Sample ID: LCSD 280-495718/21
Matrix: Water
Analysis Batch: 495718

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)			501	518		mg/L		103	93 - 110	6	20

GC Semi VOA

Prep Batch: 619717

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183925-1	LFM-99-O2B-SPR20	Total/NA	Water	3520C	
MB 680-619717/21-A	Method Blank	Total/NA	Water	3520C	
LCS 680-619717/22-A	Lab Control Sample	Total/NA	Water	3520C	
LCSD 680-619717/23-A	Lab Control Sample Dup	Total/NA	Water	3520C	

Analysis Batch: 620937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183925-1	LFM-99-O2B-SPR20	Total/NA	Water	8081B 8082A	619717
MB 680-619717/21-A	Method Blank	Total/NA	Water	8081B 8082A	619717
LCS 680-619717/22-A	Lab Control Sample	Total/NA	Water	8081B 8082A	619717
LCSD 680-619717/23-A	Lab Control Sample Dup	Total/NA	Water	8081B 8082A	619717

HPLC/IC

Analysis Batch: 619811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183925-1	LFM-99-O2B-SPR20	Total/NA	Water	9056A	
MB 680-619811/33	Method Blank	Total/NA	Water	9056A	
LCS 680-619811/34	Lab Control Sample	Total/NA	Water	9056A	
LCSD 680-619811/35	Lab Control Sample Dup	Total/NA	Water	9056A	

Analysis Batch: 619964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183925-1 - DL	LFM-99-O2B-SPR20	Total/NA	Water	9056A	
MB 680-619964/33	Method Blank	Total/NA	Water	9056A	
LCS 680-619964/34	Lab Control Sample	Total/NA	Water	9056A	
LCSD 680-619964/35	Lab Control Sample Dup	Total/NA	Water	9056A	

Metals

Prep Batch: 619087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183925-1	LFM-99-O2B-SPR20	Total/NA	Water	7470A	
MB 680-619087/1-A	Method Blank	Total/NA	Water	7470A	
LCS 680-619087/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 619198

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183925-1	LFM-99-O2B-SPR20	Total/NA	Water	7470A	619087
MB 680-619087/1-A	Method Blank	Total/NA	Water	7470A	619087
LCS 680-619087/2-A	Lab Control Sample	Total/NA	Water	7470A	619087

Prep Batch: 619912

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183925-1	LFM-99-O2B-SPR20	Total Recoverable	Water	3005A	
MB 680-619912/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-619912/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 619931

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183925-1	LFM-99-O2B-SPR20	Total/NA	Water	3010A	
MB 680-619931/1-A	Method Blank	Total/NA	Water	3010A	

Metals (Continued)

Prep Batch: 619931 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 680-619931/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 620235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183925-1	LFM-99-O2B-SPR20	Total/NA	Water	6020A	619931
MB 680-619931/1-A	Method Blank	Total/NA	Water	6020A	619931
LCS 680-619931/2-A	Lab Control Sample	Total/NA	Water	6020A	619931

Analysis Batch: 620265

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183925-1	LFM-99-O2B-SPR20	Total Recoverable	Water	6010C	619912
MB 680-619912/1-A	Method Blank	Total Recoverable	Water	6010C	619912
LCS 680-619912/2-A	Lab Control Sample	Total Recoverable	Water	6010C	619912

General Chemistry

Analysis Batch: 495553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183925-1	LFM-99-O2B-SPR20	Total/NA	Water	410.4	
MB 280-495553/5	Method Blank	Total/NA	Water	410.4	
LCS 280-495553/3	Lab Control Sample	Total/NA	Water	410.4	
LCSD 280-495553/4	Lab Control Sample Dup	Total/NA	Water	410.4	

Analysis Batch: 495718

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183925-1	LFM-99-O2B-SPR20	Total/NA	Water	SM 2540C	
MB 280-495718/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-495718/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-495718/21	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

Analysis Batch: 495774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183925-1	LFM-99-O2B-SPR20	Total/NA	Water	SM 2320B	
MB 280-495774/5	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-495774/4	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 495813

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183925-1	LFM-99-O2B-SPR20	Total/NA	Water	353.2	
MB 280-495813/22	Method Blank	Total/NA	Water	353.2	
LCS 280-495813/21	Lab Control Sample	Total/NA	Water	353.2	

Prep Batch: 620069

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183925-1	LFM-99-O2B-SPR20	Total/NA	Water	9012B	
MB 680-620069/1-A	Method Blank	Total/NA	Water	9012B	
LCS 680-620069/2-A	Lab Control Sample	Total/NA	Water	9012B	

Analysis Batch: 620335

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-183925-1	LFM-99-O2B-SPR20	Total/NA	Water	9012B	620069

General Chemistry (Continued)

Analysis Batch: 620335 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 680-620069/1-A	Method Blank	Total/NA	Water	9012B	620069
LCS 680-620069/2-A	Lab Control Sample	Total/NA	Water	9012B	620069

Lab Chronicle

Client: Seres Engineering & Services LLC
Project/Site: JV,LTM, DCI Spring 2020

Job ID: 680-183925-1

Client Sample ID: LFM-99-O2B-SPR20
Date Collected: 05/15/20 11:10
Date Received: 05/16/20 09:00

Lab Sample ID: 680-183925-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1045.2 mL	5 mL	619717	05/22/20 18:50	EHS	TAL SAV
Total/NA	Analysis	8081B 8082A		1			620937	06/02/20 20:59	JCK	TAL SAV
	Instrument ID: CSGJ									
Total/NA	Analysis	9056A		1	5 mL	5 mL	619811	05/24/20 02:39	UI	TAL SAV
	Instrument ID: CICH									
Total/NA	Analysis	9056A	DL	5	5 mL	5 mL	619964	05/26/20 23:38	UI	TAL SAV
	Instrument ID: CICH									
Total Recoverable	Prep	3005A			50 mL	50 mL	619912	05/26/20 11:14	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			620265	05/27/20 17:02	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	619931	05/26/20 13:18	AJR	TAL SAV
Total/NA	Analysis	6020A		1			620235	05/27/20 14:34	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	619087	05/18/20 14:03	BCB	TAL SAV
Total/NA	Analysis	7470A		1			619198	05/19/20 00:24	BWR	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	495813	05/21/20 17:51	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	495553	05/20/20 10:33	SGB	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			6 mL	6 mL	620069	05/27/20 10:49	JER	TAL SAV
Total/NA	Analysis	9012B		1			620335	05/27/20 15:05	JER	TAL SAV
	Instrument ID: KONELAB4									
Total/NA	Analysis	SM 2320B		1			495774	05/21/20 11:32	SPG	TAL DEN
	Instrument ID: WC-AT3									
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	495718	05/21/20 08:57	FRG	TAL DEN
	Instrument ID: NOEQUIP									

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Accreditation/Certification Summary

Client: Seres Engineering & Services LLC
Project/Site: JV,LTM, DCI Spring 2020

Job ID: 680-183925-1

Laboratory: Eurofins TestAmerica, Savannah

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2463	09-22-22

Laboratory: Eurofins TestAmerica, Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-21

Method Summary

Client: Seres Engineering & Services LLC
Project/Site: JV,LTM, DCI Spring 2020

Job ID: 680-183925-1

Method	Method Description	Protocol	Laboratory
8081B 8082A	Organochlorine Pesticides & PCBs (GC)	SW846	TAL SAV
9056A	Anions, Ion Chromatography	SW846	TAL SAV
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
7470A	Mercury (CVAA)	SW846	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL DEN
410.4	COD	MCAWW	TAL DEN
9012B	Cyanide, Total and/or Amenable	EPA	TAL SAV
SM 2320B	Alkalinity	SM	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL SAV
3010A	Preparation, Total Metals	SW846	TAL SAV
3520C	Liquid-Liquid Extraction (Continuous)	SW846	TAL SAV
7470A	Preparation, Mercury	SW846	TAL SAV
9012B	Cyanide, Total and/or Amenable, Distillation	SW846	TAL SAV

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

CHAIN-STODY RECORD

Seres-Arcadis JV
Corey Caulkins
Arcadis U.S., Inc. 410 North 44th Street, Suite 1000 Phoenix, AZ 85008
United States

Boston #215

COC # DCL_5.13.202

ARCADIS

Project Name: Long Term Monitoring	Laboratory: Eurofins Environment Testing TestAmerica, Savannah, GA	Event: JV, Long Term Monitoring, DCL, Spring 2020
Project Number: DEVNS-LTM	POC: Jon Lawhon; 912-250-0283; jon.lawhon@testamericainc.com	
WBS Code:	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:
A2320B (A) = Alkalinity
E353.2 (A) = Nitrite Nitrate as N
MADEPEP (A) = EPH with PAHs
MADEPVP (A) = VPH with targets
SW6010C (D) = Ba Cd Cr Cu Fe Pb Mn Se Ag
SW7470A (A) = Mercury
SW8081B (A) = Pesticides
SW9012B (A) = Cyanide
SW9056A (A) = Cl SO4

Equipment:

Code	Matrix
WG	Ground Water

Code	pg
2	2x 1 Liter, amber, glass, 1:1 HCl to pH =2; Cool < 6degC
4	3x 40mL glass VOA Vials, HCl, pH < 2; Cool < 6degC
6	1x 125mL, plastic, Cool < 6degC
9	1x 250mL, plastic, HNO3, pH < 2; Cool < 6degC
21	1x 2-1 Liter, amber, glass, Cool < 6degC
46	1x 250mL, plastic, Cool < 6degC
47	1x 500mL, amber glass, H2SO4, Cool < 6degC
49	1x 500mL, plastic, Cool < 6degC

Event: JV, Long Term Monitoring, DCL, Spring 2020

	Sample ID	Matrix	Date	Time	Samp Init.	A2320B (A) 46	A2540C - TDS 49	E353.2 (A) 47	E410.4 - COD 6	MADEPEP (A) 2	MADEPVP (A) 4	SW6010C (D) 9	SW6020A - As 9	SW7470A (A) 9	SW8081B (A) 21	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Cooler	Comments
1	~~DCL-DUP01-SPR20~~	WG				X	X	X	X	X	X	X	X	X	X	LFM-99-05A	FD1	19.00	29.98		
2	~~LFM-03-07-SPR20~~	WG				X	X	X	X	X	X	X	X	X	X	LFM-03-07	N1	10.90	20.90		
3	~~LFM-99-05A-SPR20~~	WG				X	X	X	X	X	X	X	X	X	X	LFM-99-05A	N1	19.00	29.98		
4	~~LFM-99-06ARP-SPR20~~	WG				X	X	X	X	X	X	X	X	X	X	LFM-99-06ARP	N1	10.09	19.39		
5	LFM-99-02B-SPR20	WG	5-15-20	1110	DB	X	X	X	X	X	X	X	X	X	X	LFM-99-02B	N1	14.50	25.83		
6																					
7																					
8																					
9																					
10																					

Turnaround Time: NA

680-183925 Chain of Custody

Relinquished by: *(Signature)* D Bedard
Date 05/15/20
Time 17:00
Received by: *(Signature)* 5-14-20 1700
Devens eCOCs Spring 2020

Date 5-15-20 1811
Time
Shipping Date:
Received by Laboratory: ***(Signature, Date, Time)*** & conditio 5-16 20 900 2.8/3.2

6/4/2020

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lawhon, Jon K	Carrier Tracking No(s):	COC No: 680-611418.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jon.lawhon@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): Dept. of Defense ELAP - A2LA; DoD - ANAB		Job #: 680-183925-1
Address: 4955 Yarrow Street,	Due Date Requested: 5/28/2020			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: JV,LTM, DCI Spring 2020	Project #: 68023801			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2320B/ Alkalinity	410.4/ COD	353.2_Pres	2540C_Calcd/ TDS	Total Number of containers	Special Instructions/Note:
			Preservation Code:									
LFM-99-O2B-SPR20 (680-183925-1)	5/15/20	11:10 Eastern		Water			X	X	X	X	4	

680-183925 Chain of Custody

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	5/18/2020 1214				
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.: 1163787	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Seres Engineering & Services LLC

Job Number: 680-183925-1

Login Number: 183925

List Source: Eurofins TestAmerica, Savannah

List Number: 1

Creator: Sims, Robert D

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Seres Engineering & Services LLC

Job Number: 680-183925-1

Login Number: 183925
List Number: 2
Creator: Schade, Daniel B

List Source: Eurofins TestAmerica, Denver
List Creation: 05/19/20 11:08 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	True	

Former Fort Devens

Seres-Arcadis JV, Long Term Monitoring, DCL, Spring 2020

Devens Consolidated Landfill (DCL)

Locations:	LFM-03-07	LFM-99-02B	LFM-99-05A	LFM-99-05A (FD)	LFM-99-06ARP
Field Sample ID:	LFM-03-07-SPR20	LFM-99-O2B-SPR20	LFM-99-05A-SPR20	DCL-DUP01-SPR20	LFM-99-06ARP-SPR20
Sample Begin Depth:	10.9	14.5	19	19	10.09
Sample End Depth:	20.9	25.83	29.98	29.98	19.39
Sample Date:	05/14/2020	05/15/2020	05/14/2020	05/14/2020	05/14/2020
EPH (UG/L)					
2-Methylnaphthalene	1.40 U	1.40 U	1.60 U	1.40 U	1.40 U
Acenaphthene	1.80 U	1.80 U	2.00 U	1.80 U	1.80 U
Acenaphthylene	1.40 U	1.40 U	1.60 U	1.40 U	1.40 U
Anthracene	1.40 U	1.40 U	1.60 U	1.40 U	1.40 U
Benzo(a)anthracene	1.40 U	1.40 U	1.60 U	1.40 U	1.40 U
Benzo(a)pyrene	1.40 U	1.40 U	1.60 U	1.40 U	1.40 U
Benzo(b)fluoranthene	1.40 U	1.40 U	1.60 U	1.40 U	1.40 U
Benzo(g,h,i)perylene	1.40 U	1.40 U	1.60 U	1.40 U	1.40 U
Benzo(k)fluoranthene	1.40 U	1.40 U	1.60 U	1.40 U	1.40 U
C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	70.0 U	70.0 U	81.0 U	72.0 U	70.0 U
C19-C36 Petroleum Hydrocarbons, Aliphatic	70.0 U	70.0 U	81.0 U	72.0 U	70.0 U
C9-C18 Petroleum Hydrocarbons, Aliphatic	70.0 U	70.0 U	81.0 U	72.0 U	70.0 U
Chrysene	1.40 U	1.40 U	1.60 U	1.40 U	1.40 U
Dibenz(a,h)anthracene	1.40 UJ	1.40 UJ	1.60 UJ	1.40 UJ	1.40 UJ
Fluoranthene	1.40 U	1.40 U	1.60 U	1.40 U	1.40 U
Fluorene	1.40 U	1.40 U	1.60 U	1.40 U	1.40 U
Indeno(1,2,3-c,d)pyrene	1.40 U	1.40 U	1.60 U	1.40 U	1.40 U
Naphthalene	1.40 U	1.40 U	1.60 U	1.40 U	1.40 U
Phenanthrene	1.40 U	1.40 U	1.60 U	1.40 U	1.40 U
Pyrene	1.40 U	1.40 U	1.60 U	1.40 U	1.40 U
GENCHEM (MG/L)					
Alkalinity, Total (as CaCO3)	**93.0**	**70.0**	**92.0**	**92.0**	**91.0**
Chemical Oxygen Demand	20.0 U	20.0 U	20.0 U	20.0 U	20.0 U
Chloride	**240**	**260**	**130**	**130**	**310**
Cyanide	**0.00590 J**	**0.00270 J**	0.00500 U	**0.00670 J**	**0.00260 J**
Nitrate-Nitrite (as N)	**1.70**	**0.470**	**0.440**	**0.470**	**1.30**
Sulfate	**29.0**	**16.0**	**16.0**	**16.0**	**27.0**
Total Dissolved Solids	**490**	**500**	**350**	**320**	**630**
Metals (UG/L)					
Arsenic	3.00 U	3.00 U	3.00 U	3.00 U	3.00 U
Barium	**14.0**	**13.0**	**11.0**	**11.0**	**6.00 J**
Cadmium	3.00 U	3.00 U	3.00 U	3.00 U	3.00 U
Chromium	4.00 U	4.00 U	4.00 U	4.00 U	4.00 U
Copper	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Iron	50.0 U	50.0 U	50.0 U	50.0 U	50.0 U
Lead	10.0 U	10.0 U	**4.50 J**	10.0 U	10.0 U
Manganese	**1.30 J**	3.00 U	**1.70 J**	3.00 U	3.00 U
Mercury	**0.0960 J**	0.200 U	**0.0940 J**	**0.0890 J**	**0.0890 J**
Selenium	20.0 U	20.0 U	20.0 U	20.0 U	20.0 U
Silver	1.50 U	1.50 U	1.50 U	1.50 U	1.50 U
PEST (UG/L)					
Aldrin	0.00850 U	0.00860 UJ	0.00910 U	0.00900 U	0.00850 U
alpha-BHC (alpha-Hexachlorocyclohexane)	0.00470 U	0.00480 U	0.00510 U	0.00500 U	0.00470 U
alpha-Endosulfan	0.00470 U	0.00480 U	0.00510 U	0.00500 U	0.00470 U
beta-BHC (beta-Hexachlorocyclohexane)	0.00850 U	0.00860 U	0.00910 U	0.00900 U	0.00850 U
beta-Endosulfan	0.00470 U	0.00480 U	0.00510 U	0.00500 U	0.00470 U
Chlordane	0.140 U	0.140 U	0.150 U	0.150 U	0.140 U
delta-BHC (delta-Hexachlorocyclohexane)	0.00850 U	0.00860 U	0.00910 U	0.00900 U	0.00850 U
Dieldrin	0.00470 U	0.00480 U	0.00510 U	0.00500 U	0.00470 U
Endosulfan sulfate	0.00470 U	0.00480 U	0.00510 U	0.00500 U	0.00470 U

Former Fort Devens

Seres-Arcadis JV, Long Term Monitoring, DCL, Spring 2020

Devens Consolidated Landfill (DCL)

Locations:	LFM-03-07	LFM-99-02B	LFM-99-05A	LFM-99-05A (FD)	LFM-99-06ARP
Field Sample ID:	LFM-03-07-SPR20	LFM-99-O2B-SPR20	LFM-99-05A-SPR20	DCL-DUP01-SPR20	LFM-99-06ARP-SPR20
Sample Begin Depth:	10.9	14.5	19	19	10.09
Sample End Depth:	20.9	25.83	29.98	29.98	19.39
Sample Date:	05/14/2020	05/15/2020	05/14/2020	05/14/2020	05/14/2020
Endrin	0.00470 U	0.00480 U	0.00510 U	0.00500 U	0.00470 U
Endrin aldehyde	0.00470 U	0.00480 U	0.00510 U	0.00500 U	0.00470 U
Endrin ketone	0.00470 U	0.00480 U	0.00510 U	0.00500 U	0.00470 U
gamma-BHC (Lindane)	0.00470 U	0.00480 U	0.00510 U	0.00500 U	0.00470 U
Heptachlor	0.00850 U	0.00860 UJ	0.00910 U	0.00900 U	0.00850 U
Heptachlor epoxide	0.00470 U	0.00480 U	0.00510 U	0.00500 U	0.00470 U
Methoxychlor	0.00850 U	0.00860 U	0.00910 U	0.00900 U	0.00850 U
p,p'-DDD	0.00470 U	0.00480 U	0.00510 U	0.00500 U	0.00470 U
p,p'-DDE	0.00470 U	0.00480 UJ	0.00510 U	0.00500 U	0.00470 U
p,p'-DDT	0.00850 U	0.00860 U	0.00910 U	0.00900 U	0.00850 U
Toxaphene	0.380 U	0.380 U	0.410 U	0.400 U	0.380 U
VPH (UG/L)					
Benzene	2.00 U	2.00 U	2.00 U	2.00 UJ	2.00 U
C5-C8 Volatile Petroleum Hydrocarbons	75.0 U	75.0 U	75.0 U	75.0 UJ	75.0 U
C9-C10 Volatile Petroleum Hydrocarbons,	75.0 U	75.0 U	75.0 U	75.0 UJ	75.0 U
C9-C12 Volatile Petroleum Hydrocarbons	75.0 U	75.0 U	75.0 U	75.0 UJ	75.0 U
Ethylbenzene	3.80 U	3.80 U	3.80 U	3.80 UJ	3.80 U
m,p-Xylene	7.50 U	7.50 U	7.50 U	7.50 UJ	7.50 U
Methyl tert-butyl ether (MTBE)	3.80 U	3.80 U	3.80 U	3.80 UJ	3.80 U
Naphthalene	3.80 U	3.80 U	3.80 U	3.80 UJ	3.80 U
o-Xylene	3.80 U	3.80 U	3.80 U	3.80 UJ	3.80 U
Toluene	3.80 U	3.80 U	3.80 U	3.80 UJ	3.80 U

Detects are displayed in bold font

Data Qualifier Definitions

J: The analyte was positively identified, but the associated numerical value is estimated and represents the approximate concentration of the analyte in the sample.
U: The analyte was not detected above the reported sample quantitation limit.
UJ: The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate.
R: The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Units

MG/KG = milligrams per kilogram
MG/L = milligram per liter
UG/KG = microgram per kilogram
UG/L = microgram per liter

ANALYTICAL REPORT

Job Number: 680-183912-2

Job Description: JV, LTM, DCL Spring 2020

For:
Seres Engineering & Services LLC
669 Marina Drive
Suite B7
Charleston, SC 29492

Attention: Nathan R Mullens



Approved for release.
Kathryn E Smith
Client Service Manager
6/7/2020 3:44 PM

Kathryn E Smith, Client Service Manager
5102 LaRoche Avenue, Savannah, GA, 31404
(912)250-0275
kathy.smith@testamericainc.com
06/07/2020

The test results in this report meet NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted. Results pertain only to samples listed in this report. This report may not be reproduced, except in full, without the written approval of the laboratory. Questions should be directed to the person who signed this report.

Savannah Certifications and ID #s: A2LA: 0399.01; AL: 41450; ARDEQ: 88-0692; ARDOH; AZ: AZ0741; CA: 03217CA; CO; CT: PH0161; DE; FL: E87052; GA: 803; Guam; HI; IL: 200022; IN: C-GA-02; IA: 353; KS: E-10322; KY EPPC: 90084; KY UST; LA DEQ: 30690; LA DHH: LA080008; ME: 2008022; MD: 250; MA: M-GA006; MI: 9925; MS; NFESC: 249; NV: GA00006; NJ: GA769; NM; NY: 10842; NC DWQ: 269; NC DHHS: 13701; PA: 68-00474; PR: GA00006; RI: LAO00244; SC: 98001001; TN: TN0296; TX: T104704185; USEPA: GA00006; VT: VT-87052; VA: 00302; WA; WV DEP: 094; WV DHHR: 9950 C; WI DNR: 999819810; WY/EPAR8: 8TMS-Q

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue, Savannah, GA 31404
Tel (912) 354-7858 Fax (912) 352-0165 www.testamericainc.com

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Method Summary

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM, DCL Spring 2020

Job ID: 680-183912-2

Method	Method Description	Protocol	Laboratory
MA-EPH	MADEP EPH (Extractable Petroleum Hydroca	MA DEP	
MA-VPH	MADEP VPH Volatile Petroleum Hydrocarbon	MA DEP	

Protocol References:

MA DEP = Massachusetts Department Of Environmental Protection

Laboratory References:

= Katahdin Analytical Services Inc, 600 Technology Way, Scarborough, ME 04074

Sample Summary

Client: Seres Engineering & Services LLC
Project/Site: JV, LTM, DCL Spring 2020

Job ID: 680-183912-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-183912-1	DCL-DUP01-SPR20	Water	05/14/20 00:00	05/16/20 09:00	
680-183912-2	LFM-03-07-SPR20	Water	05/14/20 14:00	05/16/20 09:00	
680-183912-3	LFM-99-05A-SPR20	Water	05/14/20 16:00	05/16/20 09:00	
680-183912-4	LM-99-06ARP-SPR20	Water	05/14/20 16:00	05/16/20 09:00	

Subcontract Data

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC.	Project #:
Project Location:	RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
SN3820-1, 2, 3, 4

Matrices: x Groundwater/Surface Water Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A x	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B x	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (No[1])
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1]*All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 06/02/2020 ~~06/07/2020~~

TEST AMERICA SAVANNAH
JV, LTM, DCL SPRING 2020
SN3820

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
JV, LTM, DCL SPRING 2020
SN3820

Sample Receipt

The following samples were received on May 19, 2020 and were logged in under Katahdin Analytical Services work order number SN3820 for a hardcopy due date of June 05, 2020.

KATAHDIN Sample No.	TEST AMERICA SAVANNAH Sample Identification
SN3820-1	DCL-DUP01-SPR20
SN3820-2	LFM-03-07-SPR20
SN3820-3	LFM-99-05A-SPR20
SN3820-4	LFM-99-06ARP-SPR20

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

We certify that the test results provided in this report meet all the requirements of the NELAP standards unless otherwise noted in this narrative or in the Report of Analysis.

We certify that the test results provided in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation L2223.

Analytes which are reported but not listed on our ANAB scope of accreditation will be "^" flagged and the following language will be included in the case narrative for all DoD compliant work: "^" Indicates this analyte is not included on Katahdin Analytical Services DoD-ELAP Scope of Accreditation.

Sample analyses have been performed by the methods as noted herein.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact your Katahdin Analytical Services Project Manager, **Ms. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Laboratory:

The samples of Work Order # SN3820 were analyzed in accordance with the Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MADEP, May 2004, Revision 1.1, and/or the Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis

MA-VPH Analysis

Sample SN3820-1 had a low recovery for the surrogate 2,5-DBT on the PID, which was outside of the method acceptance limits. The sample was reanalyzed with similar surrogate deviations confirming a matrix effect. The results for both analyses are reported.

The closing calibration standard (CV) (file 2NE10139) had low responses for the surrogate 2,5-DBT on the PID and FID. The CV also had low responses for six aliphatic hydrocarbons and both the C5-C8 aliphatic and C9-C12 aliphatic ranges. These responses resulted in %D's that were outside the method acceptance limits of ± 25%.

MA-EPH Analysis

The opening calibration standard (CV) (file CNE1106) had a low response for the target analyte dibenzo(a,h)anthracene that was outside the method acceptance limits of ± 25%. Samples SN3820-1 through 4 were confirmed by GC/MS 8270 SIM and this analyte was not detected above the MDL. Therefore, no further action was taken.

There were no other protocol deviations or observations noted by the organics laboratory staff.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond 06.03.20

Leslie Dimond
Quality Assurance Officer

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: T.A. Savannah	KAS PM: HTM	Sampled By: Client
Project:	KIMS Entry By: JCB	Delivered By:
KAS Work Order#: 320-38318-3520	KIMS Review By: HTM	Received By: JCB
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 5.19.20 1020

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 4.1 Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles: **Aqueous:** No bubble larger than a pea?	✓				
Soil/Sediment: Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?				✓	
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	
11. Bottleware Prepped on: n/a					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

SN3820

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lawhon, Jon K	Carrier Tracking No(s):	COC No: 680-611414.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jon.lawhon@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Katahdin Analytical Services		Accreditations Required (See note): Dept. of Defense ELAP - A2LA; DoD - ANAB		Job #: 680-183912-2
Address: 600 Technology Way, ,	Due Date Requested: 6/1/2020			
City: Scarborough	TAT Requested (days):			
State, Zip: ME, 04074				
Phone:	PO #:			
Email:	WO #:			
Project Name: JV, LTM, DCL Spring 2020	Project #: 68023801			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (MA VPH + BTEX)/ MA VPH	SUB (MA EPH + PAHs)/ MA EPH	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
DCL-DUP01-SPR20 (680-183912-1)	5/14/20	Eastern		Water			X	X	4	
LFM-03-07-SPR20 (680-183912-2)	5/14/20	14:00 Eastern		Water			X	X	4	
LFM-99-05A-SPR20 (680-183912-3)	5/14/20	16:00 Eastern		Water			X	X	4	
LM-99-06ARP-SPR20 (680-183912-4)	5/14/20	16:00 Eastern		Water			X	X	4	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		5/18/2020 1203			5.19.20 1030	KAS
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

May. 21, 2020
10:13 AM

Quote/Incoming:

Login Number: SN3820

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Primary Report Address:
Jon Lawhon
TestAmerica Savannah
5102 LaRoche Avenue

Savannah,GA 31404
jon.lawhon@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 5.1 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Include LOD on form. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative.
CHECK NO.	:	
CLIENT PO#	:	
CLIENT PROJECT MANAGE	:	Jon Lawhon
CONTRACT	:	680-183912, Project 68023901
COOLER TEMPERATURE	:	4.1
DELIVERY SERVICES	:	Fedex
EDD FORMAT	:	ECC-091317-TXT
LOGIN INITIALS	:	JCB
PM	:	HHM
PROJECT NAME	:	JV, LTM, DCL Spring 2020
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	SDS needs all forms. Include Level 4 narrative and MCP forms (from Leslie). Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS. Upload EDD to Ft. Devens Database. Email PDF, EDD, and invoice to Beth.Daughtry@testamericainc.com & Jon.Lawhon@testamericainc.com. No HC.
SDG ID	:	
SDG STATUS	:	
VERBAL TAT	:	

10:16 am, May 21, 2020

Login Number: SN3820

Quote/Incoming:

Account: TASAV001 NoWeb

Test America Savannah

Project: TASAV-DEVENS

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SN3820-1	DCL-DUP01-SPR20	14-MAY-20 00:00	19-MAY-20			05-JUN-20	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	28-MAY-20	1L N-Amber Glass		
Aqueous	S	MA-VPH	28-MAY-20	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SN3820-2	LFM-03-07-SPR20	14-MAY-20 14:00	19-MAY-20			05-JUN-20	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	28-MAY-20	1L N-Amber Glass		
Aqueous	S	MA-VPH	28-MAY-20	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SN3820-3	LFM-99-05A-SPR20	14-MAY-20 16:00	19-MAY-20			05-JUN-20	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	28-MAY-20	1L N-Amber Glass		
Aqueous	S	MA-VPH	28-MAY-20	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SN3820-4	LFM-99-06ARP-SPR20	14-MAY-20 16:00	19-MAY-20			05-JUN-20	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	28-MAY-20	1L N-Amber Glass		
Aqueous	S	MA-VPH	28-MAY-20	40mL Vial+HCl		

Total Samples: 4 ***Total Analyses: 8***

10:16 am, May 21, 2020

SAMPLE DATA SUMMARY PACKAGE

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N Presumptive evidence of a compound based on a mass spectral library search.

A Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3820-1
Client ID: DCL-DUP01-SPR20
Project: JV, LTM, DCL Spring 2020
SDG: SN3820
Lab File ID: 2NE10129.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 02-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)	*	57.2	%				
2,5-Dibromotoluene (PID)	*	53.9	%				

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
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http://www.katahdinlab.com

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3820-1RA
Client ID: DCL-DUP01-SPR20
Project: JV, LTM, DCL Spring 2020
SDG: SN3820
Lab File ID: 2NE10159.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 26-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391

Analysis Date: 26-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)	*	53.2	%				
2,5-Dibromotoluene (PID)	*	50.2	%				

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ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3820-2RA
Client ID: LFM-03-07-SPR20
Project: JV, LTM, DCL Spring 2020
SDG: SN3820
Lab File ID: 2NE10160.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 26-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391

Analysis Date: 26-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		81.8	%				
2,5-Dibromotoluene (PID)		78.4	%				

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ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3820-3RA
Client ID: LFM-99-05A-SPR20
Project: JV, LTM, DCL Spring 2020
SDG: SN3820
Lab File ID: 2NE10161.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 26-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391

Analysis Date: 26-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		76.7	%				
2,5-Dibromotoluene (PID)		72.2	%				

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ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3820-4RA
Client ID: LFM-99-06ARP-SPR20
Project: JV, LTM, DCL Spring 2020
SDG: SN3820
Lab File ID: 2NE10162.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 26-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391

Analysis Date: 26-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		92.2	%				
2,5-Dibromotoluene (PID)		87.3	%				

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ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG278133-1
Client ID: Method Blank Sample
Project:
SDG: SN3820
Lab File ID: 2NE10120.D

Sample Date:
Received Date:
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 02-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		71.4	%				
2,5-Dibromotoluene (PID)		72.0	%				

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Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG278391-1
Client ID: Method Blank Sample
Project:
SDG: SN3820
Lab File ID: 2NE10155.D

Sample Date:
Received Date:
Extract Date: 26-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391

Analysis Date: 26-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		102.	%				
2,5-Dibromotoluene (PID)		96.7	%				

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** JV, LTM, DCL Spring 2020 **Matrix:** AQ
Lab Code: KAS **SDG:** SN3820

Client Sample ID	Lab Sample ID	Col. ID	DBT-FID	#	DBT-PID	#
DCL-DUP01-SPR20	SN3820-1	B	57.2	*	53.9	*
DCL-DUP01-SPR20	SN3820-1RA	B	53.2	*	50.2	*
LFM-03-07-SPR20	SN3820-2RA	B	81.8		78.4	
LFM-99-05A-SPR20	SN3820-3RA	B	76.7		72.2	
LFM-99-06ARP-SPR20	SN3820-4RA	B	92.2		87.3	
Method Blank Sample	WG278133-1	B	71.4		72.0	
Laboratory Control S	WG278133-2	B	87.1		89.4	
Laboratory Control S	WG278133-3	B	91.9		96.1	
Method Blank Sample	WG278391-1	B	102.		96.7	
Laboratory Control S	WG278391-2	B	93.2		92.6	
Laboratory Control S	WG278391-3RA	B	95.6		95.9	

		QC Limits
DBT-FID	2,5-DIBROMOTOLUENE (FID)	70-130
DBT-PID	2,5-DIBROMOTOLUENE (PID)	70-130

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG278133-2
LCSD ID: WG278133-3
Project:
SDG: SN3820
Report Date: 02-JUN-20
LCS File ID: 2NE10121.D

Received Date:
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133
LCSD File ID: 2NE10122.D

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	269.	89.7	275.	91.7	ug/L	2	25	70-130
C9-C12 Aliphatics	200.	190.	95.0	187.	93.5	ug/L	2	25	70-130
C9-C10 Aromatics	100.	94.3	94.3	95.4	95.4	ug/L	1	25	70-130
Benzene	100.	87.9	87.9	91.1	91.1	ug/L	4	25	70-130
Ethylbenzene	100.	92.2	92.2	94.8	94.8	ug/L	3	25	70-130
Methyl tert-butylether	100.	90.4	90.4	90.4	90.4	ug/L	0	25	70-130
Naphthalene	100.	91.0	91.0	94.0	94.0	ug/L	3	25	70-130
Toluene	100.	89.2	89.2	92.6	92.6	ug/L	4	25	70-130
m+p-Xylenes	200.	183.	91.5	187.	93.5	ug/L	2	25	70-130
o-Xylene	100.	91.6	91.6	93.1	93.1	ug/L	2	25	70-130
2,5-Dibromotoluene (FID)			87.1		91.9				70-130
2,5-Dibromotoluene (PID)			89.4		96.1				70-130

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Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG278391-2
LCSD ID: WG278391-3RA
Project:
SDG: SN3820
Report Date: 01-JUN-20
LCS File ID: 2NE10156.D

Received Date:
Extract Date: 26-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391
LCSD File ID: 2NE10158.D

Analysis Date: 26-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	286.	95.3	268.	89.3	ug/L	6	25	70-130
C9-C12 Aliphatics	200.	191.	95.5	190.	95.0	ug/L	0	25	70-130
C9-C10 Aromatics	100.	87.3	87.3	88.2	88.2	ug/L	1	25	70-130
Benzene	100.	80.6	80.6	83.0	83.0	ug/L	3	25	70-130
Ethylbenzene	100.	84.4	84.4	86.4	86.4	ug/L	2	25	70-130
Methyl tert-butylether	100.	80.0	80.0	81.3	81.3	ug/L	2	25	70-130
Naphthalene	100.	82.9	82.9	86.8	86.8	ug/L	4	25	70-130
Toluene	100.	81.5	81.5	84.0	84.0	ug/L	3	25	70-130
m+p-Xylenes	200.	169.	84.5	172.	86.0	ug/L	2	25	70-130
o-Xylene	100.	84.5	84.5	85.8	85.8	ug/L	2	25	70-130
2,5-Dibromotoluene (FID)			93.2		95.6				70-130
2,5-Dibromotoluene (PID)			92.6		95.9				70-130

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020
Lab File ID : 2NE10120.D
Instrument ID : GC02

SDG : SN3820
Lab Sample ID : WG278133-1
Date Analyzed : 21-MAY-20
Time Analyzed : 10:59
Date Extracted : 21-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278133-2	2NE10121.	05/21/20	11:39
Laboratory Control S	WG278133-3	2NE10122.	05/21/20	12:20
DCL-DUP01-SPR20	SN3820-1	2NE10129.	05/21/20	18:25

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020
Lab File ID : 2NE10155.D
Instrument ID : GC02

SDG : SN3820
Lab Sample ID : WG278391-1
Date Analyzed : 26-MAY-20
Time Analyzed : 10:43
Date Extracted : 26-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278391-2	2NE10156.	05/26/20	12:14
Laboratory Control S	WG278391-3RA	2NE10158.	05/26/20	14:10
DCL-DUP01-SPR20	SN3820-1RA	2NE10159.	05/26/20	16:27
LFM-03-07-SPR20	SN3820-2RA	2NE10160.	05/26/20	17:08
LFM-99-05A-SPR20	SN3820-3RA	2NE10161.	05/26/20	17:49
LFM-99-06ARP-SPR20	SN3820-4RA	2NE10162.	05/26/20	18:31

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN3820
Project : JV, LTM, DCL Spring 2020 **Instrument ID:** GC02
Lab File IDs : 2NE10031.D 2NE10032.D 2NE10037.D 2NE10036.D 2NE10034.D 2NE10035.D **Calibration Date(s):** 07-MAY-20 09:25 07-MAY-20 14:39

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C10 Aromatic	2653	2703	2836	3021	3138	2603	AVG		2826		7.59424	25.00000	M C
Methyl tert-butylether	1484	1674	1686	1569	1771	1669	AVG		1642		6.12724	25.00000	O
Benzene	3397	3518	3561	3387	3616	3470	AVG		3492		2.60540	25.00000	O
Toluene	2922	3194	3266	3149	3325	2968	AVG		3137		5.14062	25.00000	O
Ethylbenzene	2501	2621	2740	2770	2917	2587	AVG		2689		5.55429	25.00000	O
m+p-Xylene	3076	3247	3376	3362	3350	2410	AVG		3137		11.9094	25.00000	O
o-Xylene	2559	2771	2889	2911	2964	2591	AVG		2781		6.18361	25.00000	O
1,2,4-trimethylbenzene	2653	2703	2836	3021	3138	2603	AVG		2826		7.59424	25.00000	O
Naphthalene	2949	2410	2270	3103	3272	2611	AVG		2769		14.4410	25.00000	O
2,5-Dibromotoluene (PID)	2274	1715	+++++	2433	2566	1786	AVG		2155		17.8318	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services
SDG: SN3820
Project : JV, LTM, DCL Spring 2020
Instrument ID: GC02
Lab File IDs : 2NE10031.D 2NE10032.D 2NE10037.D 2NE10036.D 2NE10034.D 2NE10035.D
Calibration Date(s): 07-MAY-20 08:43 07-MAY-20 14:39

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C5-C8 Aliphatic	5517	5727	5486	5639	5562	4787	AVG		5453		6.18987	25.00000	M C
C9-C12 Aliphatic	5393	5202	5196	5540	5789	6344	AVG		5577		7.83095	25.00000	M C
n-Pentane	4893	5095	4918	5071	5225	4097	AVG		4883		8.27021	25.00000	O
2-Methylpentane	5817	5819	5507	5664	5478	4763	AVG		5508		7.13290	25.00000	O
Methyl tert-butylether	4827	4506	4586	4238	4472	4253	AVG		4480		4.91417	25.00000	O
2,2,4-Trimethylpentane	5842	6268	6033	6181	5982	5502	AVG		5968		4.57751	25.00000	O
Benzene	7981	7809	8006	7554	7827	7749	AVG		7821		2.10939	25.00000	O
Toluene	7488	7650	7896	7530	7796	7762	AVG		7687		2.06964	25.00000	O
n-Nonane	5316	5073	5175	5605	5634	6100	AVG		5484		6.86907	25.00000	O
n-Decane	5241	4292	4329	5009	5679	6382	AVG		5155		15.60283	25.00000	O
Ethylbenzene	6766	6908	7348	7291	7575	7574	AVG		7244		4.67308	25.00000	O
m+p-Xylene	7128	7378	7979	7582	7801	7701	AVG		7595		4.02538	25.00000	O
o-Xylene	7109	7430	8156	7657	7929	7777	AVG		7677		4.82948	25.00000	O
1,2,4-trimethylbenzene	6680	6801	7123	7405	7774	7638	AVG		7237		6.15087	25.00000	O
n-Butylcyclohexane	5544	6112	6062	6070	5900	6305	AVG		5999		4.29738	25.00000	O
Naphthalene	5671	4589	4268	5559	5921	5635	AVG		5274		12.77292	25.00000	O
2,5-Dibromotoluene (FID)	2187	1573	+++++	2080	2220	1934	AVG		1999		13.15424	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020
SDG: SN3820
Lab ID : WG278133-4
Analytical Date: 05/21/20 09:36
Lab File ID : 2NE10119.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	2826	2887	0.100	2.19056	25.00000	Averaged
20	Benzene	3492	3242	0.100	-7.14169	25.00000	Averaged
30	Ethylbenzene	2689	2636	0.100	-1.97132	25.00000	Averaged
40	Methyl tert-butylether	1642	1625	0.100	-1.05975	25.00000	Averaged
50	Naphthalene	2769	2756	0.100	-0.48620	25.00000	Averaged
60	Toluene	3137	2986	0.100	-4.82557	25.00000	Averaged
70	m+p-Xylene	3137	3121	0.100	-0.49227	25.00000	Averaged
80	o-Xylene	2781	2730	0.100	-1.83890	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	2155	1902	0.100	-11.72196	25.00000	Averaged
180	1,2,4-trimethylbenzene	2826	2887	0.100	2.19004	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020
SDG: SN3820
Lab ID : WG278133-4
Analytical Date: 05/21/20 09:36
Lab File ID : 2NE10119.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
30	C5-C8 Aliphatic	5453	4905	0.100	-10.05248	25.00000	Averaged
40	C9-C12 Aliphatic	5577	4908	0.100	-11.99198	25.00000	Averaged
60	Benzene	7821	7227	0.100	-7.59466	25.00000	Averaged
70	Ethylbenzene	7244	7025	0.100	-3.01402	25.00000	Averaged
80	Methyl tert-butylether	4480	4293	0.100	-4.18959	25.00000	Averaged
90	Naphthalene	5274	5156	0.100	-2.23869	25.00000	Averaged
100	Toluene	7687	7193	0.100	-6.43213	25.00000	Averaged
110	m+p-Xylene	7595	7346	0.100	-3.27982	25.00000	Averaged
120	o-Xylene	7677	7474	0.100	-2.64310	25.00000	Averaged
200	n-Pentane	4883	4030	0.100	-17.46315	25.00000	Averaged
210	2-Methylpentane	5508	5054	0.100	-8.24928	25.00000	Averaged
220	2,2,4-Trimethylpentane	5968	5631	0.100	-5.65263	25.00000	Averaged
230	n-Nonane	5484	4949	0.100	-9.75406	30.00000	Averaged
240	n-Decane	5155	4325	0.100	-16.10969	25.00000	Averaged
250	n-Butylcyclohexane	5999	5492	0.100	-8.45268	25.00000	Averaged
260	1,2,4-trimethylbenzene	7237	7300	0.100	0.87477	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	1999	1687	0.100	-15.59610	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020 **SDG:** SN3820
Lab ID : WG278133-5 **Analytical Date:** 05/22/20 01:36
Lab File ID : 2NE10139.D **Instrument ID:** GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39 **Column ID:** A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
10	C9-C10 Aromatic	2826	2849	0.100	0.84239	25.00000	Averaged	
20	Benzene	3492	3367	0.100	-3.57134	25.00000	Averaged	
30	Ethylbenzene	2689	2688	0.100	-0.05853	25.00000	Averaged	
40	Methyl tert-butylether	1642	1536	0.100	-6.48308	25.00000	Averaged	
50	Naphthalene	2769	2736	0.100	-1.21277	25.00000	Averaged	
60	Toluene	3137	3123	0.100	-0.43823	25.00000	Averaged	
70	m+p-Xylene	3137	3229	0.100	2.92852	25.00000	Averaged	
80	o-Xylene	2781	2807	0.100	0.95667	25.00000	Averaged	
90	2,5-Dibromotoluene (PID)	2155	1425	0.100	-33.86224	25.00000	Averaged	<-
180	1,2,4-trimethylbenzene	2826	2849	0.100	0.84236	25.00000	Averaged	

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020 **SDG:** SN3820
Lab ID : WG278133-5 **Analytical Date:** 05/22/20 01:36
Lab File ID : 2NE10139.D **Instrument ID:** GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39 **Column ID:** B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
30	C5-C8 Aliphatic	5453	3455	0.100	-36.63294	25.00000	Averaged	<-
40	C9-C12 Aliphatic	5577	3216	0.100	-42.34226	25.00000	Averaged	<-
60	Benzene	7821	7861	0.100	0.51579	25.00000	Averaged	
70	Ethylbenzene	7244	7454	0.100	2.90583	25.00000	Averaged	
80	Methyl tert-butylether	4480	4312	0.100	-3.75302	25.00000	Averaged	
90	Naphthalene	5274	5262	0.100	-0.23332	25.00000	Averaged	
100	Toluene	7687	7845	0.100	2.05387	25.00000	Averaged	
110	m+p-Xylene	7595	7811	0.100	2.84219	25.00000	Averaged	
120	o-Xylene	7677	7877	0.100	2.61472	25.00000	Averaged	
200	n-Pentane	4883	3078	0.100	-36.97545	25.00000	Averaged	<-
210	2-Methylpentane	5508	3477	0.100	-36.88080	25.00000	Averaged	<-
220	2,2,4-Trimethylpentane	5968	3812	0.100	-36.12453	25.00000	Averaged	<-
230	n-Nonane	5484	3100	0.100	-43.47694	30.00000	Averaged	<-
240	n-Decane	5155	2639	0.100	-48.80963	25.00000	Averaged	<-
250	n-Butylcyclohexane	5999	3792	0.100	-36.78404	25.00000	Averaged	<-
260	1,2,4-trimethylbenzene	7237	7440	0.100	2.80489	25.00000	Averaged	
21	2,5-Dibromotoluene (FID)	1999	1269	0.100	-36.49971	25.00000	Averaged	<-

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020 **SDG:** SN3820
Lab ID : WG278391-4 **Analytical Date:** 05/26/20 09:42
Lab File ID : 2NE10154.D **Instrument ID:** GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39 **Column ID:** A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	2826	2661	0.100	-5.82224	25.00000	Averaged
20	Benzene	3492	3122	0.100	-10.59576	25.00000	Averaged
30	Ethylbenzene	2689	2494	0.100	-7.24788	25.00000	Averaged
40	Methyl tert-butylether	1642	1483	0.100	-9.69592	25.00000	Averaged
50	Naphthalene	2769	2639	0.100	-4.69033	25.00000	Averaged
60	Toluene	3137	2870	0.100	-8.51675	25.00000	Averaged
70	m+p-Xylene	3137	2967	0.100	-5.39647	25.00000	Averaged
80	o-Xylene	2781	2558	0.100	-8.00395	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	2155	1913	0.100	-11.22261	25.00000	Averaged
180	1,2,4-trimethylbenzene	2826	2661	0.100	-5.82242	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020 **SDG:** SN3820
Lab ID : WG278391-4 **Analytical Date:** 05/26/20 09:42
Lab File ID : 2NE10154.D **Instrument ID:** GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39 **Column ID:** B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
30	C5-C8 Aliphatic	5453	5095	0.100	-6.57112	25.00000	Averaged
40	C9-C12 Aliphatic	5577	4828	0.100	-13.43519	25.00000	Averaged
60	Benzene	7821	7589	0.100	-2.96381	25.00000	Averaged
70	Ethylbenzene	7244	7248	0.100	0.06339	25.00000	Averaged
80	Methyl tert-butylether	4480	4252	0.100	-5.09398	25.00000	Averaged
90	Naphthalene	5274	5340	0.100	1.25971	25.00000	Averaged
100	Toluene	7687	7548	0.100	-1.80563	25.00000	Averaged
110	m+p-Xylene	7595	7550	0.100	-0.59367	25.00000	Averaged
120	o-Xylene	7677	7624	0.100	-0.68650	25.00000	Averaged
200	n-Pentane	4883	4661	0.100	-4.55393	25.00000	Averaged
210	2-Methylpentane	5508	5107	0.100	-7.27580	25.00000	Averaged
220	2,2,4-Trimethylpentane	5968	5516	0.100	-7.57122	25.00000	Averaged
230	n-Nonane	5484	4944	0.100	-9.83831	30.00000	Averaged
240	n-Decane	5155	4275	0.100	-17.07450	25.00000	Averaged
250	n-Butylcyclohexane	5999	5381	0.100	-10.30737	25.00000	Averaged
260	1,2,4-trimethylbenzene	7237	7323	0.100	1.19010	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	1999	1848	0.100	-7.52524	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020 **SDG:** SN3820
Lab ID : WG278391-5 **Analytical Date:** 05/27/20 01:41
Lab File ID : 2NE10172.D **Instrument ID:** GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39 **Column ID:** A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	2826	2738	0.100	-3.11247	25.00000	Averaged
20	Benzene	3492	3264	0.100	-6.50930	25.00000	Averaged
30	Ethylbenzene	2689	2608	0.100	-3.00730	25.00000	Averaged
40	Methyl tert-butylether	1642	1543	0.100	-6.01054	25.00000	Averaged
50	Naphthalene	2769	2749	0.100	-0.71443	25.00000	Averaged
60	Toluene	3137	2999	0.100	-4.40036	25.00000	Averaged
70	m+p-Xylene	3137	3068	0.100	-2.20044	25.00000	Averaged
80	o-Xylene	2781	2673	0.100	-3.88864	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	2155	1881	0.100	-12.72065	25.00000	Averaged
180	1,2,4-trimethylbenzene	2826	2738	0.100	-3.11291	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020
SDG: SN3820
Lab ID : WG278391-5
Analytical Date: 05/27/20 01:41
Lab File ID : 2NE10172.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
30	C5-C8 Aliphatic	5453	5738	0.100	5.21757	25.00000	Averaged
40	C9-C12 Aliphatic	5577	5083	0.100	-8.85765	25.00000	Averaged
60	Benzene	7821	7737	0.100	-1.07480	25.00000	Averaged
70	Ethylbenzene	7244	7386	0.100	1.96571	25.00000	Averaged
80	Methyl tert-butylether	4480	4315	0.100	-3.70258	25.00000	Averaged
90	Naphthalene	5274	5452	0.100	3.37391	25.00000	Averaged
100	Toluene	7687	7687	0.100	0.00053	25.00000	Averaged
110	m+p-Xylene	7595	7666	0.100	0.94210	25.00000	Averaged
120	o-Xylene	7677	7734	0.100	0.75451	25.00000	Averaged
200	n-Pentane	4883	5351	0.100	9.57580	25.00000	Averaged
210	2-Methylpentane	5508	5741	0.100	4.22336	25.00000	Averaged
220	2,2,4-Trimethylpentane	5968	6121	0.100	2.56899	25.00000	Averaged
230	n-Nonane	5484	5153	0.100	-6.03220	30.00000	Averaged
240	n-Decane	5155	4508	0.100	-12.55809	25.00000	Averaged
250	n-Butylcyclohexane	5999	5658	0.100	-5.67716	25.00000	Averaged
260	1,2,4-trimethylbenzene	7237	7382	0.100	2.00344	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	1999	1762	0.100	-11.82283	25.00000	Averaged

*** = Compound out of QC criteria**

Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services
SDG : SN3820
Project : JV, LTM, DCL Spring 2020
Instrument ID : GC02

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG277230-1	05/07/20	09:25		31.31
Initial Calibration	WG277230-1	05/07/20	09:25	31.299	
Initial Calibration	WG277230-2	05/07/20	10:07		31.308
Initial Calibration	WG277230-2	05/07/20	10:07	31.298	
Initial Calibration	WG277230-5	05/07/20	11:31		31.309
Initial Calibration	WG277230-5	05/07/20	11:31	31.299	
Initial Calibration	WG277230-6	05/07/20	12:12		31.313
Initial Calibration	WG277230-6	05/07/20	12:12	31.303	
Initial Calibration	WG277230-4	05/07/20	13:58		31.31
Initial Calibration	WG277230-4	05/07/20	13:58	31.3	
Initial Calibration	WG277230-3	05/07/20	14:39		31.308
Initial Calibration	WG277230-3	05/07/20	14:39	31.298	
Independent Source	WG277230-7	05/07/20	16:32	31.3	31.31
Continuing Calibrati	WG278133-4	05/21/20	09:36	31.27	31.28
Method Blank Sample	WG278133-1	05/21/20	10:59	31.269	31.279
Laboratory Control S	WG278133-2	05/21/20	11:39	31.273	31.283
Laboratory Control S	WG278133-3	05/21/20	12:20	31.269	31.279
DCL-DUP01-SPR20	SN3820-1	05/21/20	18:25	31.288	31.299
Continuing Calibrati	WG278133-5	05/22/20	01:36	31.288	31.299
Continuing Calibrati	WG278391-4	05/26/20	09:42	31.275	31.285
Method Blank Sample	WG278391-1	05/26/20	10:43	31.275	31.285
Laboratory Control S	WG278391-2	05/26/20	12:14	31.276	31.286
Laboratory Control S	WG278391-3RA	05/26/20	14:10	31.274	31.284
DCL-DUP01-SPR20	SN3820-1RA	05/26/20	16:27	31.277	31.288
LFM-03-07-SPR20	SN3820-2RA	05/26/20	17:08	31.277	31.288
LFM-99-05A-SPR20	SN3820-3RA	05/26/20	17:49	31.292	31.303
LFM-99-06ARP-SPR20	SN3820-4RA	05/26/20	18:31	31.289	31.299
Continuing Calibrati	WG278391-5	05/27/20	01:41	31.287	31.297

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3820-1
Client ID: DCL-DUP01-SPR20
Project: JV, LTM, DCL Spring 2020
SDG: SN3820
Lab File ID: CNE2117.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 20-MAY-20
Extracted By: MR
Extraction Method: SW846 3510C
Lab Prep Batch: WG278026

Analysis Date: 22-MAY-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 28-MAY-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	96	ug/L	1	100	96.	48.	72.
C19-C36 Aliphatics	U	96	ug/L	1	100	96.	48.	72.
C11-C22 Aromatics	U	96	ug/L	1	100	96.	48.	72.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.86	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.96	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		55.3	%					
o-Terphenyl		69.2	%					
2-Fluorobiphenyl		73.4	%					
2-Bromonaphthalene		73.3	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3820-2
Client ID: LFM-03-07-SPR20
Project: JV, LTM, DCL Spring 2020
SDG: SN3820
Lab File ID: CNE2118.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 20-MAY-20
Extracted By: MR
Extraction Method: SW846 3510C
Lab Prep Batch: WG278026

Analysis Date: 22-MAY-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 28-MAY-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	93	ug/L	1	100	93.	47.	70.
C19-C36 Aliphatics	U	93	ug/L	1	100	93.	47.	70.
C11-C22 Aromatics	U	93	ug/L	1	100	93.	47.	70.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.84	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.93	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		40.1	%					
o-Terphenyl		53.0	%					
2-Fluorobiphenyl		80.8	%					
2-Bromonaphthalene		79.2	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3820-3
Client ID: LFM-99-05A-SPR20
Project: JV, LTM, DCL Spring 2020
SDG: SN3820
Lab File ID: CNE2119.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 20-MAY-20
Extracted By: MR
Extraction Method: SW846 3510C
Lab Prep Batch: WG278026

Analysis Date: 22-MAY-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 28-MAY-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	110	ug/L	1	100	110	54.	81.
C19-C36 Aliphatics	U	110	ug/L	1	100	110	54.	81.
C11-C22 Aromatics	U	110	ug/L	1	100	110	54.	81.
Naphthalene	U	2.2	ug/L	1	2	2.2	0.97	1.6
2-Methylnaphthalene	U	2.2	ug/L	1	2	2.2	0.86	1.6
Phenanthrene	U	2.2	ug/L	1	2	2.2	0.97	1.6
Acenaphthylene	U	2.2	ug/L	1	2	2.2	0.86	1.6
Acenaphthene	U	2.2	ug/L	1	2	2.2	1.9	2.0
Anthracene	U	2.2	ug/L	1	2	2.2	1.5	1.6
Benzo(a)anthracene	U	2.2	ug/L	1	2	2.2	1.5	1.6
Benzo(a)pyrene	U	2.2	ug/L	1	2	2.2	1.4	1.6
Benzo(b)fluoranthene	U	2.2	ug/L	1	2	2.2	0.86	1.6
Benzo(g,h,i)perylene	U	2.2	ug/L	1	2	2.2	1.4	1.6
Benzo(k)fluoranthene	U	2.2	ug/L	1	2	2.2	1.1	1.6
Chrysene	U	2.2	ug/L	1	2	2.2	0.97	1.6
Dibenzo(a,h)anthracene	U	2.2	ug/L	1	2	2.2	1.3	1.6
Fluoranthene	U	2.2	ug/L	1	2	2.2	0.86	1.6
Fluorene	U	2.2	ug/L	1	2	2.2	0.97	1.6
Indeno(1,2,3-cd)pyrene	U	2.2	ug/L	1	2	2.2	1.5	1.6
Pyrene	U	2.2	ug/L	1	2	2.2	1.2	1.6
5-Alpha Androstane		53.4	%					
o-Terphenyl		65.4	%					
2-Fluorobiphenyl		74.8	%					
2-Bromonaphthalene		75.0	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3820-4
Client ID: LFM-99-06ARP-SPR20
Project: JV, LTM, DCL Spring 2020
SDG: SN3820
Lab File ID: CNE2120.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 20-MAY-20
Extracted By: MR
Extraction Method: SW846 3510C
Lab Prep Batch: WG278026

Analysis Date: 22-MAY-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 28-MAY-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	93	ug/L	1	100	93.	47.	70.
C19-C36 Aliphatics	U	93	ug/L	1	100	93.	47.	70.
C11-C22 Aromatics	U	93	ug/L	1	100	93.	47.	70.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.84	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.93	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		50.0	%					
o-Terphenyl		62.2	%					
2-Fluorobiphenyl		69.8	%					
2-Bromonaphthalene		68.7	%					

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Report of Analytical Results

Client:
Lab ID: WG278026-1
Client ID: Method Blank Sample
Project:
SDG: SN3820
Lab File ID: CNE2113.D

Sample Date:
Received Date:
Extract Date: 20-MAY-20
Extracted By: MR
Extraction Method: SW846 3510C
Lab Prep Batch: WG278026

Analysis Date: 22-MAY-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 28-MAY-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		58.0	%					
o-Terphenyl		53.7	%					
2-Fluorobiphenyl		56.7	%					
2-Bromonaphthalene		56.4	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** JV, LTM, DCL Spring 2020 **Matrix:** AQ
Lab Code: KAS **SDG:** SN3820

Client Sample ID	Lab Sample ID	Col. ID	2BN	#	2FBP	#	5AA	#	OTP	#
DCL-DUP01-SPR20	SN3820-1	B	73.3		73.4		55.3		69.2	
LFM-03-07-SPR20	SN3820-2	B	79.2		80.8		40.1		53.0	
LFM-99-05A-SPR20	SN3820-3	B	75.0		74.8		53.4		65.4	
LFM-99-06ARP-SPR20	SN3820-4	B	68.7		69.8		50.0		62.2	
Method Blank Sample	WG278026-1	B	56.4		56.7		58.0		53.7	
Laboratory Control S	WG278026-2	B	79.1		78.9		62.2		76.1	
Laboratory Control S	WG278026-3	B	62.1		61.7		46.0		54.8	

		QC Limits
5AA	5-ALPHA ANDROSTANE	40-140
OTP	O-TERPHENYL	40-140
2FBP	2-FLUOROBIPHENYL	40-140
2BN	2-BROMONAPHTHALENE	40-140

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG278026-2
LCSD ID: WG278026-3
Project:
SDG: SN3820
Report Date: 28-MAY-20
LCS File ID: CNE2114.D

Received Date:
Extract Date: 20-MAY-20
Extracted By: MR
Extraction Method: SW846 3510C
Lab Prep Batch: WG278026
LCSD File ID: CNE1115.d

Analysis Date: 22-MAY-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1530	1210	79.1	899.	58.8	ug/L	29*	25	40-140
C9-C18 Aliphatics	540.	350.	64.8	330.	61.1	ug/L	6	25	40-140
C19-C36 Aliphatics	720.	617.	85.7	567.	78.8	ug/L	8	25	40-140
Naphthalene	90.0	59.3	65.9	44.5	49.4	ug/L	28*	25	40-140
2-Methylnaphthalene	90.0	65.1	72.3	48.9	54.3	ug/L	28*	25	40-140
Phenanthrene	90.0	76.4	84.9	57.2	63.6	ug/L	29*	25	40-140
Acenaphthylene	90.0	63.2	70.2	47.9	53.2	ug/L	28*	25	40-140
Acenaphthene	90.0	65.6	72.9	50.5	56.1	ug/L	26*	25	40-140
Anthracene	90.0	70.4	78.2	52.2	58.0	ug/L	30*	25	40-140
Benzo(a)anthracene	90.0	75.8	84.2	55.5	61.7	ug/L	31*	25	40-140
Benzo(a)pyrene	90.0	70.4	78.2	51.1	56.8	ug/L	32*	25	40-140
Benzo(b)fluoranthene	90.0	73.1	81.2	57.2	63.6	ug/L	24	25	40-140
Benzo(g,h,i)perylene	90.0	73.6	81.8	53.2	59.1	ug/L	32*	25	40-140
Benzo(k)fluoranthene	90.0	74.6	82.9	49.9	55.4	ug/L	40*	25	40-140
Chrysene	90.0	72.6	80.7	53.4	59.3	ug/L	30*	25	40-140
Dibenzo(a,h)anthracene	90.0	67.0	74.4	49.0	54.4	ug/L	31*	25	40-140
Fluoranthene	90.0	75.4	83.8	55.8	62.0	ug/L	30*	25	40-140
Fluorene	90.0	69.9	77.7	53.5	59.4	ug/L	26*	25	40-140
Indeno(1,2,3-cd)pyrene	90.0	73.0	81.1	51.4	57.1	ug/L	35*	25	40-140
Pyrene	90.0	73.6	81.8	53.9	59.9	ug/L	31*	25	40-140
5-Alpha Androstane			62.2		46.0				40-140
o-Terphenyl			76.1		54.8				40-140
2-Fluorobiphenyl			78.9		61.7				40-140
2-Bromonaphthalene			79.1		62.1				40-140

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020
Lab File ID : CNE1113.D
Instrument ID : GC12

SDG : SN3820
Lab Sample ID : WG278026-1
Date Analyzed : 22-MAY-20
Time Analyzed : 17:16
Date Extracted : 20-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278026-2	CNE1114.I	05/22/20	18:03
Laboratory Control S	WG278026-3	CNE1115.I	05/22/20	18:49
DCL-DUP01-SPR20	SN3820-1	CNE1117.I	05/22/20	20:22
LFM-03-07-SPR20	SN3820-2	CNE1118.I	05/22/20	21:08
LFM-99-05A-SPR20	SN3820-3	CNE1119.I	05/22/20	21:54
LFM-99-06ARP-SPR20	SN3820-4	CNE1120.I	05/22/20	22:40

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020
Lab File ID : CNE1113A.D
Instrument ID : GC12

SDG : SN3820
Lab Sample ID : WG278026-1
Date Analyzed : 22-MAY-20
Time Analyzed : 17:16
Date Extracted : 20-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278026-2	CNE1114A	05/22/20	18:03
Laboratory Control S	WG278026-3	CNE1115A	05/22/20	18:49
DCL-DUP01-SPR20	SN3820-1	CNE1117A	05/22/20	20:22
LFM-03-07-SPR20	SN3820-2	CNE1118A	05/22/20	21:08
LFM-99-05A-SPR20	SN3820-3	CNE1119A	05/22/20	21:54
LFM-99-06ARP-SPR20	SN3820-4	CNE1120A	05/22/20	22:40

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020
Lab File ID : CNE2113.D
Instrument ID : GC12

SDG : SN3820
Lab Sample ID : WG278026-1
Date Analyzed : 22-MAY-20
Time Analyzed : 17:16
Date Extracted : 20-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278026-2	CNE2114.I	05/22/20	18:03
Laboratory Control S	WG278026-3	CNE2115.I	05/22/20	18:49
DCL-DUP01-SPR20	SN3820-1	CNE2117.I	05/22/20	20:22
LFM-03-07-SPR20	SN3820-2	CNE2118.I	05/22/20	21:08
LFM-99-05A-SPR20	SN3820-3	CNE2119.I	05/22/20	21:54
LFM-99-06ARP-SPR20	SN3820-4	CNE2120.I	05/22/20	22:40

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services
SDG: SN3820
Project : JV, LTM, DCL Spring 2020
Instrument ID: GC12
Lab File IDs : CNC1023.d CNC1022.d CNC1021.d CNC1020.d CNC1019.d
Calibration Date(s): 06-MAR-20 11:58 06-MAR-20 15:00

	1.0000 Level 1	10.0000 Level 2	50.0000 Level 3	100.0000 Level 4	200.0000 Level 5		New Crv	b	m1	m2	%RSD	Max %RSD	
Unadjusted C11-C22 Aromatic	11371	10074	9250	9133	9951		AVG		9956		8.97242	25.00000	M (
Naphthalene	10735	9813	9200	9191	9943		AVG		9776		6.51655	25.00000	O
2-Methylnaphthalene	10255	9764	9180	9120	9882		AVG		9640		5.01227	25.00000	O
Acenaphthylene	11004	9891	9211	9119	9929		AVG		9831		7.68065	25.00000	O
Acenaphthene	11490	10086	9327	9240	10053		AVG		10039		8.98320	25.00000	O
Fluorene	10794	9842	9123	9086	9872		AVG		9743		7.16230	25.00000	O
Phenanthrene	9628	9614	9037	8959	9792		AVG		9406		4.03949	25.00000	O
Anthracene	12544	10063	9093	9009	9851		AVG		10112		14.19291	25.00000	O
Fluoranthene	11860	10138	9231	9100	9944		AVG		10055		10.97242	25.00000	O
Pyrene	11940	10456	9427	9272	10125		AVG		10244		10.40901	25.00000	O
Benzo(a)Anthracene	9587	10127	9251	9178	9993		AVG		9627		4.43352	25.00000	O
Chrysene	12869	10556	9337	9132	9925		AVG		10364		14.53464	25.00000	O
Benzo(b)Fluoranthene	11494	10613	10180	10298	11263		AVG		10770		5.41892	25.00000	O
Benzo(k)Fluoranthene	13075	10075	8763	8314	9042		AVG		9854		19.41921	25.00000	O
Benzo(a)Pyrene	12804	10095	9245	9087	9912		AVG		10229		14.68255	25.00000	O
Indeno(1,2,3-cd)Pyrene	9476	10307	10177	10130	11311		AVG		10280		6.42112	25.00000	O
Dibenzo(a,h)Anthracene	11876	9910	8476	8208	8717		AVG		9438		16.00254	25.00000	O
Benzo(g,h,i)Perylene	11871	9907	8998	8819	9618		AVG		9842		12.37185	25.00000	O
2-Fluorobiphenyl	8755	8953	8389	8295	9049		AVG		8688		3.85622	25.00000	
2-Bromonaphthalene	6115	6013	5760	5733	6267		AVG		5977		3.84577	25.00000	
O-Terphenyl	12500	10279	9412	9370	10169		AVG		10346		12.32082	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN3820
Project : JV, LTM, DCL Spring 2020 **Instrument ID:** GC12
Lab File IDs : CNC2023.d CNC2022.d CNC2021.d CNC2020.d CNC2019.d **Calibration Date(s):** 06-MAR-20 11:58 06-MAR-20 15:00

	Level 1 1.0000	Level 2 10.0000	Level 3 50.0000	Level 4 100.0000	Level 5 200.0000		Crv New	b	m1	m2	%RSD	Max %RSD	
C9-C18 Aliphatic	8740	8199	7921	7515	7446		AVG		7964		6.67229	25.00000	M C
C19-C36 Aliphatic	8522	8717	8076	7576	7541		AVG		8086		6.61570	25.00000	S O
C-9	8370	7551	7922	7595	7503		AVG		7788		4.68116	30.00000	O
C-10	9415	8576	7968	7609	7482		AVG		8210		9.69960	25.00000	O
C-12	8515	8400	8002	7594	7506		AVG		8004		5.70440	25.00000	O
C-14	8800	8177	7914	7452	7395		AVG		7948		7.25834	25.00000	O
C-16	8935	8290	7898	7486	7445		AVG		8011		7.74490	25.00000	O
C-18	8403	8201	7822	7351	7343		AVG		7824		6.17061	25.00000	O
C-19	8990	8577	8050	7649	7611		AVG		8175		7.32983	25.00000	O
C-20	7989	8477	8003	7534	7568		AVG		7914		4.86903	25.00000	O
C-22	8213	8485	8050	7622	7613		AVG		7997		4.74652	25.00000	O
C-24	9359	9332	8168	7607	7603		AVG		8414		10.4734	25.00000	O
C-26	9889	9499	8071	7561	7402		AVG		8484		13.4369	25.00000	O
C-28	8999	8787	8137	7586	7523		AVG		8206		8.22594	25.00000	O
C-30	8088	8681	8187	7608	7536		AVG		8020		5.82428	25.00000	O
C-36	6645	7895	7942	7442	7472		AVG		7479		6.96091	25.00000	O
5-alpha androstane	13400	10104	9174	8620	8553		AVG		9970		20.2140	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020 **SDG:** SN3820
Lab ID : WG278377-1 **Analytical Date:** 05/22/20 11:57
Lab File ID : CNE1106.d **Instrument ID:** GC12
Initial Calibration Date(s): 03/06/20 11:58 03/06/20 15:00 **Column ID:** A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
50	Naphthalene	9776	9420	0.010	-3.63848	25.00000	Averaged	
60	2-Methylnaphthalene	9640	9380	0.010	-2.69662	25.00000	Averaged	
70	Phenanthrene	9406	9368	0.010	-0.40850	25.00000	Averaged	
80	Acenaphthylene	9831	9267	0.010	-5.73255	25.00000	Averaged	
90	Acenaphthene	10039	9537	0.010	-5.00035	25.00000	Averaged	
100	Anthracene	10112	8649	0.010	-14.46942	25.00000	Averaged	
110	Benzo(a)Anthracene	9627	9418	0.010	-2.17575	25.00000	Averaged	
120	Benzo(a)Pyrene	10229	9174	0.010	-10.30990	25.00000	Averaged	
130	Benzo(b)Fluoranthene	10770	10498	0.010	-2.51908	25.00000	Averaged	
140	Benzo(g,h,i)Perylene	9842	8552	0.010	-13.11334	25.00000	Averaged	
150	Benzo(k)Fluoranthene	9854	8707	0.010	-11.64196	25.00000	Averaged	
160	Chrysene	10364	9498	0.010	-8.35763	25.00000	Averaged	
170	Dibenzo(a,h)Anthracene	9438	7018	0.010	-25.64100	25.00000	Averaged	<-
180	Fluoranthene	10055	9579	0.010	-4.72586	25.00000	Averaged	
190	Fluorene	9743	9369	0.010	-3.84222	25.00000	Averaged	
200	Indeno(1,2,3-cd)Pyrene	10280	9311	0.010	-9.43127	25.00000	Averaged	
210	Pyrene	10244	9687	0.010	-5.43500	25.00000	Averaged	
4	2-Fluorobiphenyl	8688	8556	0.010	-1.52605	25.00000	Averaged	
6	2-Bromonaphthalene	5977	5929	0.010	-0.80452	25.00000	Averaged	
11	O-Terphenyl	10346	9751	0.010	-5.75222	25.00000	Averaged	

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020 **SDG:** SN3820
Lab ID : WG278377-2 **Analytical Date:** 05/23/20 08:11
Lab File ID : CNE1128.d **Instrument ID:** GC12
Initial Calibration Date(s): 03/06/20 11:58 03/06/20 15:00 **Column ID:** A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9776	10839	0.010	10.87294	25.00000	Averaged
60	2-Methylnaphthalene	9640	10874	0.010	12.79649	25.00000	Averaged
70	Phenanthrene	9406	10951	0.010	16.42656	25.00000	Averaged
80	Acenaphthylene	9831	10708	0.010	8.92161	25.00000	Averaged
90	Acenaphthene	10039	11031	0.010	9.87841	25.00000	Averaged
100	Anthracene	10112	10115	0.010	0.03034	25.00000	Averaged
110	Benzo(a)Anthracene	9627	11070	0.010	14.98903	25.00000	Averaged
120	Benzo(a)Pyrene	10229	11045	0.010	7.98453	25.00000	Averaged
130	Benzo(b)Fluoranthene	10770	12897	0.010	19.74910	25.00000	Averaged
140	Benzo(g,h,i)Perylene	9842	10632	0.010	8.02336	25.00000	Averaged
150	Benzo(k)Fluoranthene	9854	9981	0.010	1.29249	25.00000	Averaged
160	Chrysene	10364	11139	0.010	7.47654	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	9438	9600	0.010	1.71717	25.00000	Averaged
180	Fluoranthene	10055	11159	0.010	10.98329	25.00000	Averaged
190	Fluorene	9743	10882	0.010	11.68230	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	10280	11973	0.010	16.46633	25.00000	Averaged
210	Pyrene	10244	11334	0.010	10.64153	25.00000	Averaged
4	2-Fluorobiphenyl	8688	9976	0.010	14.82384	25.00000	Averaged
6	2-Bromonaphthalene	5977	6834	0.010	14.32558	25.00000	Averaged
11	O-Terphenyl	10346	11355	0.010	9.75060	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020 **SDG:** SN3820
Lab ID : WG278377-3 **Analytical Date:** 05/22/20 11:57
Lab File ID : CNE2106.d **Instrument ID:** GC12
Initial Calibration Date(s): 03/06/20 11:58 03/06/20 15:00 **Column ID:** A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7964	9067	0.010	13.85175	25.00000	Averaged
30	C19-C36 Aliphatic	8086	9248	0.010	14.36364	25.00000	Averaged
370	C-9	7788	9083	0.010	16.63147	30.00000	Averaged
380	C-10	8210	9058	0.010	10.32869	25.00000	Averaged
390	C-12	8004	9078	0.010	13.42651	25.00000	Averaged
400	C-14	7948	9047	0.010	13.82835	25.00000	Averaged
410	C-16	8011	9176	0.010	14.54073	25.00000	Averaged
420	C-18	7824	8961	0.010	14.53531	25.00000	Averaged
430	C-19	8175	9326	0.010	14.07142	25.00000	Averaged
440	C-20	7914	9263	0.010	17.04440	25.00000	Averaged
450	C-22	7997	9294	0.010	16.22332	25.00000	Averaged
460	C-24	8414	9350	0.010	11.12560	25.00000	Averaged
470	C-26	8484	9308	0.010	9.70733	25.00000	Averaged
480	C-28	8206	9414	0.010	14.71861	25.00000	Averaged
490	C-30	8020	9333	0.010	16.36971	25.00000	Averaged
500	C-36	7479	8694	0.010	16.24222	25.00000	Averaged
44	5-alpha androstane	9970	10651	0.010	6.82580	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020 **SDG:** SN3820
Lab ID : WG278377-4 **Analytical Date:** 05/23/20 08:11
Lab File ID : CNE2128.d **Instrument ID:** GC12
Initial Calibration Date(s): 03/06/20 11:58 03/06/20 15:00 **Column ID:** A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7964	9049	0.010	13.62918	25.00000	Averaged
30	C19-C36 Aliphatic	8086	9320	0.010	15.26168	25.00000	Averaged
370	C-9	7788	9133	0.010	17.26603	30.00000	Averaged
380	C-10	8210	8970	0.010	9.25632	25.00000	Averaged
390	C-12	8004	9049	0.010	13.06742	25.00000	Averaged
400	C-14	7948	9033	0.010	13.65773	25.00000	Averaged
410	C-16	8011	9130	0.010	13.97051	25.00000	Averaged
420	C-18	7824	8981	0.010	14.79426	25.00000	Averaged
430	C-19	8175	9331	0.010	14.13258	25.00000	Averaged
440	C-20	7914	9192	0.010	16.13819	25.00000	Averaged
450	C-22	7997	9357	0.010	17.01165	25.00000	Averaged
460	C-24	8414	9323	0.010	10.80659	25.00000	Averaged
470	C-26	8484	9334	0.010	10.01543	25.00000	Averaged
480	C-28	8206	9449	0.010	15.13681	25.00000	Averaged
490	C-30	8020	9405	0.010	17.27471	25.00000	Averaged
500	C-36	7479	9172	0.010	22.63903	25.00000	Averaged
44	5-alpha androstane	9970	10594	0.010	6.25560	25.00000	Averaged

*** = Compound out of QC criteria**

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: GC12 ICAL SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 9.06 S2 : 10.44

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	S2 RT #
01		WG273574-5	03/06/20	1158	9.07	10.45
02		WG273574-4	03/06/20	1243	9.06	10.44
03		WG273574-3	03/06/20	1329	9.06	10.44
04		WG273574-2	03/06/20	1414	9.05	10.43
05		WG273574-1	03/06/20	1500	9.06	10.44
06		WG273574-6	03/09/20	0623		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: GC12 ICAL SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.36

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG273574-5	03/06/20	1158	15.37	
02		WG273574-4	03/06/20	1243	15.35	
03		WG273574-3	03/06/20	1329	15.36	
04		WG273574-2	03/06/20	1414	15.35	
05		WG273574-1	03/06/20	1500	15.35	
06		WG273574-6	03/09/20	0623		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SN3820

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 9.05 S2 : 10.43

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	S2 RT #
01		WG278377-1	05/22/20	1157	9.05	10.43
02	WG278026-BLA	WG278026-1	05/22/20	1716	9.03	10.40
03	WG278026-LCS	WG278026-2	05/22/20	1803	9.01	10.39
04	WG278026-LCS	WG278026-3	05/22/20	1849	9.02	10.39
05	DCL-DUP01-SP	SN3820-1	05/22/20	2022	9.02	10.40
06	LFM-03-07-SP	SN3820-2	05/22/20	2108	9.02	10.39
07	LFM-99-05A-S	SN3820-3	05/22/20	2154	9.02	10.40
08	LFM-99-06ARP	SN3820-4	05/22/20	2240	9.03	10.41
09		WG278377-2	05/23/20	0811	9.12	10.49
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS

S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SN3820

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.35

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG278377-1	05/22/20	1157	15.35	
02	WG278026-BLA	WG278026-1	05/22/20	1716	15.31	
03	WG278026-LCS	WG278026-2	05/22/20	1803	15.31	
04	WG278026-LCS	WG278026-3	05/22/20	1849	15.31	
05	DCL-DUP01-SP	SN3820-1	05/22/20	2022	15.32	
06	LFM-03-07-SP	SN3820-2	05/22/20	2108	15.31	
07	LFM-99-05A-S	SN3820-3	05/22/20	2154	15.32	
08	LFM-99-06ARP	SN3820-4	05/22/20	2240	15.33	
09		WG278377-2	05/23/20	0811	15.41	
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: GC12 ICAL SDG No.: SDGA02536

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.71

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01		WG273574-11	03/06/20	1158	16.72	
02		WG273574-10	03/06/20	1243	16.70	
03		WG273574-9	03/06/20	1329	16.71	
04		WG273574-8	03/06/20	1414	16.69	
05		WG273574-7	03/06/20	1500	16.69	
06		WG273574-12	03/09/20	0623		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.33 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII DRO

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SN3820

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.78

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01		WG278377-3	05/22/20	1157	16.78	
02	WG278026-BLA	WG278026-1	05/22/20	1716	16.76	
03	WG278026-LCS	WG278026-2	05/22/20	1803	16.75	
04	WG278026-LCS	WG278026-3	05/22/20	1849	16.76	
05	DCL-DUP01-SP	SN3820-1	05/22/20	2022	16.76	
06	LFM-03-07-SP	SN3820-2	05/22/20	2108	16.76	
07	LFM-99-05A-S	SN3820-3	05/22/20	2154	16.76	
08	LFM-99-06ARP	SN3820-4	05/22/20	2240	16.77	
09		WG278377-4	05/23/20	0811	16.81	
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.34 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII DRO

VOLATILE PETROLEUM HYDROCARBON DATA

QC Summary Section

Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** JV, LTM, DCL Spring 2020 **Matrix:** AQ
Lab Code: KAS **SDG:** SN3820

Client Sample ID	Lab Sample ID	Col. ID	DBT-FID	#	DBT-PID	#
DCL-DUP01-SPR20	SN3820-1	B	57.2	*	53.9	*
DCL-DUP01-SPR20	SN3820-1RA	B	53.2	*	50.2	*
LFM-03-07-SPR20	SN3820-2RA	B	81.8		78.4	
LFM-99-05A-SPR20	SN3820-3RA	B	76.7		72.2	
LFM-99-06ARP-SPR20	SN3820-4RA	B	92.2		87.3	
Method Blank Sample	WG278133-1	B	71.4		72.0	
Laboratory Control S	WG278133-2	B	87.1		89.4	
Laboratory Control S	WG278133-3	B	91.9		96.1	
Method Blank Sample	WG278391-1	B	102.		96.7	
Laboratory Control S	WG278391-2	B	93.2		92.6	
Laboratory Control S	WG278391-3RA	B	95.6		95.9	

		QC Limits
DBT-FID	2,5-DIBROMOTOLUENE (FID)	70-130
DBT-PID	2,5-DIBROMOTOLUENE (PID)	70-130

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020
Lab File ID : 2NE10120.D
Instrument ID : GC02

SDG : SN3820
Lab Sample ID : WG278133-1
Date Analyzed : 21-MAY-20
Time Analyzed : 10:59
Date Extracted : 21-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278133-2	2NE10121.	05/21/20	11:39
Laboratory Control S	WG278133-3	2NE10122.	05/21/20	12:20
DCL-DUP01-SPR20	SN3820-1	2NE10129.	05/21/20	18:25

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020
Lab File ID : 2NE10155.D
Instrument ID : GC02

SDG : SN3820
Lab Sample ID : WG278391-1
Date Analyzed : 26-MAY-20
Time Analyzed : 10:43
Date Extracted : 26-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278391-2	2NE10156.	05/26/20	12:14
Laboratory Control S	WG278391-3RA	2NE10158.	05/26/20	14:10
DCL-DUP01-SPR20	SN3820-1RA	2NE10159.	05/26/20	16:27
LFM-03-07-SPR20	SN3820-2RA	2NE10160.	05/26/20	17:08
LFM-99-05A-SPR20	SN3820-3RA	2NE10161.	05/26/20	17:49
LFM-99-06ARP-SPR20	SN3820-4RA	2NE10162.	05/26/20	18:31

Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services
SDG : SN3820
Project : JV, LTM, DCL Spring 2020
Instrument ID : GC02

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG277230-1	05/07/20	09:25		31.31
Initial Calibration	WG277230-1	05/07/20	09:25	31.299	
Initial Calibration	WG277230-2	05/07/20	10:07		31.308
Initial Calibration	WG277230-2	05/07/20	10:07	31.298	
Initial Calibration	WG277230-5	05/07/20	11:31		31.309
Initial Calibration	WG277230-5	05/07/20	11:31	31.299	
Initial Calibration	WG277230-6	05/07/20	12:12		31.313
Initial Calibration	WG277230-6	05/07/20	12:12	31.303	
Initial Calibration	WG277230-4	05/07/20	13:58		31.31
Initial Calibration	WG277230-4	05/07/20	13:58	31.3	
Initial Calibration	WG277230-3	05/07/20	14:39		31.308
Initial Calibration	WG277230-3	05/07/20	14:39	31.298	
Independent Source	WG277230-7	05/07/20	16:32	31.3	31.31
Continuing Calibrati	WG278133-4	05/21/20	09:36	31.27	31.28
Method Blank Sample	WG278133-1	05/21/20	10:59	31.269	31.279
Laboratory Control S	WG278133-2	05/21/20	11:39	31.273	31.283
Laboratory Control S	WG278133-3	05/21/20	12:20	31.269	31.279
DCL-DUP01-SPR20	SN3820-1	05/21/20	18:25	31.288	31.299
Continuing Calibrati	WG278133-5	05/22/20	01:36	31.288	31.299
Continuing Calibrati	WG278391-4	05/26/20	09:42	31.275	31.285
Method Blank Sample	WG278391-1	05/26/20	10:43	31.275	31.285
Laboratory Control S	WG278391-2	05/26/20	12:14	31.276	31.286
Laboratory Control S	WG278391-3RA	05/26/20	14:10	31.274	31.284
DCL-DUP01-SPR20	SN3820-1RA	05/26/20	16:27	31.277	31.288
LFM-03-07-SPR20	SN3820-2RA	05/26/20	17:08	31.277	31.288
LFM-99-05A-SPR20	SN3820-3RA	05/26/20	17:49	31.292	31.303
LFM-99-06ARP-SPR20	SN3820-4RA	05/26/20	18:31	31.289	31.299
Continuing Calibrati	WG278391-5	05/27/20	01:41	31.287	31.297

Sample Data Section

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N Presumptive evidence of a compound based on a mass spectral library search.

A Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

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Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3820-1
Client ID: DCL-DUP01-SPR20
Project: JV, LTM, DCL Spring 2020
SDG: SN3820
Lab File ID: 2NE10129.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 02-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)	*	57.2	%				
2,5-Dibromotoluene (PID)	*	53.9	%				

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Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10129.D
Report Date: 02-Jun-2020 13:11

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Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10129.D
Lab Smp Id: SN3820-1 Client Smp ID: DCL-DUP01-SPR20
Inj Date : 21-MAY-2020 18:25
Operator : DL Inst ID: gc02.i
Smp Info : SN3820-1
Misc Info : WG278133,WG277230-4
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

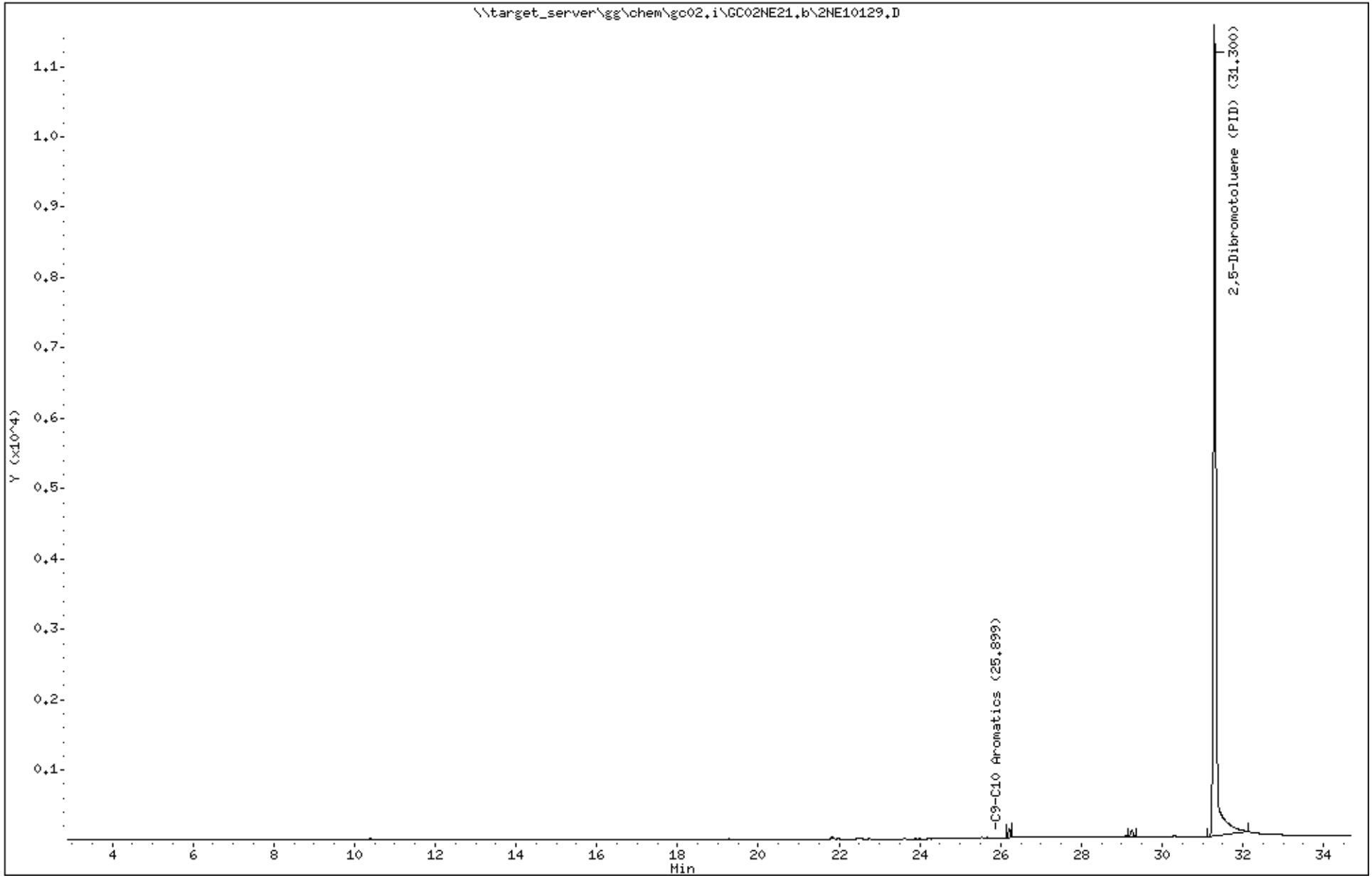
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 11 2,5-Dibromotoluene (PID)	31.299	31.309	-0.010	116080	53.8703	53.9(R)	

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10129.D
Date : 21-MAY-2020 18:25
Client ID: DCL-DUP01-SPR20
Instrument: gc02.i
Sample Info: SN3820-1
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



Data File: 2NE10129.D
Report Date: 02-Jun-2020 13:11

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10129.D
Lab Smp Id: SN3820-1 Client Smp ID: DCL-DUP01-SPR20
Inj Date : 21-MAY-2020 18:25
Operator : DL Inst ID: gc02.i
Smp Info : SN3820-1
Misc Info : WG278133,WG277230-4
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

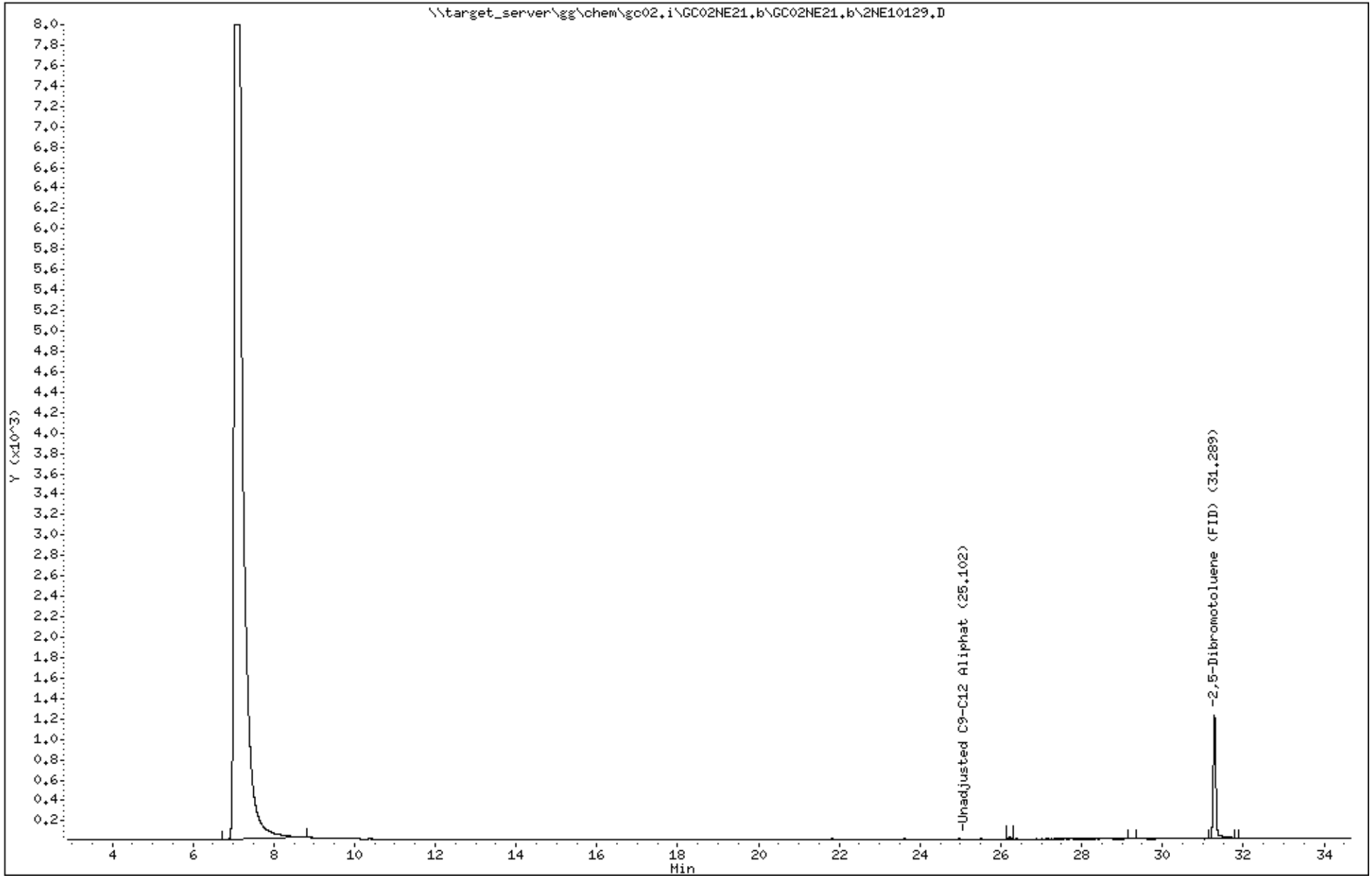
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 21 2,5-Dibromotoluene (FID)	31.288	31.304	-0.016	114352	57.2105	57.2(R)	

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10129.D
Date : 21-MAY-2020 18:25
Client ID: DCL-DUP01-SPR20 Instrument: gc02.i
Sample Info: SN3820-1
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3820-1RA
Client ID: DCL-DUP01-SPR20
Project: JV, LTM, DCL Spring 2020
SDG: SN3820
Lab File ID: 2NE10159.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 26-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391

Analysis Date: 26-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)	*	53.2	%				
2,5-Dibromotoluene (PID)	*	50.2	%				

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Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10159.D
Report Date: 01-Jun-2020 09:31

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10159.D
Lab Smp Id: SN3820-1RA Client Smp ID: DCL-DUP01-SPR20
Inj Date : 26-MAY-2020 16:27
Operator : DL Inst ID: gc02.i
Smp Info : SN3820-1RA
Misc Info : WG278391,WG277230-4
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m
Meth Date : 27-May-2020 07:24 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

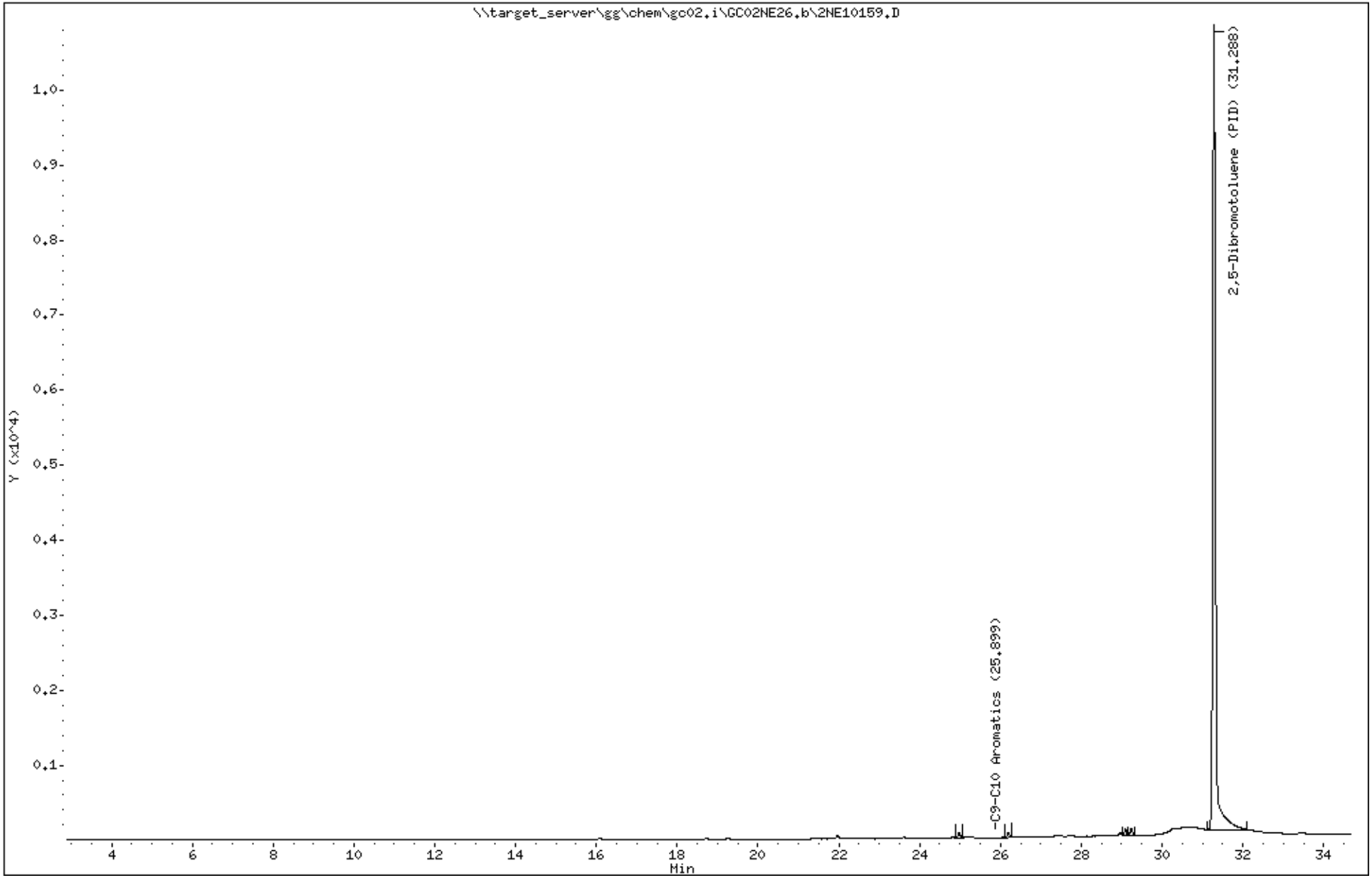
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 11 2,5-Dibromotoluene (PID)	31.288	31.309	-0.021	108209	50.2175	50.2(R)	

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10159.D
Date : 26-MAY-2020 16:27
Client ID: DCL-DUP01-SPR20
Instrument: gc02.i
Sample Info: SN3820-1RA
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



Data File: 2NE10159.D
Report Date: 01-Jun-2020 09:32

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10159.D
Lab Smp Id: SN3820-1RA Client Smp ID: DCL-DUP01-SPR20
Inj Date : 26-MAY-2020 16:27
Operator : DL Inst ID: gc02.i
Smp Info : SN3820-1RA
Misc Info : WG278391,WG277230-4
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m\VPHFID91.m
Meth Date : 27-May-2020 07:31 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

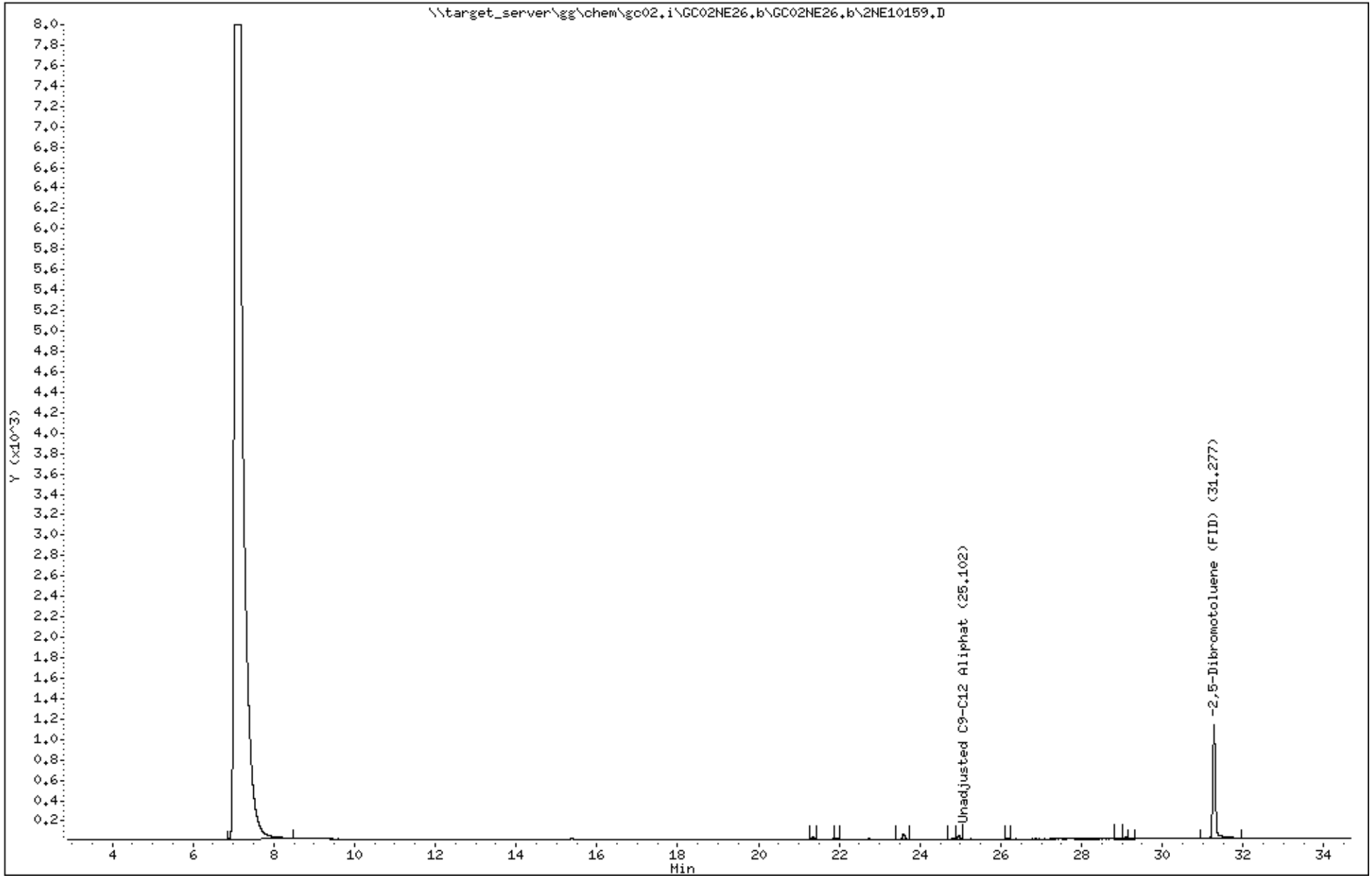
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 21 2,5-Dibromotoluene (FID)	31.277	31.304	-0.027	106313	53.1886	53.2(R)	

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10159.D
Date : 26-MAY-2020 16:27
Client ID: DCL-DUP01-SPR20 Instrument: gc02.i
Sample Info: SN3820-1RA
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3820-2RA
Client ID: LFM-03-07-SPR20
Project: JV, LTM, DCL Spring 2020
SDG: SN3820
Lab File ID: 2NE10160.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 26-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391

Analysis Date: 26-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		81.8	%				
2,5-Dibromotoluene (PID)		78.4	%				

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Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10160.D
Report Date: 01-Jun-2020 09:31

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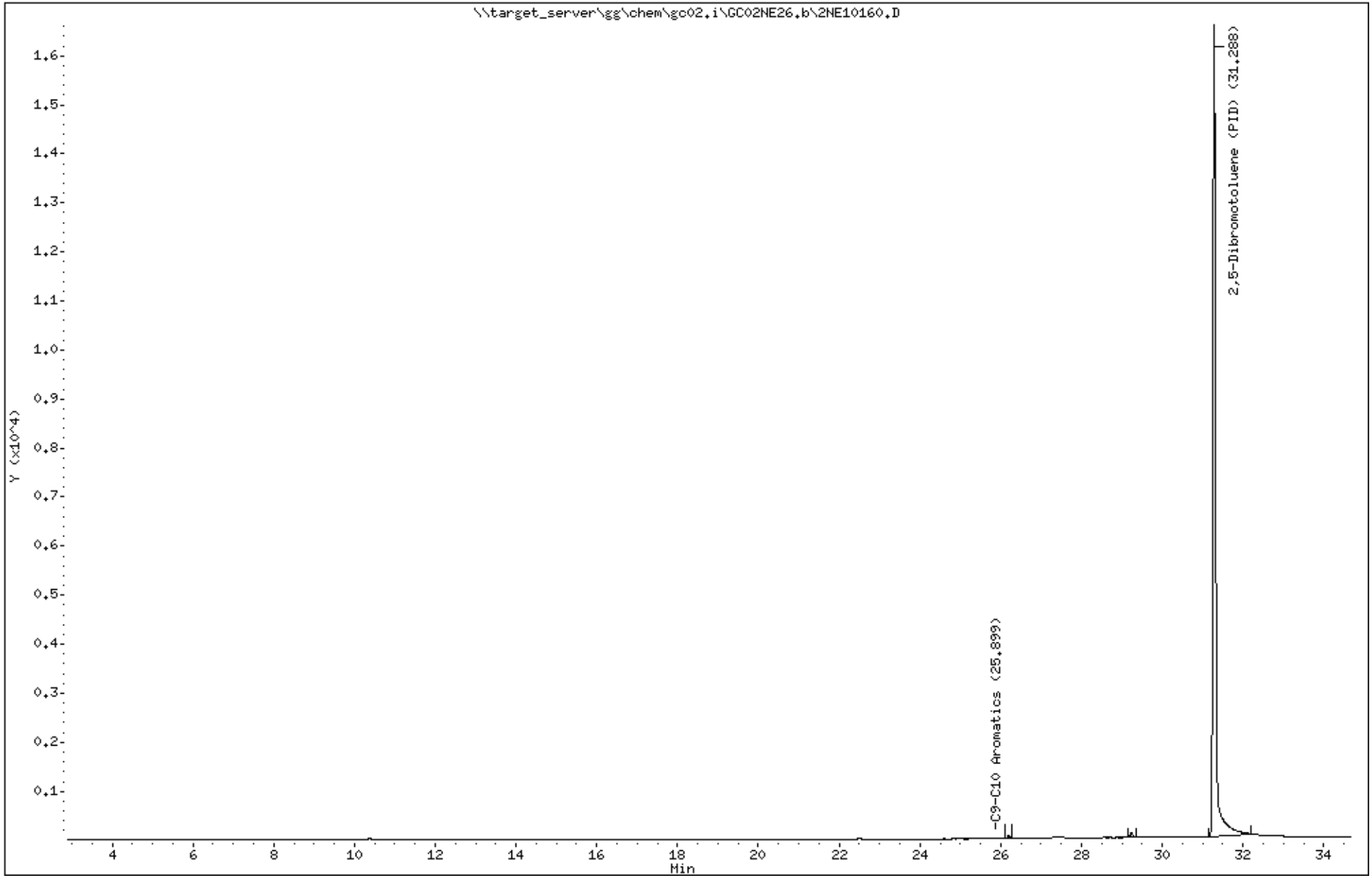
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Lab Smp Id: SN3820-2RA Client Smp ID: LFM-03-07-SPR20
Inj Date : 26-MAY-2020 17:08
Operator : DL Inst ID: gc02.i
Smp Info : SN3820-2RA
Misc Info : WG278391,WG277230-4
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m
Meth Date : 27-May-2020 07:24 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 11 2,5-Dibromotoluene (PID)	31.288	31.309	-0.021	168991	78.4252	78.4	

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10160.D
Date : 26-MAY-2020 17:08
Client ID: LFM-03-07-SPR20
Instrument: gc02.i
Sample Info: SN3820-2RA
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



Data File: 2NE10160.D
Report Date: 01-Jun-2020 09:32

Katahdin Analytical Services

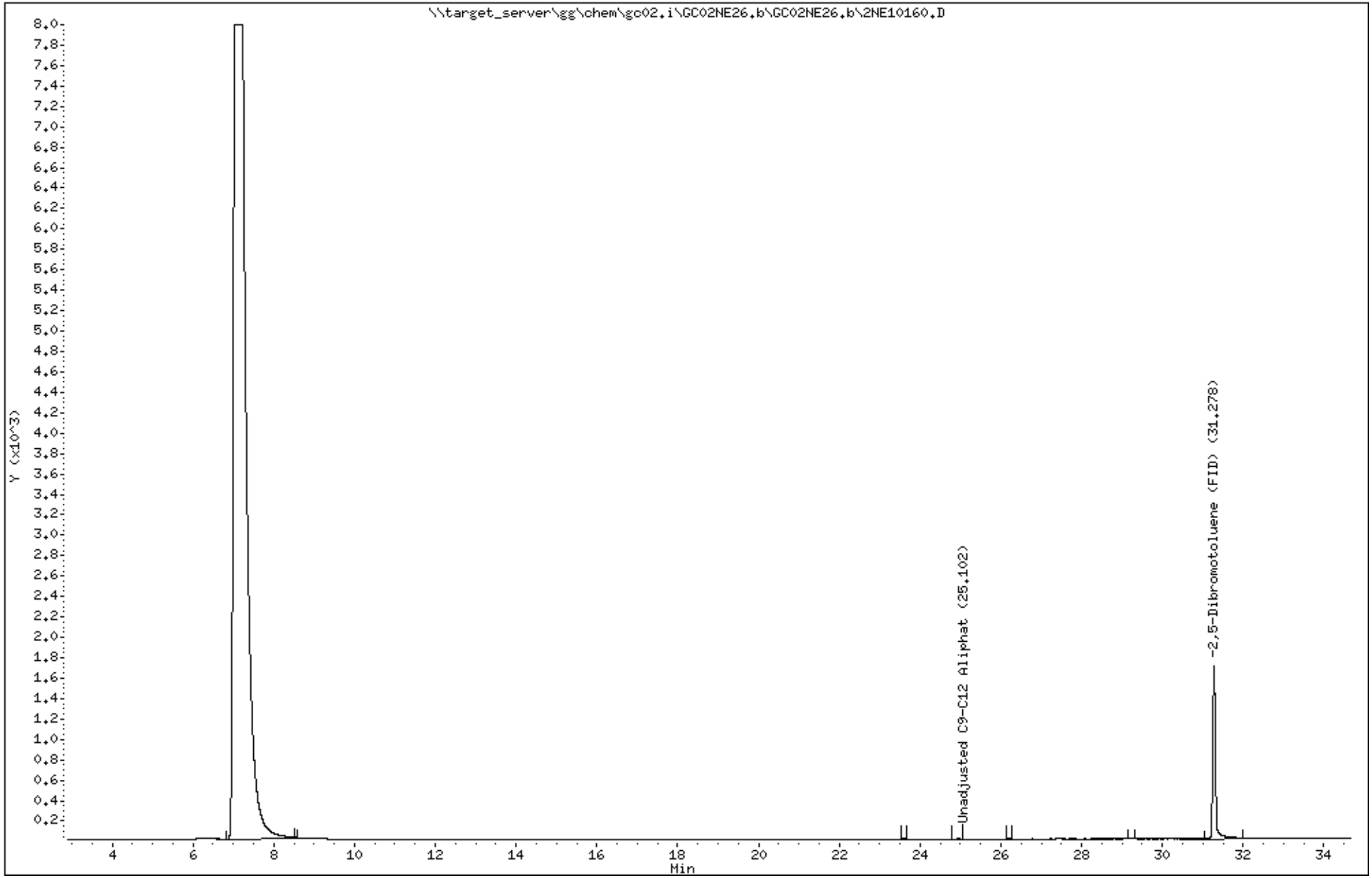
Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10160.D
Lab Smp Id: SN3820-2RA Client Smp ID: LFM-03-07-SPR20
Inj Date : 26-MAY-2020 17:08
Operator : DL Inst ID: gc02.i
Smp Info : SN3820-2RA
Misc Info : WG278391,WG277230-4
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m\VPHFID91.m
Meth Date : 27-May-2020 07:31 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 21 2,5-Dibromotoluene (FID)	31.277	31.304	-0.027	163537	81.8178	81.8	

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10160.D
Date : 26-MAY-2020 17:08
Client ID: LFM-03-07-SPR20 Instrument: gc02.i
Sample Info: SN3820-2RA
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3820-3RA
Client ID: LFM-99-05A-SPR20
Project: JV, LTM, DCL Spring 2020
SDG: SN3820
Lab File ID: 2NE10161.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 26-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391

Analysis Date: 26-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		76.7	%				
2,5-Dibromotoluene (PID)		72.2	%				

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Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10161.D
Report Date: 01-Jun-2020 09:31

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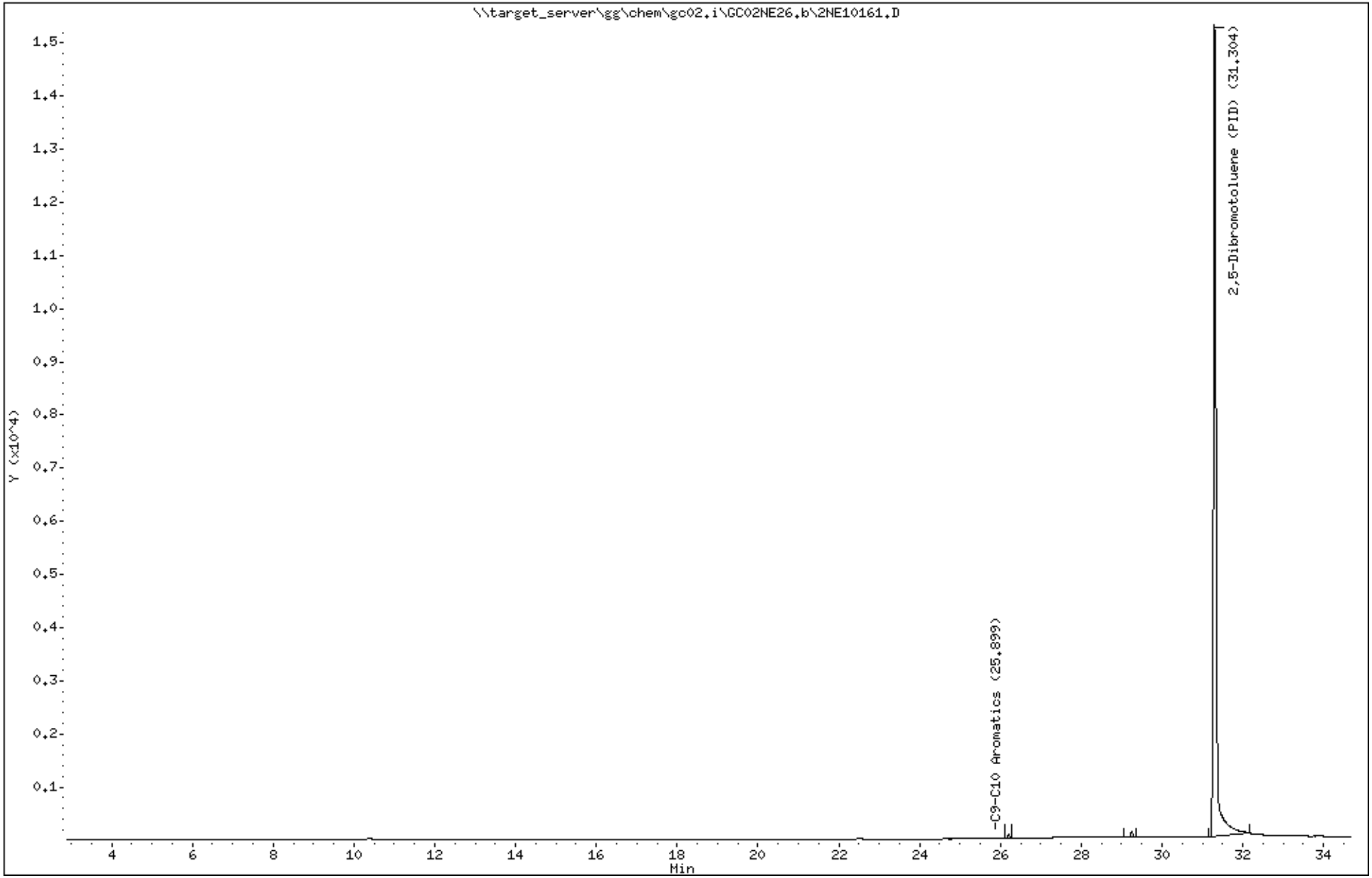
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Lab Smp Id: SN3820-3RA Client Smp ID: LFM-99-05A-SPR20
Inj Date : 26-MAY-2020 17:49
Operator : DL Inst ID: gc02.i
Smp Info : SN3820-3RA
Misc Info : WG278391,WG277230-4
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m
Meth Date : 27-May-2020 07:24 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 11 2,5-Dibromotoluene (PID)	31.303	31.309	-0.006	155627	72.2232	72.2	

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10161.D
Date : 26-MAY-2020 17:49
Client ID: LFM-99-05A-SPR20 Instrument: gc02.i
Sample Info: SN3820-3RA
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



06/07/2020
Katahdin Analytical Services 1000027

Data File: 2NE10161.D
Report Date: 01-Jun-2020 09:32

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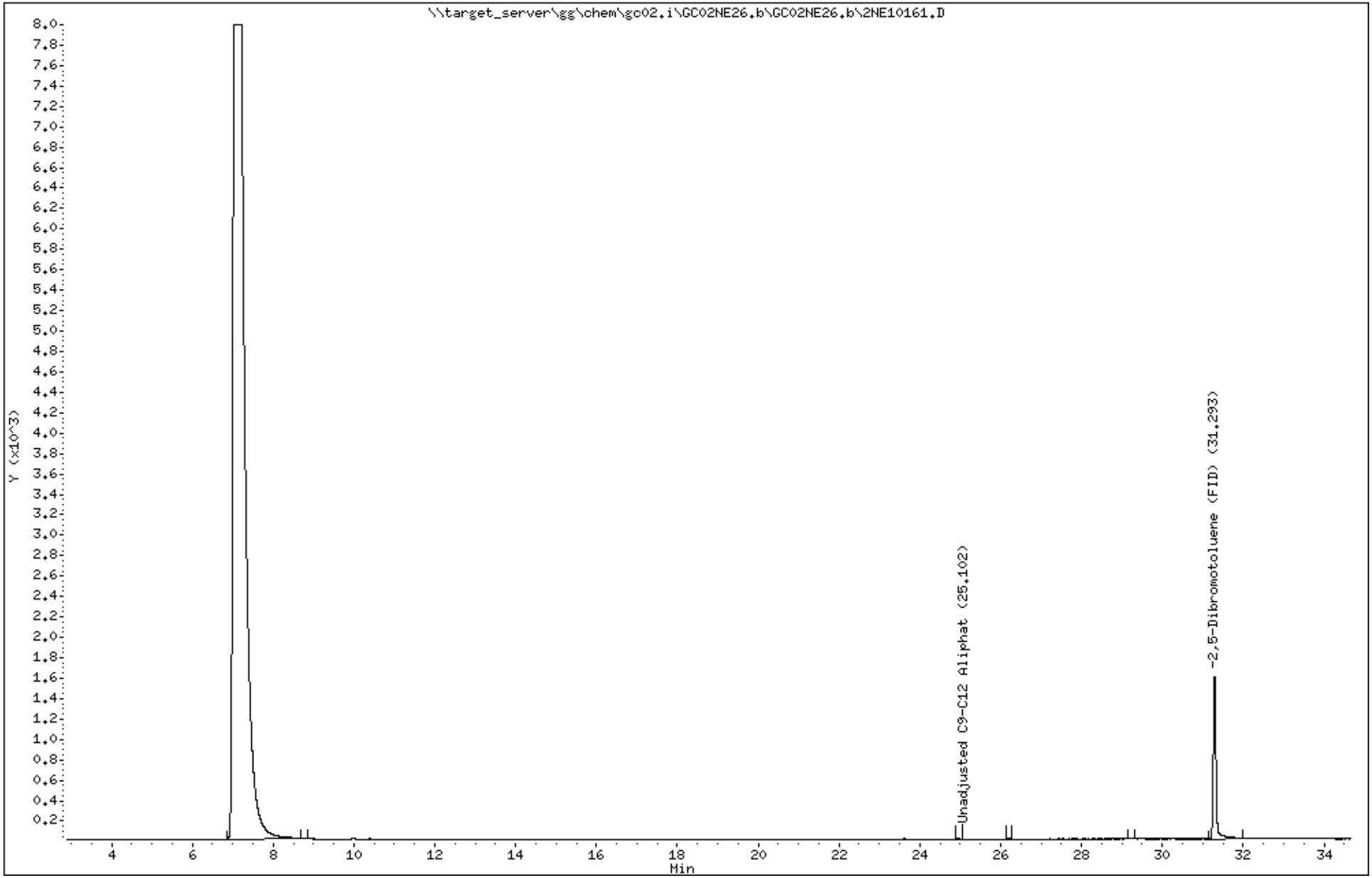
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Lab Smp Id: SN3820-3RA Client Smp ID: LFM-99-05A-SPR20
Inj Date : 26-MAY-2020 17:49
Operator : DL Inst ID: gc02.i
Smp Info : SN3820-3RA
Misc Info : WG278391,WG277230-4
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m\VPHFID91.m
Meth Date : 27-May-2020 07:31 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 21 2,5-Dibromotoluene (FID)	31.292	31.304	-0.012	153333	76.7128	76.7	

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10161.D
Date : 26-MAY-2020 17:49
Client ID: LFM-99-05A-SPR20 Instrument: gc02.i
Sample Info: SN3820-3RA
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3820-4RA
Client ID: LFM-99-06ARP-SPR20
Project: JV, LTM, DCL Spring 2020
SDG: SN3820
Lab File ID: 2NE10162.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 26-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391

Analysis Date: 26-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		92.2	%				
2,5-Dibromotoluene (PID)		87.3	%				

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Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10162.D
Report Date: 01-Jun-2020 09:31

Katahdin Analytical Services

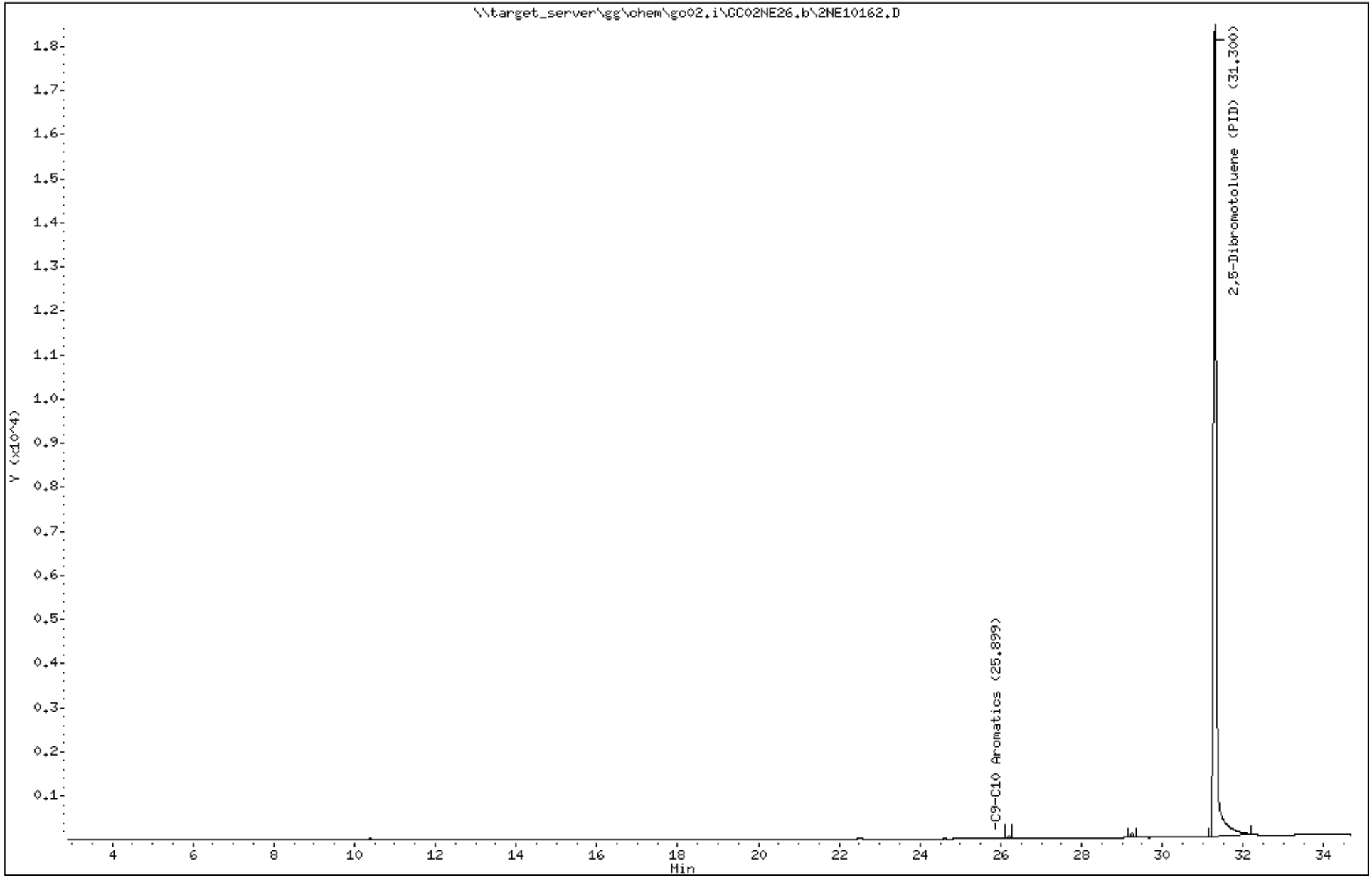
Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10162.D
Lab Smp Id: SN3820-4RA Client Smp ID: LFM-99-06ARP-SPR20
Inj Date : 26-MAY-2020 18:31
Operator : DL Inst ID: gc02.i
Smp Info : SN3820-4RA
Misc Info : WG278391,WG277230-4
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m
Meth Date : 27-May-2020 07:24 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 11 2,5-Dibromotoluene (PID)	31.299	31.309	-0.010	188077	87.2826	87.3	

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10162.D
Date : 26-MAY-2020 18:31
Client ID: LFM-99-06ARP-SPR20
Instrument: gc02.i
Sample Info: SN3820-4RA
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



Data File: 2NE10162.D
Report Date: 01-Jun-2020 09:32

Katahdin Analytical Services

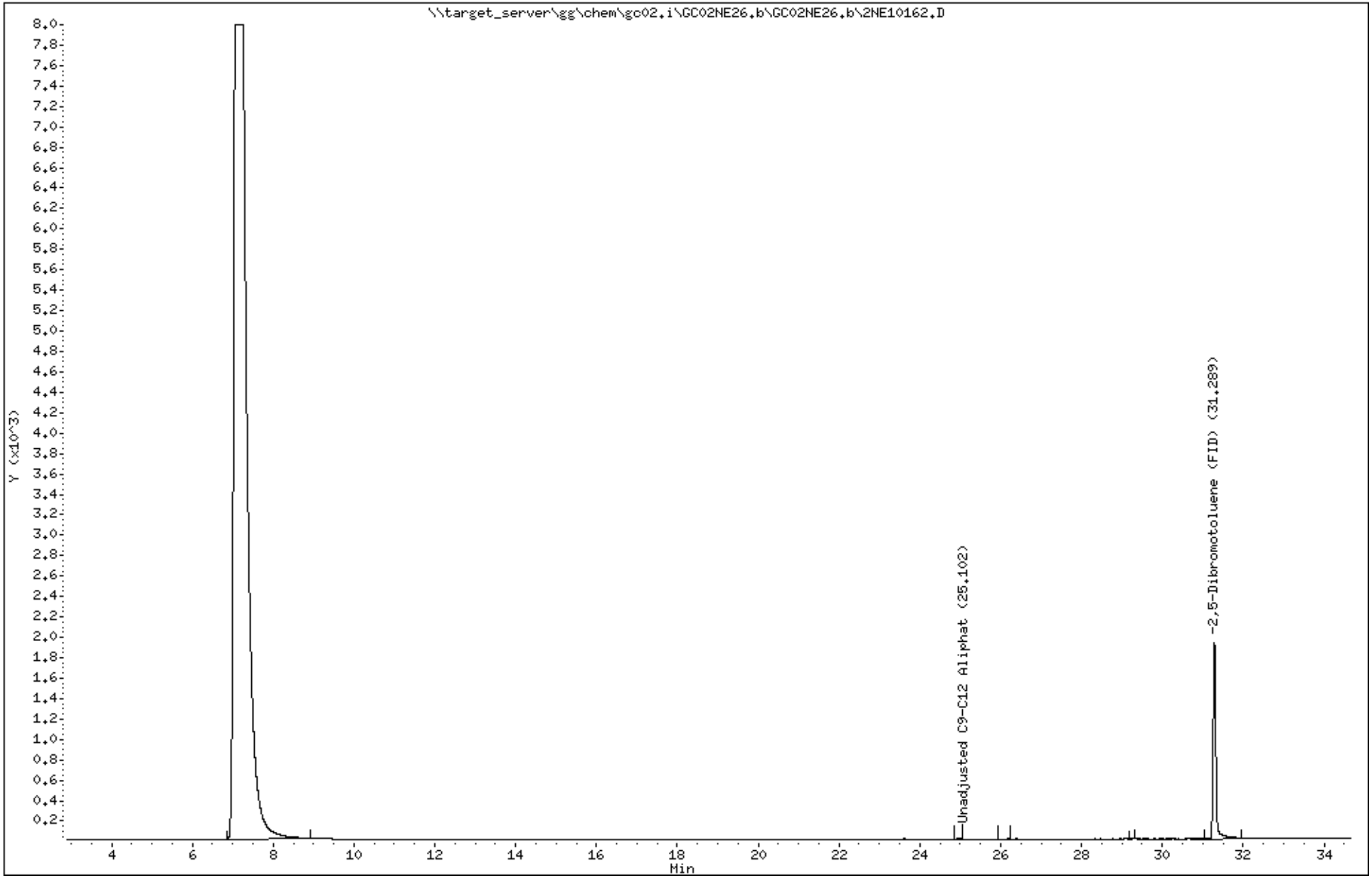
Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10162.D
Lab Smp Id: SN3820-4RA Client Smp ID: LFM-99-06ARP-SPR20
Inj Date : 26-MAY-2020 18:31
Operator : DL Inst ID: gc02.i
Smp Info : SN3820-4RA
Misc Info : WG278391,WG277230-4
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m\VPHFID91.m
Meth Date : 27-May-2020 07:31 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 21 2,5-Dibromotoluene (FID)	31.289	31.304	-0.015	184322	92.2166	92.2	

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10162.D
Date : 26-MAY-2020 18:31
Client ID: LFM-99-06ARP-SPR20 Instrument: gc02.i
Sample Info: SN3820-4RA
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



Standards Data Section

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN3820
Project : JV, LTM, DCL Spring 2020 **Instrument ID:** GC02
Lab File IDs : 2NE10031.D 2NE10032.D 2NE10037.D 2NE10036.D 2NE10034.D 2NE10035.D **Calibration Date(s):** 07-MAY-20 09:25 07-MAY-20 14:39

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C10 Aromatic	2653	2703	2836	3021	3138	2603	AVG		2826		7.59424	25.00000	M C
Methyl tert-butylether	1484	1674	1686	1569	1771	1669	AVG		1642		6.12724	25.00000	O
Benzene	3397	3518	3561	3387	3616	3470	AVG		3492		2.60540	25.00000	O
Toluene	2922	3194	3266	3149	3325	2968	AVG		3137		5.14062	25.00000	O
Ethylbenzene	2501	2621	2740	2770	2917	2587	AVG		2689		5.55429	25.00000	O
m+p-Xylene	3076	3247	3376	3362	3350	2410	AVG		3137		11.90948	25.00000	O
o-Xylene	2559	2771	2889	2911	2964	2591	AVG		2781		6.18361	25.00000	O
1,2,4-trimethylbenzene	2653	2703	2836	3021	3138	2603	AVG		2826		7.59424	25.00000	O
Naphthalene	2949	2410	2270	3103	3272	2611	AVG		2769		14.44103	25.00000	O
2,5-Dibromotoluene (PID)	2274	1715	+++++	2433	2566	1786	AVG		2155		17.83181	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10038.D
Report Date: 01-Jun-2020 08:03

Katahdin Analytical Services

RECOVERY REPORT

Client Name: Client SDG: SDGa01556
Sample Matrix: LIQUID Fraction: VPH
Lab Smp Id: IND
Level: LOW Operator: DL
Data Type: GC DATA SampleType: LCS
SpikeList File: ind.spk Quant Type: ESTD
Sublist File: IND.sub
Method File: \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Misc Info: WG277230,WG277230-4

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
2 Methyl tert-butyle	100	95.3	95.32	80-120
3 Benzene	100	98.1	98.08	80-120
4 Toluene	100	99.7	99.66	80-120
5 Ethylbenzene	100	102	102.56	80-120
6 m+p-Xylene	200	204	101.91	80-120
7 o-Xylene	100	102	101.83	80-120
8 1,2,4-trimethylben	100	105	104.67	80-120
10 Naphthalene	100	111	111.41	80-120

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
$ 11 2,5-Dibromotoluene	100	117	116.85	70-130

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services
SDG: SN3820
Project : JV, LTM, DCL Spring 2020
Instrument ID: GC02
Lab File IDs : 2NE10031.D 2NE10032.D 2NE10037.D 2NE10036.D 2NE10034.D 2NE10035.D
Calibration Date(s): 07-MAY-20 08:43 07-MAY-20 14:39

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C5-C8 Aliphatic	5517	5727	5486	5639	5562	4787	AVG		5453		6.18987	25.00000	M C
C9-C12 Aliphatic	5393	5202	5196	5540	5789	6344	AVG		5577		7.83095	25.00000	M C
n-Pentane	4893	5095	4918	5071	5225	4097	AVG		4883		8.27021	25.00000	O
2-Methylpentane	5817	5819	5507	5664	5478	4763	AVG		5508		7.13290	25.00000	O
Methyl tert-butylether	4827	4506	4586	4238	4472	4253	AVG		4480		4.91417	25.00000	O
2,2,4-Trimethylpentane	5842	6268	6033	6181	5982	5502	AVG		5968		4.57751	25.00000	O
Benzene	7981	7809	8006	7554	7827	7749	AVG		7821		2.10939	25.00000	O
Toluene	7488	7650	7896	7530	7796	7762	AVG		7687		2.06964	25.00000	O
n-Nonane	5316	5073	5175	5605	5634	6100	AVG		5484		6.86907	25.00000	O
n-Decane	5241	4292	4329	5009	5679	6382	AVG		5155		15.60283	25.00000	O
Ethylbenzene	6766	6908	7348	7291	7575	7574	AVG		7244		4.67308	25.00000	O
m+p-Xylene	7128	7378	7979	7582	7801	7701	AVG		7595		4.02538	25.00000	O
o-Xylene	7109	7430	8156	7657	7929	7777	AVG		7677		4.82948	25.00000	O
1,2,4-trimethylbenzene	6680	6801	7123	7405	7774	7638	AVG		7237		6.15087	25.00000	O
n-Butylcyclohexane	5544	6112	6062	6070	5900	6305	AVG		5999		4.29738	25.00000	O
Naphthalene	5671	4589	4268	5559	5921	5635	AVG		5274		12.77292	25.00000	O
2,5-Dibromotoluene (FID)	2187	1573	+++++	2080	2220	1934	AVG		1999		13.15424	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Data File: 2NE10038.D
Report Date: 01-Jun-2020 08:03

Katahdin Analytical Services

RECOVERY REPORT

Client Name: Client SDG: SDGa01556
Sample Matrix: LIQUID Fraction: VPH
Lab Smp Id: IND
Level: LOW Operator: DL
Data Type: GC DATA SampleType: LCS
SpikeList File: ind.spk Quant Type: ESTD
Sublist File: IND.sub
Method File: \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Misc Info: WG277230,WG277230-4

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
5 n-Pentane	100	99.4	99.43	80-120
6 2-Methylpentane	100	100	100.03	80-120
7 Methyl tert-butyle	100	91.7	91.73	80-120
8 2,2,4-Trimethylpen	100	102	101.87	80-120
9 Benzene	100	95.6	95.66	80-120
11 Toluene	100	95.8	95.83	80-120
12 n-Nonane	100	105	105.41	80-120
13 n-Decane	100	114	113.70	80-120
14 Ethylbenzene	100	98.9	98.94	80-120
15 m+p-Xylene	200	195	97.55	80-120
16 o-Xylene	100	98.2	98.19	80-120
18 1,2,4-trimethylben	100	101	100.74	80-120
19 n-Butylcyclohexane	100	102	101.88	80-120
20 Naphthalene	100	105	105.31	80-120

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
$ 21 2,5-Dibromotoluene	100	108	108.34	70-130

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10031.D
Report Date: 01-Jun-2020 08:02

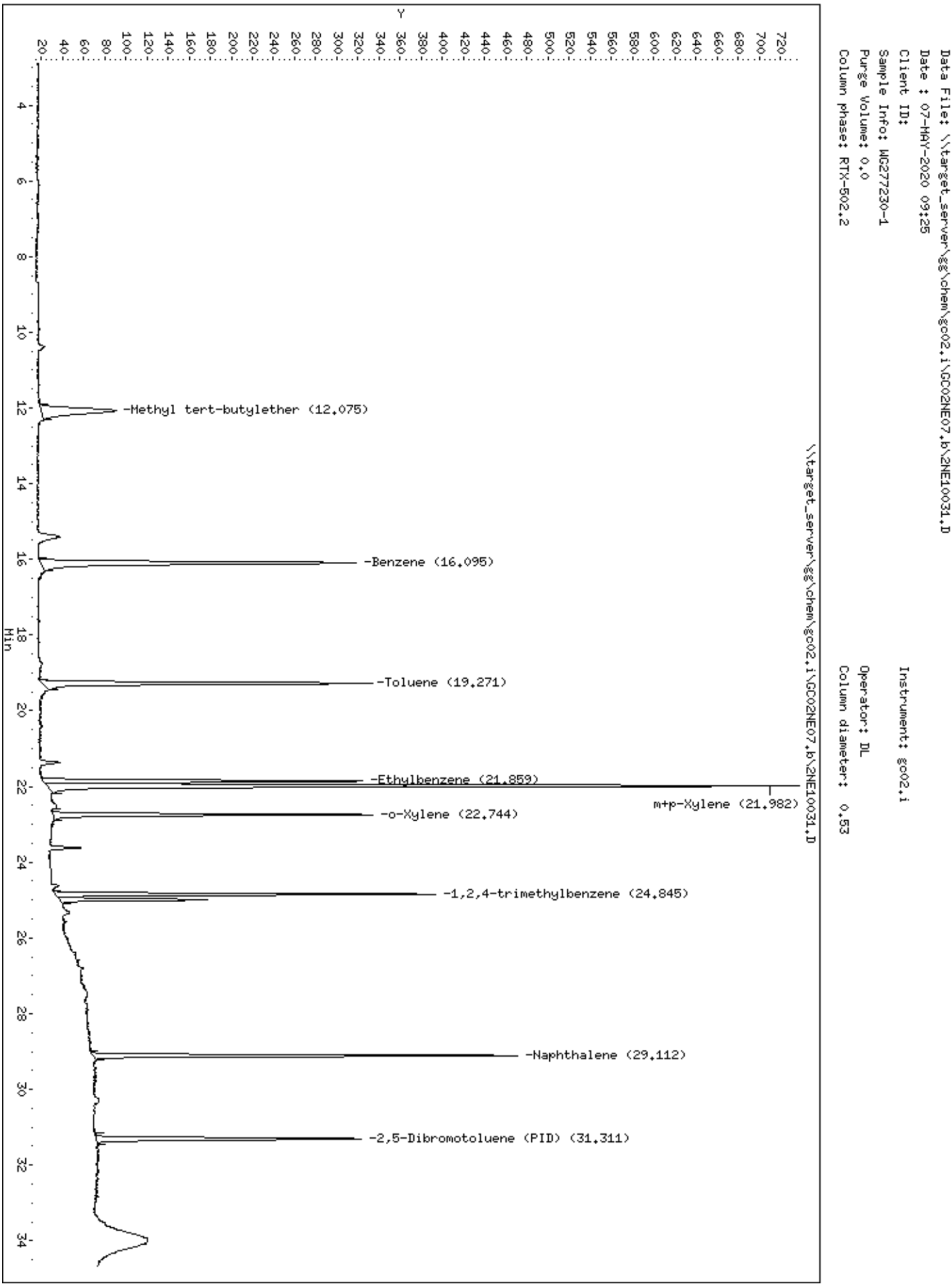
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10031.D
Lab Smp Id: ICAL1
Inj Date : 07-MAY-2020 09:25
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-1
Misc Info :
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 09:25   Cal File: 2NE10031.D
Als bottle: 1   Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
M	1	C9-C10 Aromatic				2653	1.00000		
	2	Methyl tert-butylether	12.074	12.078	-0.004	1484	1.00000		
	3	Benzene	16.094	16.099	-0.005	3397	1.00000		
	4	Toluene	19.271	19.274	-0.003	2922	1.00000		
	5	Ethylbenzene	21.859	21.860	-0.001	2501	1.00000		
	6	m+p-Xylene	21.982	21.983	-0.001	6152	2.00000		
	7	o-Xylene	22.743	22.745	-0.002	2559	1.00000		
	8	1,2,4-trimethylbenzene	24.844	24.844	0.000	2653	1.00000		
	10	Naphthalene	29.111	29.110	0.001	2949	1.00000		
$	11	2,5-Dibromotoluene (PID)	31.310	31.309	0.001	2274	1.00000		


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10031.D
Date : 07-MAY-2020 09:25
Client ID:
Sample Info: WG277230-1
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10031.D
Y
Min
-Methyl tert-butylether (12.075)
-Benzene (16.095)
-Toluene (19.271)
-Ethylbenzene (21.859)
m+p-Xylene (21.982)
-o-Xylene (22.744)
-1,2,4-trimethylbenzene (24.845)
-Naphthalene (29.112)
-2,5-Dibromotoluene (PID) (31.311)

Data File: 2NE10031.D
Report Date: 01-Jun-2020 08:03

Katahdin Analytical Services

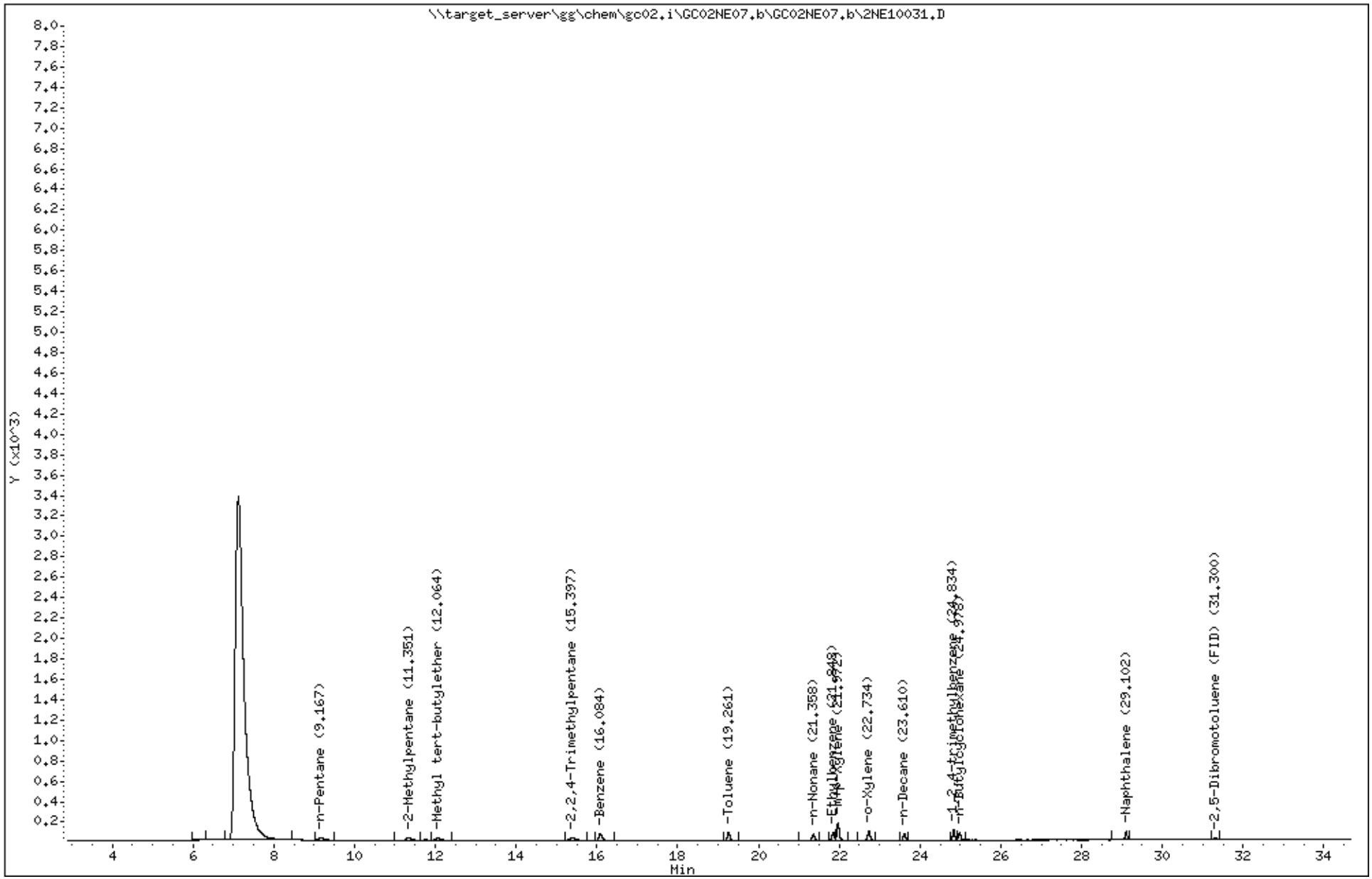
Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10031.D
Lab Smp Id: ICAL1
Inj Date : 07-MAY-2020 09:25
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-1
Misc Info :
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 09:25   Cal File: 2NE10031.D
Als bottle: 1   Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
M	1 C5-C8 Aliphatic				16552	3.00000	3.06	
M	2 C9-C12 Aliphatic				10785	2.00000	2.06	
	5 n-Pentane	9.167	9.065	0.102	4893	1.00000	1.01	
	6 2-Methylpentane	11.351	11.282	0.069	5817	1.00000	1.04	
	7 Methyl tert-butylether	12.063	11.992	0.071	4827	1.00000	1.06	
	8 2,2,4-Trimethylpentane	15.397	15.386	0.011	5842	1.00000	1.00	
	9 Benzene	16.084	16.065	0.019	7981	1.00000	1.02	
	11 Toluene	19.260	19.257	0.003	7488	1.00000	0.992	
	12 n-Nonane	21.357	21.361	-0.004	5316	1.00000	1.01	
	14 Ethylbenzene	21.848	21.850	-0.002	6766	1.00000	0.962	
	15 m+p-Xylene	21.971	21.975	-0.004	14255	2.00000	1.94	
	16 o-Xylene	22.733	22.736	-0.003	7109	1.00000	0.962	
	13 n-Decane	23.610	23.614	-0.004	5241	1.00000	1.07	
	18 1,2,4-trimethylbenzene	24.834	24.838	-0.004	6680	1.00000	0.956	
	19 n-Butylcyclohexane	24.977	24.982	-0.005	5544	1.00000	0.986	
	20 Naphthalene	29.101	29.104	-0.003	5671	1.00000	1.08	
$	21 2,5-Dibromotoluene (FID)	31.299	31.304	-0.005	2187	1.00000	1.00	

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10031.D
Date : 07-MAY-2020 09:25
Client ID:
Instrument: gc02.i
Sample Info: WG277230-1
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



06/07/2020
Katahdin Analytical Services 1000043

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10032.D
Report Date: 01-Jun-2020 08:02

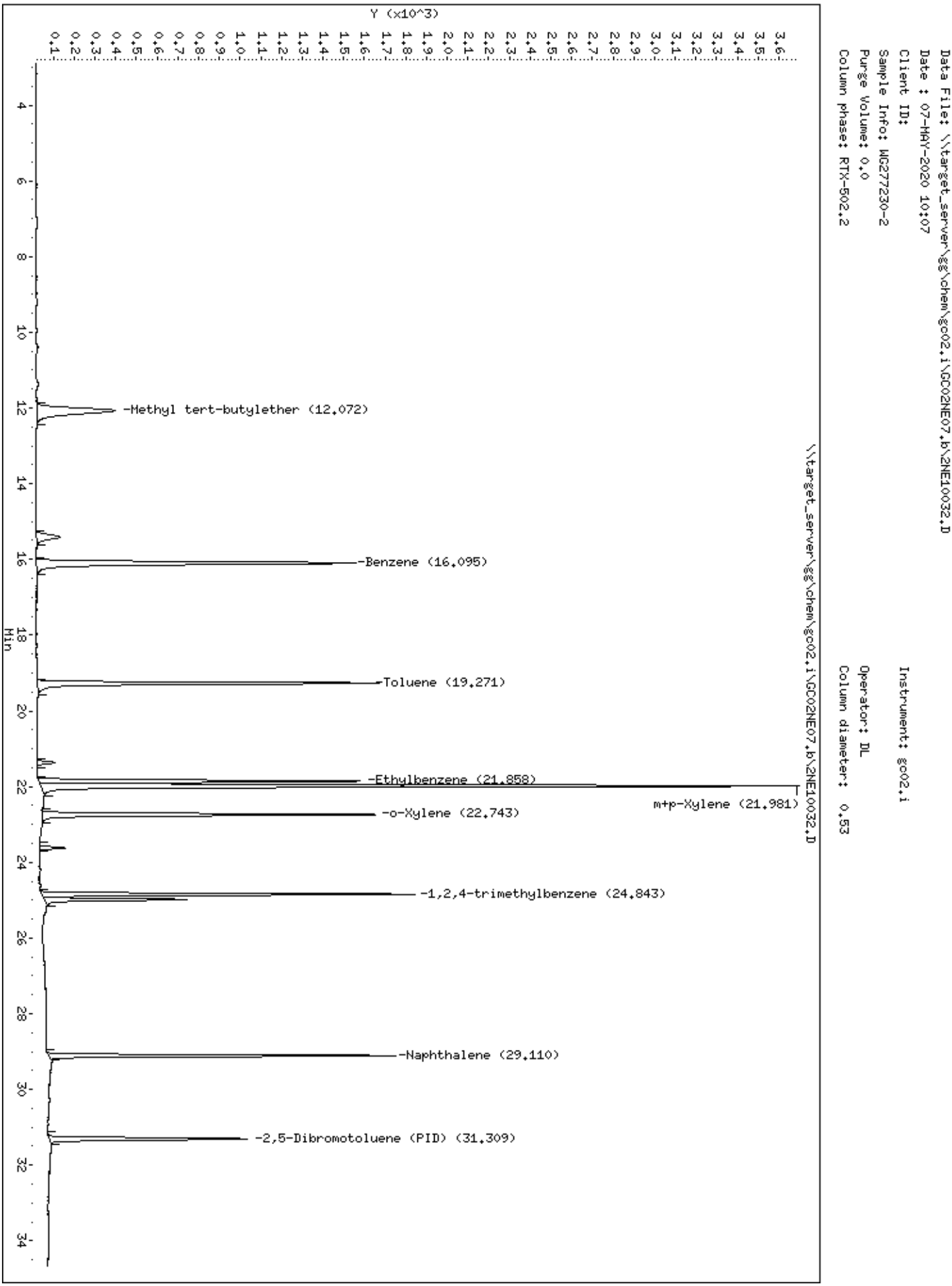
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10032.D
Lab Smp Id: ICAL5
Inj Date : 07-MAY-2020 10:07
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-2
Misc Info :
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 10:07   Cal File: 2NE10032.D
Als bottle: 1   Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
M	1 C9-C10 Aromatic				13514	5.00000		
	2 Methyl tert-butylether	12.072	12.078	-0.006	8368	5.00000	5.64	
	3 Benzene	16.095	16.099	-0.004	17591	5.00000	5.18	
	4 Toluene	19.270	19.274	-0.004	15969	5.00000	5.46	
	5 Ethylbenzene	21.857	21.860	-0.003	13105	5.00000	5.24	
	6 m+p-Xylene	21.980	21.983	-0.003	32468	10.0000	10.6	
	7 o-Xylene	22.742	22.745	-0.003	13854	5.00000	5.41	
	8 1,2,4-trimethylbenzene	24.842	24.844	-0.002	13514	5.00000	5.09	
	10 Naphthalene	29.110	29.110	0.000	12051	5.00000	4.09	
$	11 2,5-Dibromotoluene (PID)	31.308	31.309	-0.001	8574	5.00000	3.77	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10032.D
Date : 07-MAY-2020 10:07
Client ID:
Sample Info: WG277230-2
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
\\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10032.D
-Methyl tert-butylether (12.072)
-Benzene (16.095)
-Toluene (19.271)
-Ethylbenzene (21.858)
m+p-Xylene (21.981)
-o-Xylene (22.743)
-1,2,4-trimethylbenzene (24.843)
-Naphthalene (29.110)
-2,5-Dibromotoluene (PID) (31.309)

Data File: 2NE10032.D
Report Date: 01-Jun-2020 08:03

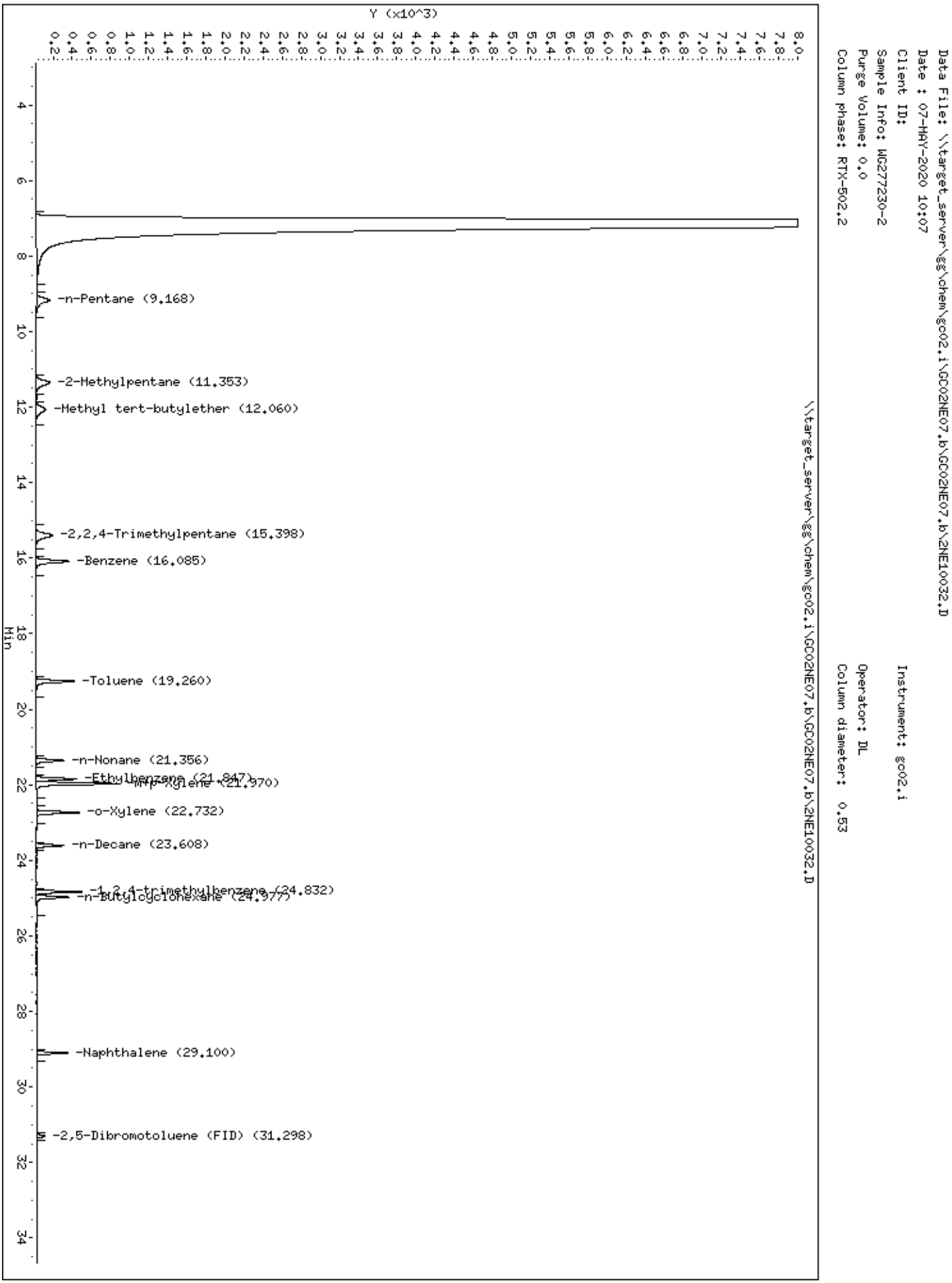
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10032.D
Lab Smp Id: ICAL5
Inj Date : 07-MAY-2020 10:07
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-2
Misc Info :
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 10:07   Cal File: 2NE10032.D
Als bottle: 1   Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
M	1	C5-C8 Aliphatic				85905	15.0000	15.6	
M	2	C9-C12 Aliphatic				52022	10.0000	10.0	
	5	n-Pentane	9.168	9.065	0.103	25474	5.00000	5.17	
	6	2-Methylpentane	11.352	11.282	0.070	29093	5.00000	5.14	
	7	Methyl tert-butylether	12.060	11.992	0.068	22532	5.00000	4.98	
	8	2,2,4-Trimethylpentane	15.397	15.386	0.011	31338	5.00000	5.25	
	9	Benzene	16.084	16.065	0.019	39046	5.00000	5.00	
	11	Toluene	19.260	19.257	0.003	38250	5.00000	5.04	
	12	n-Nonane	21.356	21.361	-0.005	25363	5.00000	4.87	
	14	Ethylbenzene	21.847	21.850	-0.003	34541	5.00000	4.94	
	15	m+p-Xylene	21.970	21.975	-0.005	73778	10.0000	10.0	
	16	o-Xylene	22.732	22.736	-0.004	37152	5.00000	5.02	
	13	n-Decane	23.608	23.614	-0.006	21461	5.00000	4.74	
	18	1,2,4-trimethylbenzene	24.832	24.838	-0.006	34005	5.00000	4.91	
	19	n-Butylcyclohexane	24.976	24.982	-0.006	30561	5.00000	5.28	
	20	Naphthalene	29.099	29.104	-0.005	22947	5.00000	4.55	
$	21	2,5-Dibromotoluene (FID)	31.298	31.304	-0.006	7864	5.00000	5.62	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10032.D
Date : 07-MAY-2020 10:07
Client ID:
Sample Info: WG277230-2
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10032.D
Y (x10^3)
Min
-n-Pentane (9.168)
-2-Methylpentane (11.353)
-Methyl tert-butylether (12.060)
-2,2,4-Trimethylpentane (15.398)
-Benzene (16.085)
-Toluene (19.260)
-n-Nonane (21.356)
-Ethylbenzene (21.847)
-m,p-Xylene (21.970)
-o-Xylene (22.732)
-n-Decane (23.608)
-1,2,4-trimethylbenzene (24.832)
-n-Butylcyclohexane (24.977)
-Naphthalene (29.100)
-2,5-Dibromotoluene (FID) (31.298)

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10037.D
Report Date: 01-Jun-2020 08:02

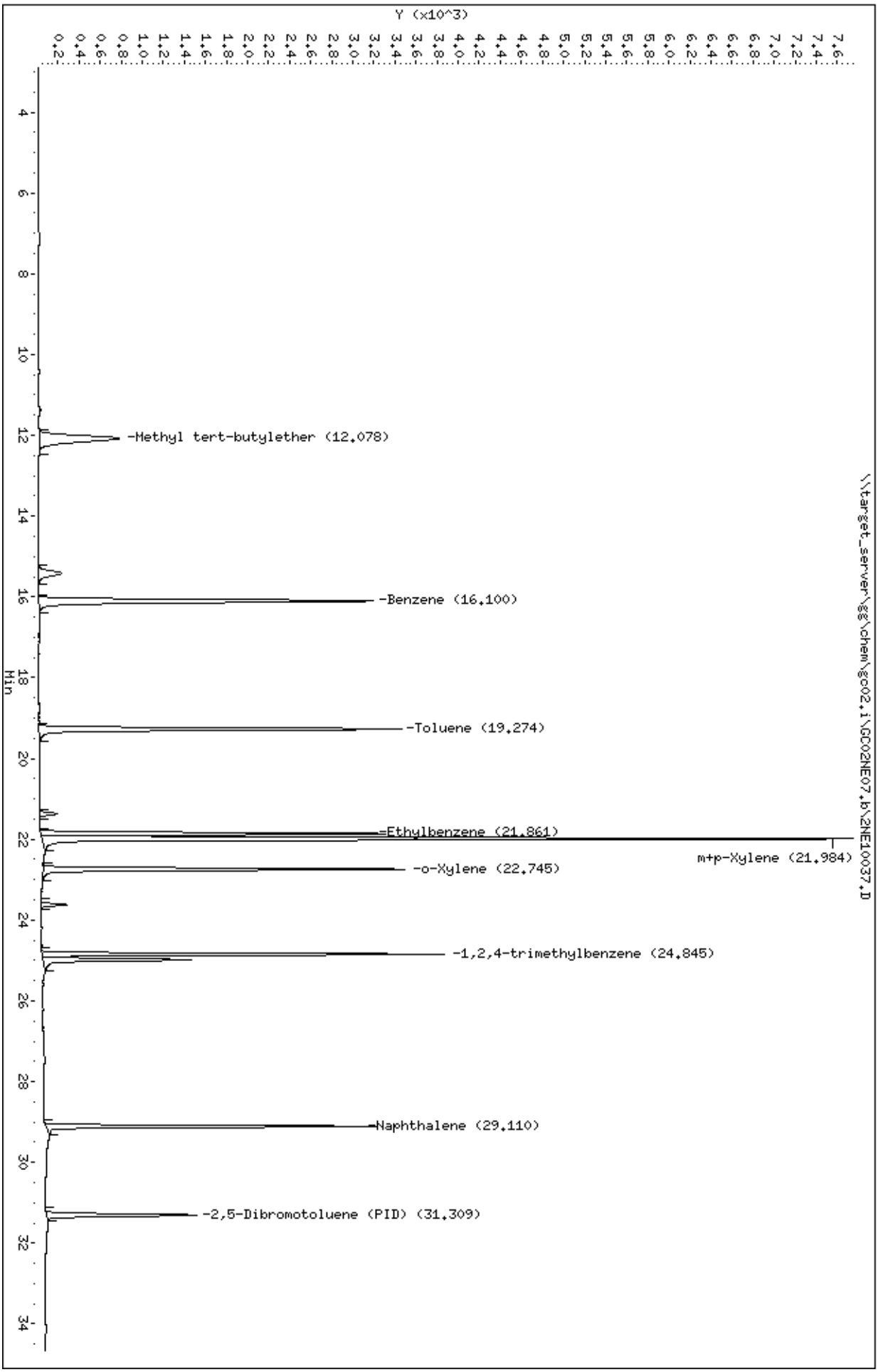
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10037.D
Lab Smp Id: ICAL10
Inj Date : 07-MAY-2020 14:39
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-3
Misc Info :
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
M	1	C9-C10 Aromatic				28362	10.0000		
	2	Methyl tert-butylether	12.077	12.078	-0.001	16857	10.0000	10.3	
	3	Benzene	16.099	16.099	0.000	35606	10.0000	10.2	
	4	Toluene	19.274	19.274	0.000	32657	10.0000	10.5	
	5	Ethylbenzene	21.860	21.860	0.000	27398	10.0000	10.2	
	6	m+p-Xylene	21.983	21.983	0.000	67524	20.0000	21.9	
	7	o-Xylene	22.745	22.745	0.000	28892	10.0000	10.5	
	8	1,2,4-trimethylbenzene	24.844	24.844	0.000	28362	10.0000	10.0	
	10	Naphthalene	29.110	29.110	0.000	22700	10.0000	7.91	
$	11	2,5-Dibromotoluene (PID)	31.308	31.309	-0.001	12745	10.0000	5.91	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10037.D
Date : 07-MAY-2020 14:39
Client ID:
Sample Info: WG277230-3
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
-Methyl tert-butylether (12.078)
-Benzene (16.100)
-Toluene (19.274)
=Ethylbenzene (21.861)
m+p-Xylene (21.984)
-o-Xylene (22.745)
-1,2,4-trimethylbenzene (24.845)
Naphthalene (29.110)
-2,5-Dibromotoluene (PID) (31.309)
\\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10037.D

Data File: 2NE10037.D
Report Date: 01-Jun-2020 08:03

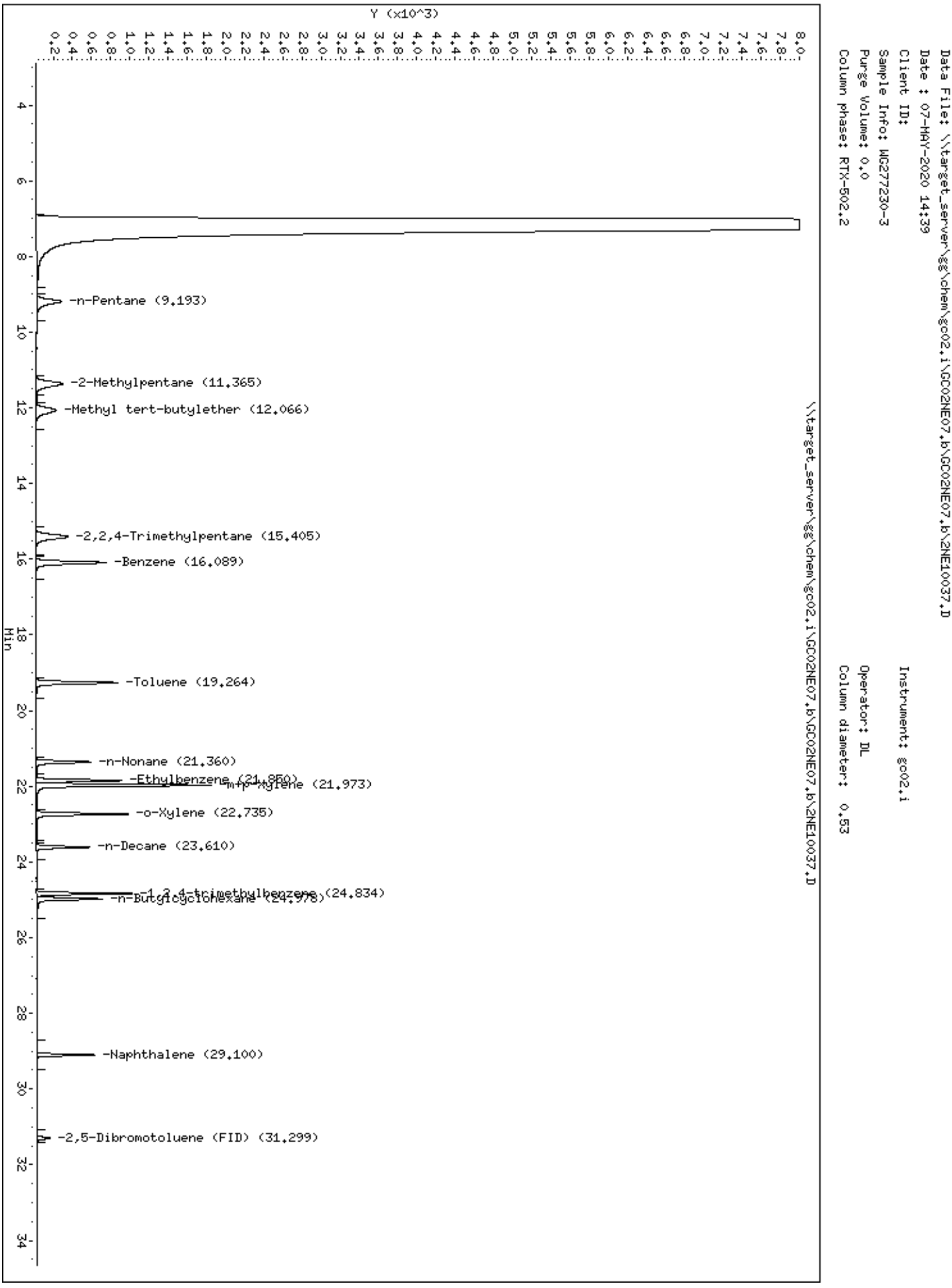
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10037.D
Lab Smp Id: ICAL10
Inj Date : 07-MAY-2020 14:39
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-3
Misc Info :
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
M	1 C5-C8 Aliphatic				164588	30.0000	30.2	
M	2 C9-C12 Aliphatic				103916	20.0000	18.5	
	5 n-Pentane	9.193	9.065	0.128	49181	10.0000	10.1	
	6 2-Methylpentane	11.365	11.282	0.083	55073	10.0000	10.0	
	7 Methyl tert-butylether	12.066	11.992	0.074	45858	10.0000	10.2	
	8 2,2,4-Trimethylpentane	15.405	15.386	0.019	60334	10.0000	10.1	
	9 Benzene	16.089	16.065	0.024	80055	10.0000	10.2	
	11 Toluene	19.263	19.257	0.006	78955	10.0000	10.3	
	12 n-Nonane	21.359	21.361	-0.002	51753	10.0000	9.44	
	14 Ethylbenzene	21.850	21.850	0.000	73478	10.0000	10.1	
	15 m+p-Xylene	21.973	21.975	-0.002	159585	20.0000	21.0	
	16 o-Xylene	22.734	22.736	-0.002	81564	10.0000	10.6	
	13 n-Decane	23.610	23.614	-0.004	43292	10.0000	8.40	
	18 1,2,4-trimethylbenzene	24.834	24.838	-0.004	71232	10.0000	9.84	
	19 n-Butylcyclohexane	24.978	24.982	-0.004	60624	10.0000	10.1	
	20 Naphthalene	29.099	29.104	-0.005	42678	10.0000	8.09	
$	21 2,5-Dibromotoluene (FID)	31.298	31.304	-0.006	11557	10.0000	5.78	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10037.D
Date : 07-MAY-2020 14:39
Client ID:
Sample Info: WG277230-3
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
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Y (x10^3)
Min
-n-Pentane (9.193)
-2-Methylpentane (11.365)
-Methyl tert-butylether (12.066)
-2,2,4-Trimethylpentane (15.405)
-Benzene (16.089)
-Toluene (19.264)
-n-Nonane (21.360)
-Ethylbenzene (21.850)
-m+p-Xylene (21.973)
-o-Xylene (22.735)
-n-Decane (23.610)
-1,2,4-trimethylbenzene (24.834)
-n-Butylcyclohexane (24.978)
-Naphthalene (29.100)
-2,5-Dibromotoluene (FID) (31.299)

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10036.D
Report Date: 01-Jun-2020 08:02

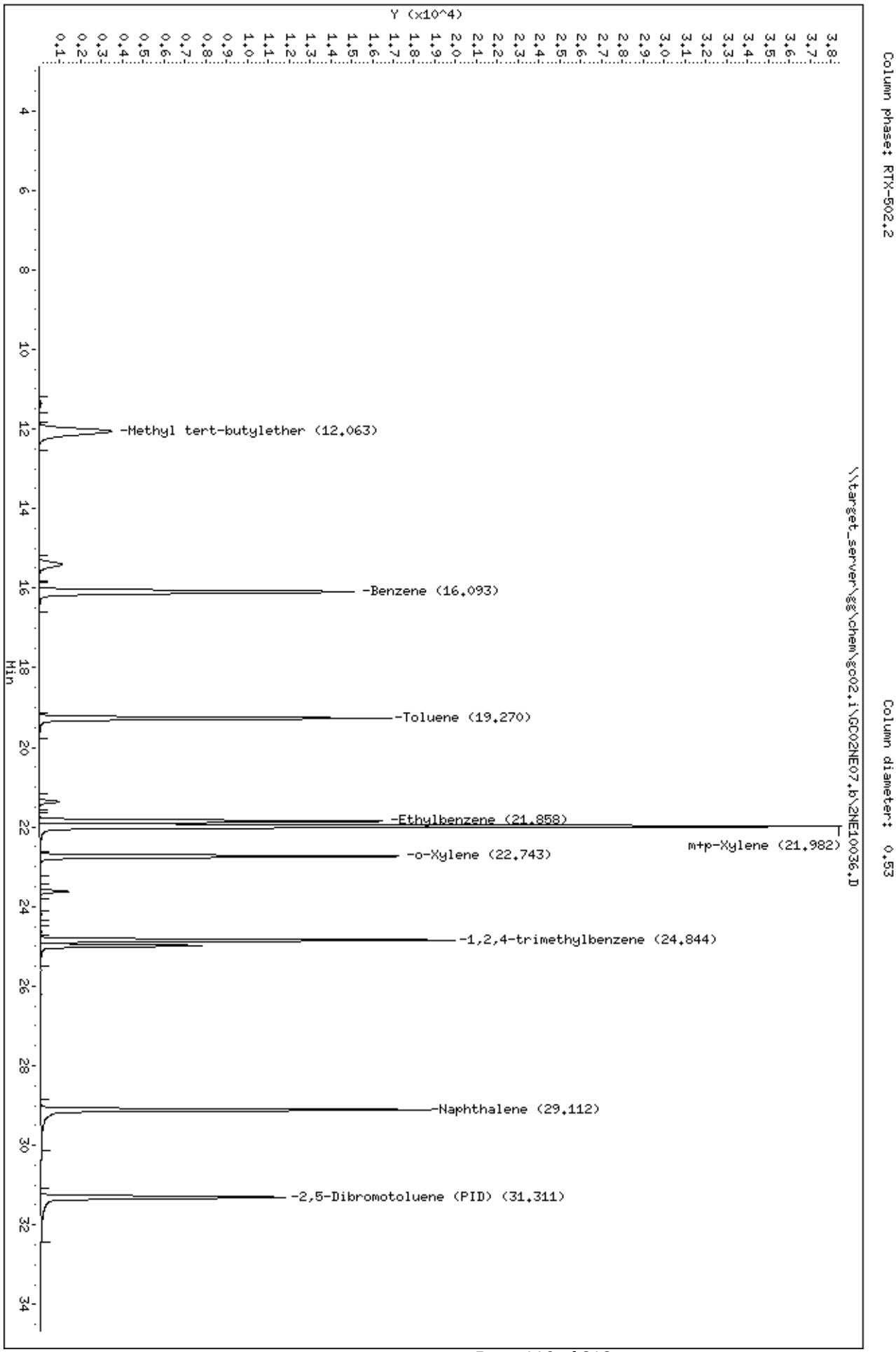
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10036.D
Lab Smp Id: ICAL50
Inj Date : 07-MAY-2020 13:58
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-4
Misc Info :
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 13:58   Cal File: 2NE10036.D
Als bottle: 1   Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

							AMOUNTS		
		Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/L)	ON-COL (ug/L)	REVIEW CODE
M	1	C9-C10 Aromatic				151033	50.0000		
	2	Methyl tert-butylether	12.063	12.078	-0.015	78463	50.0000	47.6	
	3	Benzene	16.093	16.099	-0.006	169359	50.0000	48.4	
	4	Toluene	19.270	19.274	-0.004	157470	50.0000	50.8	
	5	Ethylbenzene	21.858	21.860	-0.002	138493	50.0000	52.1	
	6	m+p-Xylene	21.981	21.983	-0.002	336182	100.000	111	
	7	o-Xylene	22.742	22.745	-0.003	145547	50.0000	53.5	
	8	1,2,4-trimethylbenzene	24.844	24.844	0.000	151033	50.0000	54.4	
	10	Naphthalene	29.111	29.110	0.001	155132	50.0000	55.2	
$	11	2,5-Dibromotoluene (PID)	31.310	31.309	0.001	121637	50.0000	58.3	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10036.D
Date : 07-MAY-2020 13:58
Client ID:
Sample Info: WG277230-4
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.063)
-Benzene (16.093)
-Toluene (19.270)
-Ethylbenzene (21.858)
m+p-Xylene (21.982)
-o-Xylene (22.743)
-1,2,4-trimethylbenzene (24.844)
-Naphthalene (29.112)
-2,5-Dibromotoluene (PID) (31.311)
\\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10036.D

Data File: 2NE10036.D
Report Date: 01-Jun-2020 08:03

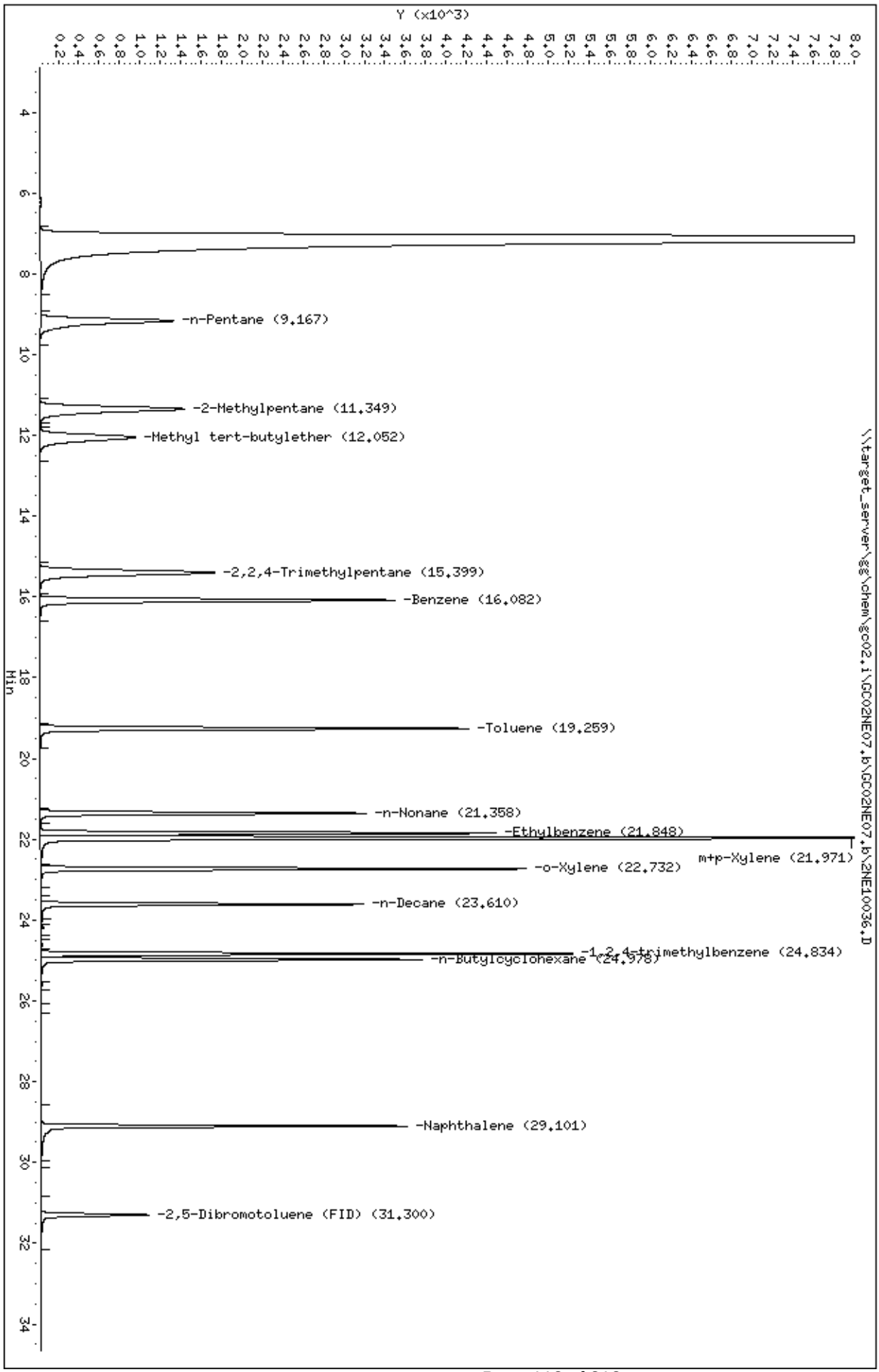
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10036.D
Lab Smp Id: ICAL50
Inj Date : 07-MAY-2020 13:58
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-4
Misc Info :
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 13:58   Cal File: 2NE10036.D
Als bottle: 1   Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
M	1	C5-C8 Aliphatic				845815	150.000	154	
M	2	C9-C12 Aliphatic				553964	100.000	98.9	
	5	n-Pentane	9.166	9.065	0.101	253559	50.0000	51.4	
	6	2-Methylpentane	11.348	11.282	0.066	283200	50.0000	50.9	
	7	Methyl tert-butylether	12.052	11.992	0.060	211894	50.0000	47.4	
	8	2,2,4-Trimethylpentane	15.398	15.386	0.012	309056	50.0000	51.4	
	9	Benzene	16.082	16.065	0.017	377714	50.0000	48.1	
	11	Toluene	19.259	19.257	0.002	376517	50.0000	48.7	
	12	n-Nonane	21.357	21.361	-0.004	280255	50.0000	50.9	
	14	Ethylbenzene	21.847	21.850	-0.003	364564	50.0000	50.2	
	15	m+p-Xylene	21.971	21.975	-0.004	758232	100.000	100	
	16	o-Xylene	22.732	22.736	-0.004	382871	50.0000	50.2	
	13	n-Decane	23.609	23.614	-0.005	250464	50.0000	48.7	
	18	1,2,4-trimethylbenzene	24.833	24.838	-0.005	370229	50.0000	51.1	
	19	n-Butylcyclohexane	24.977	24.982	-0.005	303500	50.0000	50.3	
	20	Naphthalene	29.101	29.104	-0.003	277932	50.0000	54.4	
$	21	2,5-Dibromotoluene (FID)	31.300	31.304	-0.004	103997	50.0000	52.0	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10036.D
Date : 07-MAY-2020 13:58
Client ID:
Sample Info: WG277230-4
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
\\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10036.D
-n-Pentane (9.167)
-2-Methylpentane (11.349)
-Methyl tert-butylether (12.052)
-2,2,4-Trimethylpentane (15.399)
-Benzene (16.082)
-Toluene (19.259)
-n-Nonane (21.358)
-Ethylbenzene (21.848)
m+p-Xylene (21.971)
-o-Xylene (22.732)
-n-Decane (23.610)
-1,2,4-trimethylbenzene (24.834)
-n-Butylcyclohexane (24.978)
-Naphthalene (29.101)
-2,5-Dibromotoluene (FID) (31.300)

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10034.D
Report Date: 01-Jun-2020 08:02

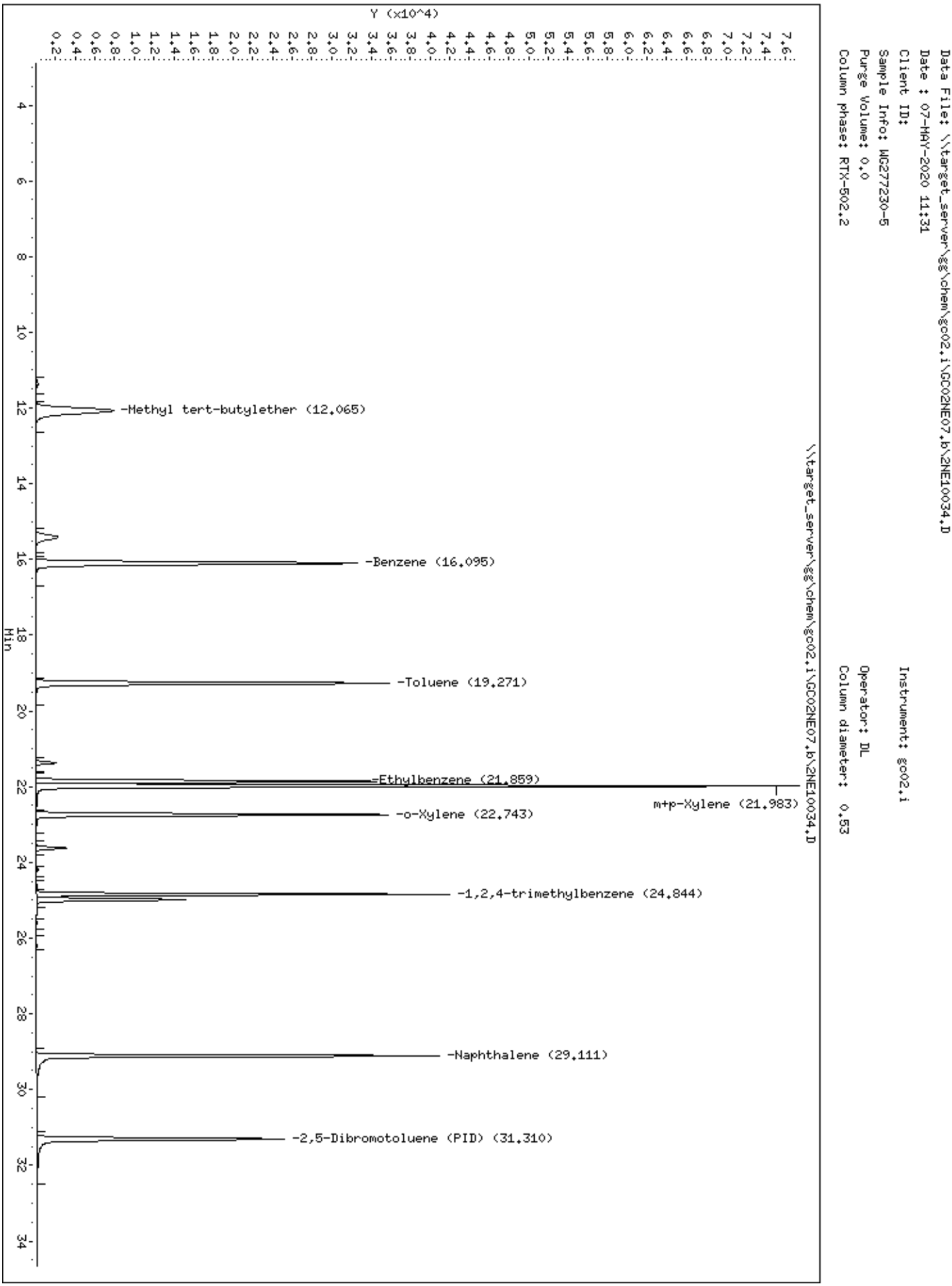
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10034.D
Lab Smp Id: ICAL100
Inj Date : 07-MAY-2020 11:31
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-5
Misc Info :
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 11:31   Cal File: 2NE10034.D
Als bottle: 1   Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
M	1	C9-C10 Aromatic				313802	100.000		
	2	Methyl tert-butylether	12.065	12.078	-0.013	177132	100.000	112	
	3	Benzene	16.094	16.099	-0.005	361642	100.000	104	
	4	Toluene	19.270	19.274	-0.004	332465	100.000	109	
	5	Ethylbenzene	21.858	21.860	-0.002	291708	100.000	114	
	6	m+p-Xylene	21.982	21.983	-0.001	669939	200.000	212	
	7	o-Xylene	22.742	22.745	-0.003	296441	100.000	111	
	8	1,2,4-trimethylbenzene	24.843	24.844	-0.001	313802	100.000	117	
	10	Naphthalene	29.111	29.110	0.001	327219	100.000	122	
$	11	2,5-Dibromotoluene (PID)	31.309	31.309	0.000	256649	100.000	129	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10034.D
Date : 07-MAY-2020 11:31
Client ID:
Sample Info: WG277230-5
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
\\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10034.D
-Methyl tert-butylether (12.065)
-Benzene (16.095)
-Toluene (19.271)
=Ethylbenzene (21.859)
m+p-Xylene (21.983)
-o-Xylene (22.743)
-1,2,4-trimethylbenzene (24.844)
-Naphthalene (29.111)
-2,5-Dibromotoluene (PID) (31.310)

Data File: 2NE10034.D
Report Date: 01-Jun-2020 08:03

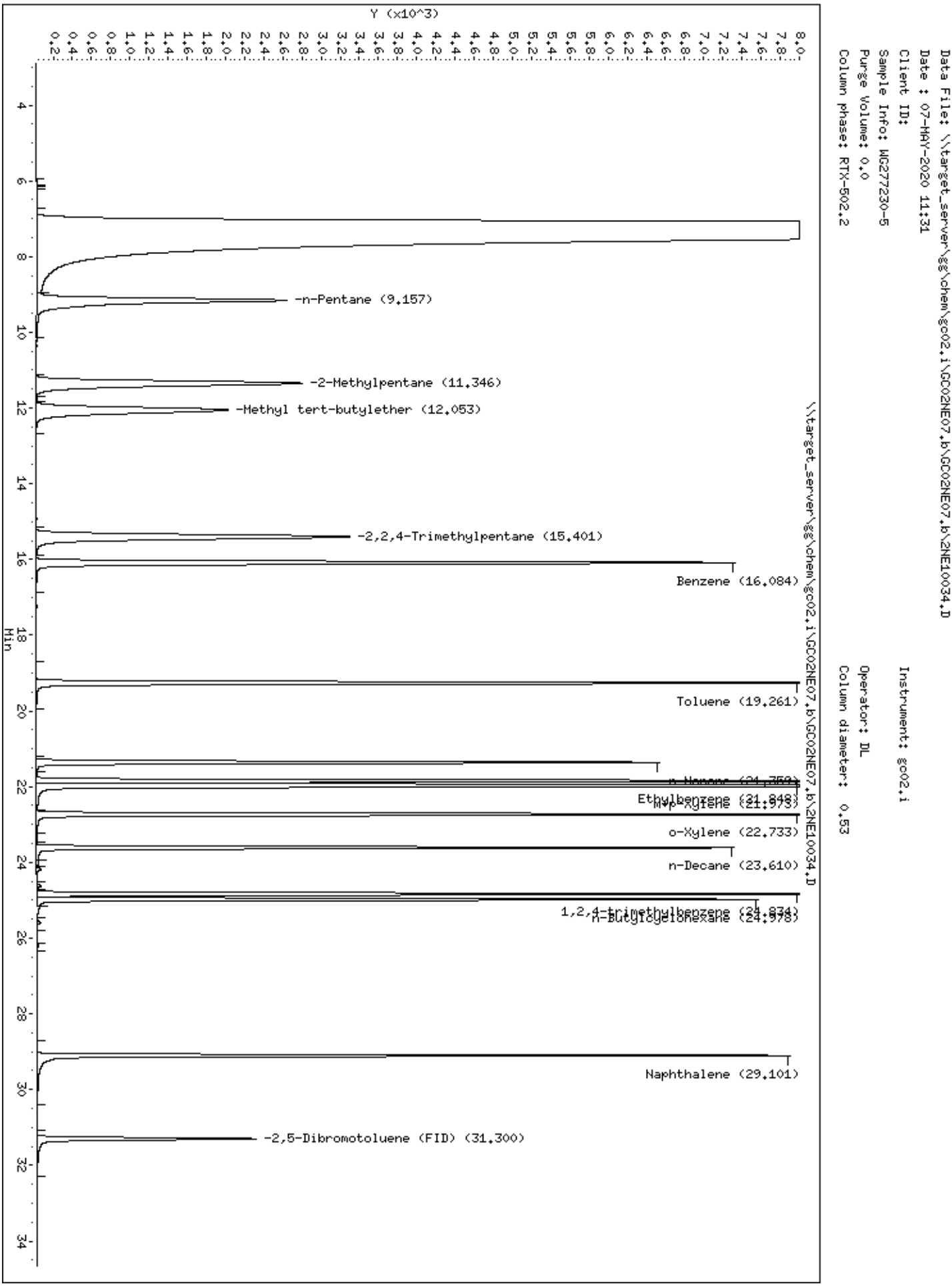
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10034.D
Lab Smp Id: ICAL100
Inj Date : 07-MAY-2020 11:31
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-5
Misc Info :
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 11:31   Cal File: 2NE10034.D
Als bottle: 1   Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/L)	ON-COL (ug/L)	REVIEW CODE
M	1 C5-C8 Aliphatic				1668466	300.000	300	
M	2 C9-C12 Aliphatic				1157841	200.000	203	
	5 n-Pentane	9.157	9.065	0.092	522459	100.000	104	
	6 2-Methylpentane	11.346	11.282	0.064	547815	100.000	96.8	
	7 Methyl tert-butylether	12.052	11.992	0.060	447197	100.000	98.9	
	8 2,2,4-Trimethylpentane	15.401	15.386	0.015	598192	100.000	99.1	
	9 Benzene	16.084	16.065	0.019	782678	100.000	99.2	
	11 Toluene	19.260	19.257	0.003	779632	100.000	101	
	12 n-Nonane	21.359	21.361	-0.002	563377	100.000	106	
	14 Ethylbenzene	21.848	21.850	-0.002	757506	100.000	105	
	15 m+p-Xylene	21.972	21.975	-0.003	1560223	200.000	206	
	16 o-Xylene	22.732	22.736	-0.004	792920	100.000	104	
	13 n-Decane	23.609	23.614	-0.005	567866	100.000	103	
	18 1,2,4-trimethylbenzene	24.833	24.838	-0.005	777387	100.000	109	
	19 n-Butylcyclohexane	24.977	24.982	-0.005	589975	100.000	99.8	
	20 Naphthalene	29.100	29.104	-0.004	592101	100.000	122	
$	21 2,5-Dibromotoluene (FID)	31.299	31.304	-0.005	221990	100.000	104	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10034.D
Date : 07-MAY-2020 11:31
Client ID:
Sample Info: WG277230-5
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
\\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10034.D
-n-Pentane (9.157)
-2-Methylpentane (11.346)
-Methyl tert-butylether (12.053)
-2,2,4-Trimethylpentane (15.401)
Benzene (16.084)
Toluene (19.261)
n-Heptane (21.369)
Ethylbenzene (21.848)
m,p-Xylene (21.973)
o-Xylene (22.733)
n-Decane (23.610)
1,2,4-trimethylbenzene (24.834)
n-Butylcyclohexane (24.978)
Naphthalene (29.101)
-2,5-Dibromotoluene (FID) (31.300)

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10035.D
Report Date: 01-Jun-2020 08:02

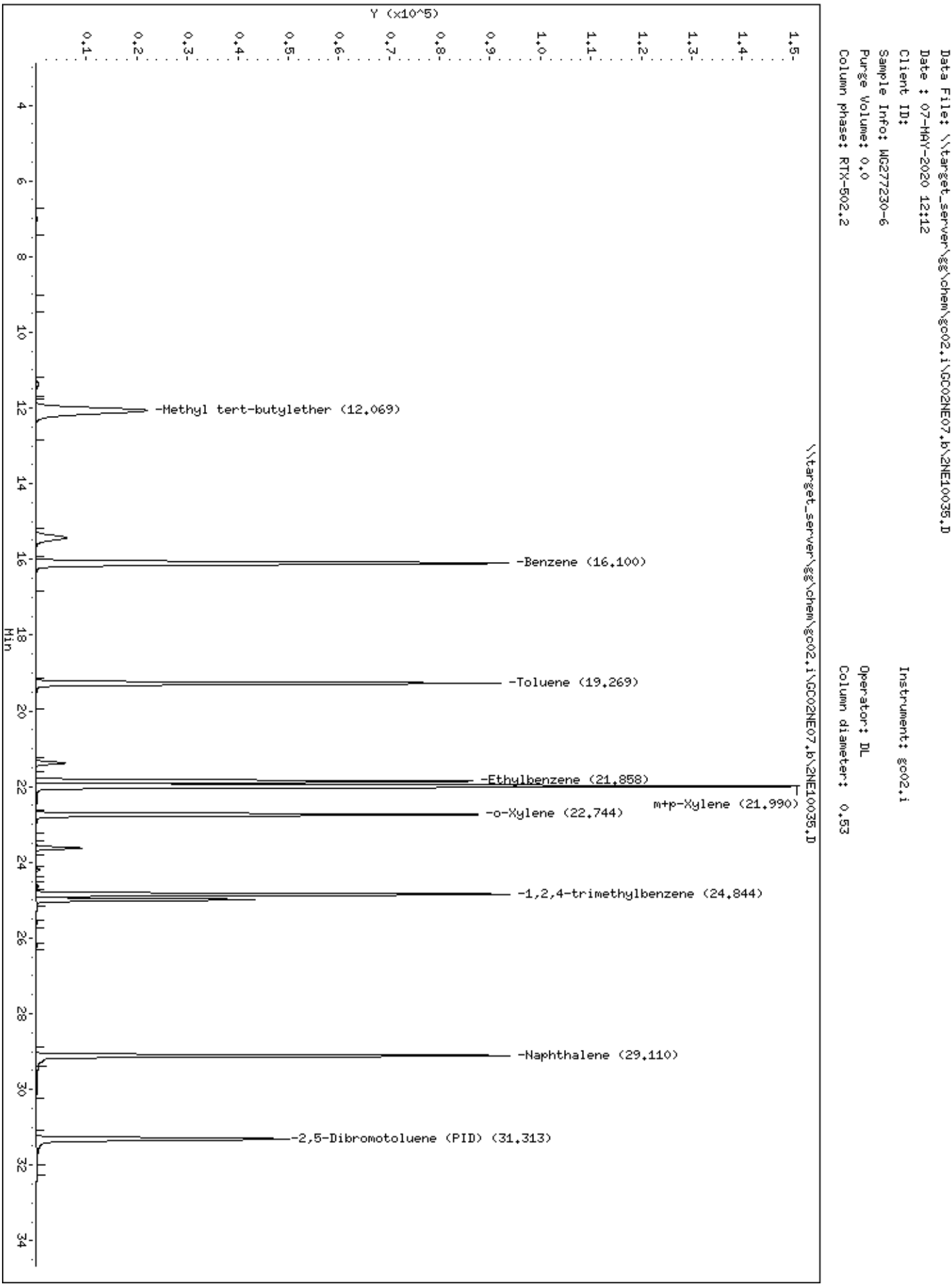
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10035.D
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Inj Date : 07-MAY-2020 12:12
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-6
Misc Info :
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 12:12   Cal File: 2NE10035.D
Als bottle: 1   Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
M 1	C9-C10 Aromatic				780873	300.000		
2	Methyl tert-butylether	12.069	12.078	-0.009	500729	300.000	305	
3	Benzene	16.099	16.099	0.000	1040942	300.000	296	
4	Toluene	19.268	19.274	-0.006	890310	300.000	283	
5	Ethylbenzene	21.858	21.860	-0.002	776035	300.000	290	
6	m+p-Xylene	21.990	21.983	0.007	1445815	600.000	448	
7	o-Xylene	22.744	22.745	-0.001	777201	300.000	281	
8	1,2,4-trimethylbenzene	24.843	24.844	-0.001	780873	300.000	276	
10	Naphthalene	29.109	29.110	-0.001	783322	300.000	272	
$ 11	2,5-Dibromotoluene (PID)	31.313	31.309	0.004	535799	300.000	245	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10035.D
Date : 07-MAY-2020 12:12
Client ID:
Sample Info: WG277230-6
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^5)
Min
-Methyl tert-butylether (12.069)
-Benzene (16.100)
-Toluene (19.269)
-Ethylbenzene (21.858)
m+p-Xylene (21.990)
-o-Xylene (22.744)
-1,2,4-trimethylbenzene (24.844)
-Naphthalene (29.110)
-2,5-Dibromotoluene (PID) (31.313)
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Data File: 2NE10035.D
Report Date: 01-Jun-2020 08:03

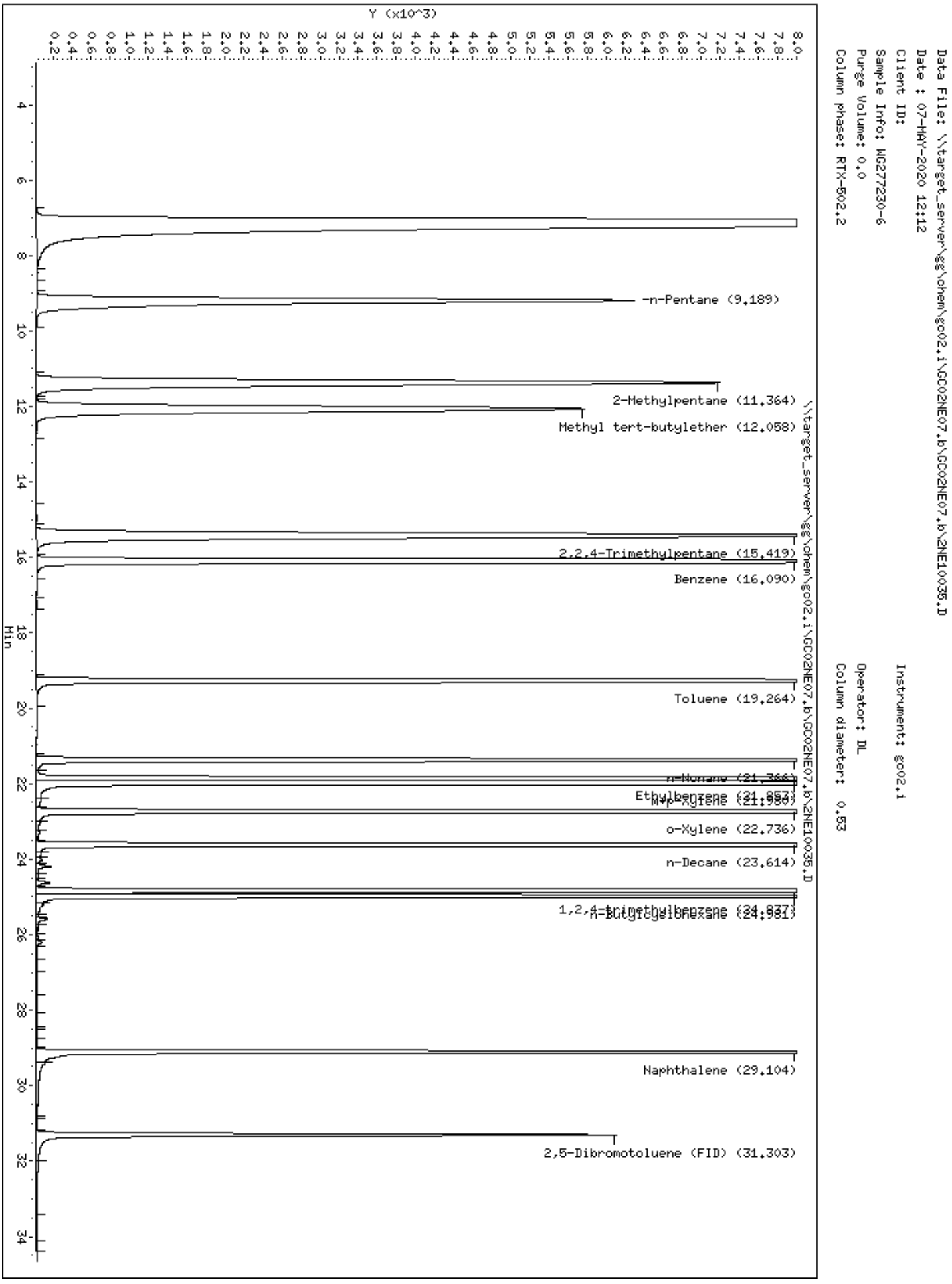
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10035.D
Lab Smp Id: ICAL300
Inj Date : 07-MAY-2020 12:12
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-6
Misc Info :
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 12:12   Cal File: 2NE10035.D
Als bottle: 1   Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
M	1 C5-C8 Aliphatic				4308653	900.000	788	
M	2 C9-C12 Aliphatic				3806111	600.000	620	
	5 n-Pentane	9.189	9.065	0.124	1229217	300.000	252	
	6 2-Methylpentane	11.364	11.282	0.082	1428984	300.000	259	
	7 Methyl tert-butylether	12.058	11.992	0.066	1275987	300.000	285	
	8 2,2,4-Trimethylpentane	15.418	15.386	0.032	1650452	300.000	277	
	9 Benzene	16.089	16.065	0.024	2324808	300.000	295	
	11 Toluene	19.264	19.257	0.007	2328586	300.000	301	
	12 n-Nonane	21.366	21.361	0.005	1830035	300.000	336	
	14 Ethylbenzene	21.853	21.850	0.003	2272281	300.000	313	
	15 m+p-Xylene	21.979	21.975	0.004	4620809	600.000	609	
	16 o-Xylene	22.736	22.736	0.000	2333081	300.000	306	
	13 n-Decane	23.613	23.614	-0.001	1914659	300.000	303	
	18 1,2,4-trimethylbenzene	24.836	24.838	-0.002	2291507	300.000	317	
	19 n-Butylcyclohexane	24.980	24.982	-0.002	1891452	300.000	316	
	20 Naphthalene	29.103	29.104	-0.001	1690566	300.000	338	
$	21 2,5-Dibromotoluene (FID)	31.303	31.304	-0.001	580299	300.000	296	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10035.D
Date : 07-MAY-2020 12:12
Client ID:
Sample Info: WG277230-6
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
-n-Pentane (9.189)
2-Methylpentane (11.364)
Methyl tert-butylether (12.058)
2,2,4-Trimethylpentane (15.419)
Benzene (16.090)
Toluene (19.264)
n-Nonane (21.366)
Ethylbenzene (21.857)
m,p-Xylene (21.986)
o-Xylene (22.736)
n-Decane (23.614)
1,2,4-Trimethylbenzene (24.837)
n-Butylcyclohexane (24.981)
Naphthalene (29.104)
2,5-Dibromotoluene (FID) (31.303)
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Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10038.D
Report Date: 01-Jun-2020 08:03

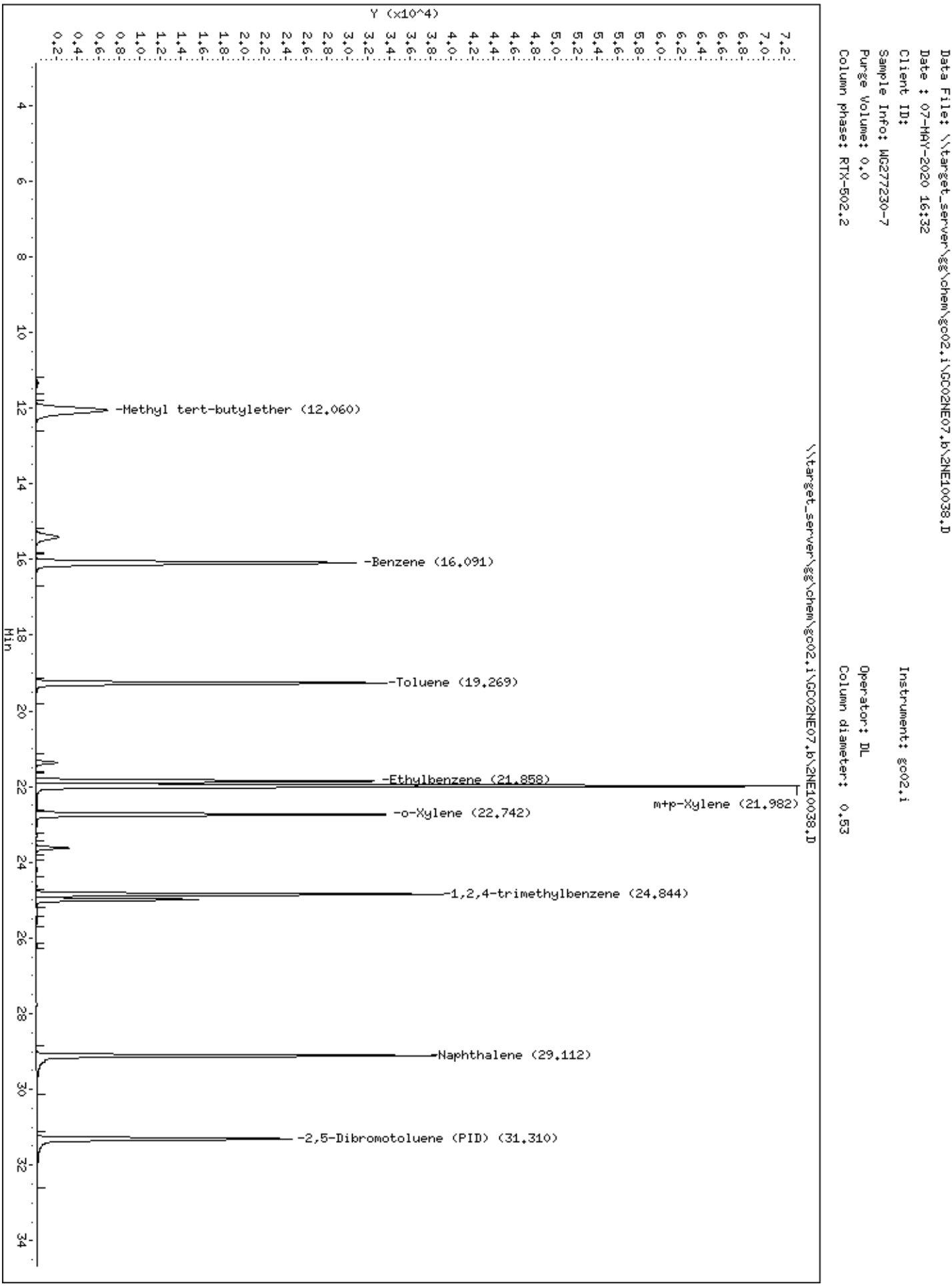
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10038.D
Lab Smp Id: IND
Inj Date : 07-MAY-2020 16:32
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-7
Misc Info : WG277230,WG277230-4
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: IND.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
2	Methyl tert-butylether	12.059	12.078	-0.019	156532	95.3206	95.3	
3	Benzene	16.091	16.099	-0.008	342444	98.0784	98.1	
4	Toluene	19.269	19.274	-0.005	312662	99.6625	99.7	
5	Ethylbenzene	21.857	21.860	-0.003	275799	102.556	102	
6	m+p-Xylene	21.982	21.983	-0.001	639321	203.820	204	
7	o-Xylene	22.742	22.745	-0.003	283164	101.827	102	
8	1,2,4-trimethylbenzene	24.843	24.844	-0.001	295759	104.671	105	
10	Naphthalene	29.111	29.110	0.001	308511	111.409	111	
$ 11	2,5-Dibromotoluene (PID)	31.310	31.309	0.001	251794	116.852	117	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10038.D
Date : 07-MAY-2020 16:32
Client ID:
Sample Info: WG277230-7
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10038.D
Y (x10^4)
Min
-Methyl tert-butylether (12.060)
-Benzene (16.091)
-Toluene (19.269)
-Ethylbenzene (21.858)
m+p-Xylene (21.982)
-o-Xylene (22.742)
-1,2,4-trimethylbenzene (24.844)
Naphthalene (29.112)
-2,5-Dibromotoluene (PID) (31.310)

Data File: 2NE10038.D
Report Date: 01-Jun-2020 08:03

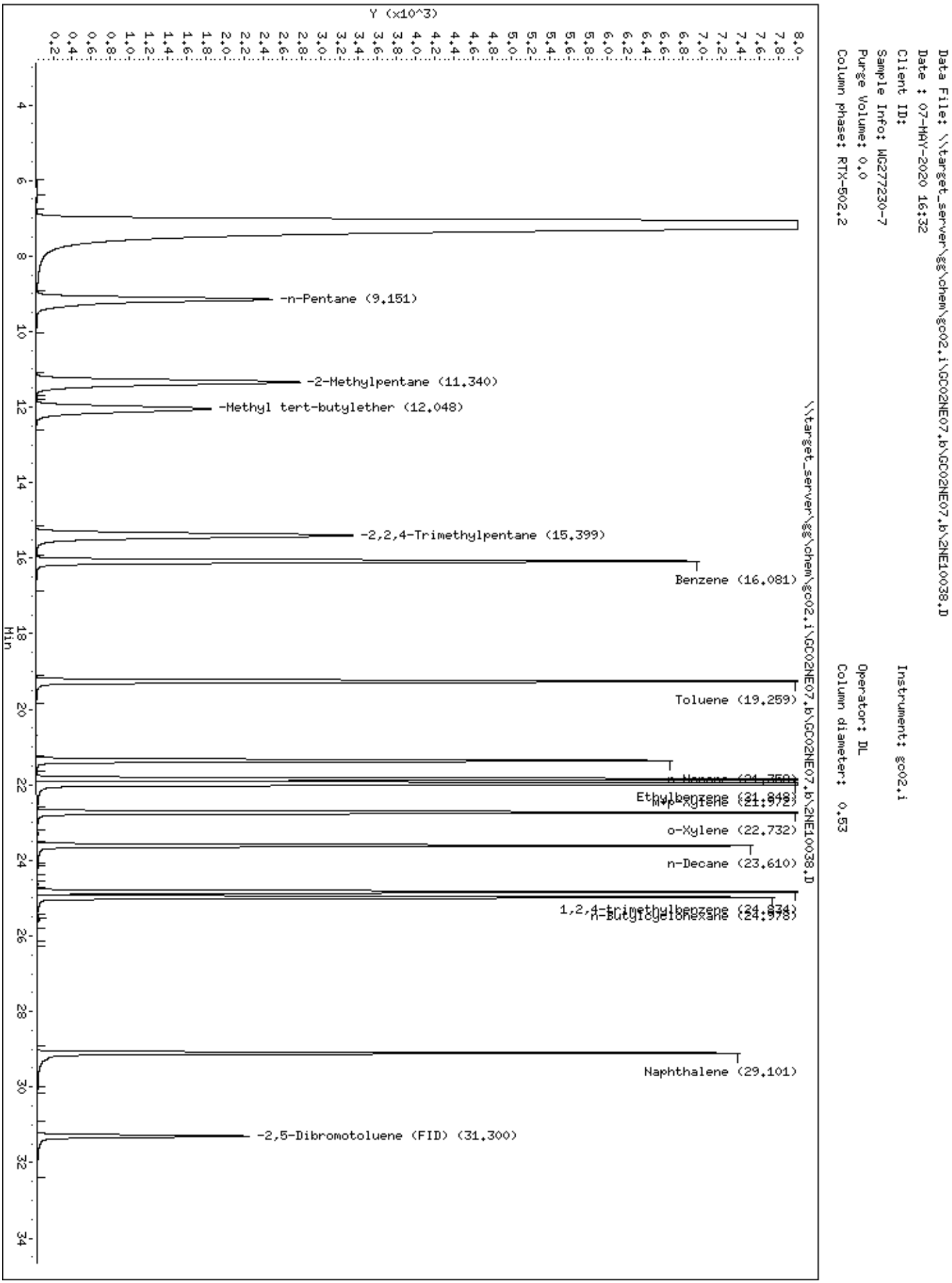
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10038.D
Lab Smp Id: IND
Inj Date : 07-MAY-2020 16:32
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-7
Misc Info : WG277230,WG277230-4
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: IND.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
5	n-Pentane	9.150	9.065	0.085	485526	99.4283	99.4	
6	2-Methylpentane	11.340	11.282	0.058	550992	100.034	100	
7	Methyl tert-butylether	12.048	11.992	0.056	410967	91.7257	91.7	
8	2,2,4-Trimethylpentane	15.399	15.386	0.013	607934	101.867	102	
9	Benzene	16.080	16.065	0.015	748122	95.6553	95.6	
11	Toluene	19.259	19.257	0.002	736654	95.8309	95.8	
12	n-Nonane	21.358	21.361	-0.003	578043	105.409	105	
14	Ethylbenzene	21.847	21.850	-0.003	716730	98.9444	98.9	
15	m+p-Xylene	21.971	21.975	-0.004	1481803	195.105	195	
16	o-Xylene	22.732	22.736	-0.004	753735	98.1866	98.2	
13	n-Decane	23.609	23.614	-0.005	586184	113.702	114	
18	1,2,4-trimethylbenzene	24.833	24.838	-0.005	729068	100.744	101	
19	n-Butylcyclohexane	24.977	24.982	-0.005	611139	101.876	102	
20	Naphthalene	29.101	29.104	-0.003	555370	105.306	105	
$ 21	2,5-Dibromotoluene (FID)	31.300	31.304	-0.004	216552	108.341	108	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10038.D
Date : 07-MAY-2020 16:32
Client ID:
Sample Info: WG277230-7
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10038.D
Y (x10^3)
Min
-n-Pentane (9.151)
-2-Methylpentane (11.340)
-Methyl tert-butylether (12.048)
-2,2,4-Trimethylpentane (15.399)
Benzene (16.081)
Toluene (19.259)
Ethylbenzene (21.848)
m,p-Xylene (21.972)
o-Xylene (22.732)
n-Decane (23.610)
1,2,4-trimethylbenzene (24.834)
n-Butylcyclohexane (24.978)
Naphthalene (29.101)
-2,5-Dibromotoluene (FID) (31.300)

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020
SDG: SN3820
Lab ID : WG278133-4
Analytical Date: 05/21/20 09:36
Lab File ID : 2NE10119.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	2826	2887	0.100	2.19056	25.00000	Averaged
20	Benzene	3492	3242	0.100	-7.14169	25.00000	Averaged
30	Ethylbenzene	2689	2636	0.100	-1.97132	25.00000	Averaged
40	Methyl tert-butylether	1642	1625	0.100	-1.05975	25.00000	Averaged
50	Naphthalene	2769	2756	0.100	-0.48620	25.00000	Averaged
60	Toluene	3137	2986	0.100	-4.82557	25.00000	Averaged
70	m+p-Xylene	3137	3121	0.100	-0.49227	25.00000	Averaged
80	o-Xylene	2781	2730	0.100	-1.83890	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	2155	1902	0.100	-11.72196	25.00000	Averaged
180	1,2,4-trimethylbenzene	2826	2887	0.100	2.19004	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10119.D
Report Date: 02-Jun-2020 13:22

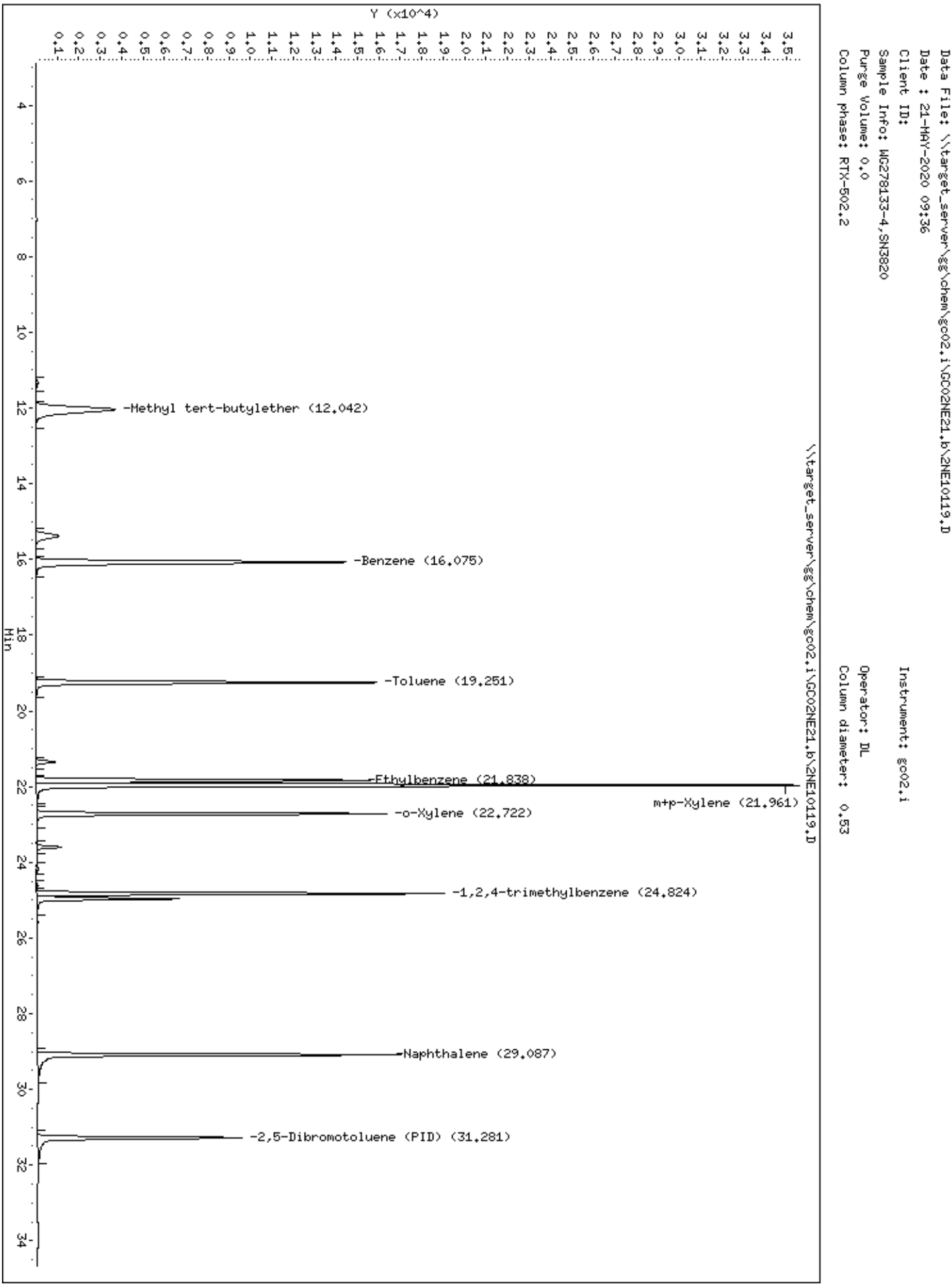
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10119.D
Lab Smp Id: WG278133-4
Inj Date : 21-MAY-2020 09:36
Operator : DL   Inst ID: gc02.i
Smp Info : WG278133-4,SN3820
Misc Info : WG278133,WG277230-4,SN3820-1
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
	2 Methyl tert-butylether	12.041	12.078	-0.037	81238	50.0000	49.5	
	3 Benzene	16.074	16.099	-0.025	162109	50.0000	46.4	
	4 Toluene	19.250	19.274	-0.024	149291	50.0000	47.6	
	5 Ethylbenzene	21.837	21.860	-0.023	131812	50.0000	49.0	
	6 m+p-Xylene	21.961	21.983	-0.022	312126	100.000	99.5	
	7 o-Xylene	22.722	22.745	-0.023	136485	50.0000	49.1	
	8 1,2,4-trimethylbenzene	24.824	24.844	-0.020	144374	50.0000	51.1	
	10 Naphthalene	29.087	29.110	-0.023	137786	50.0000	49.8	
M	1 C9-C10 Aromatic				144374	50.0000	51.1	
$	11 2,5-Dibromotoluene (PID)	31.280	31.309	-0.029	95111	50.0000	44.1	


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10119.D
Date : 21-MAY-2020 09:36
Client ID:
Sample Info: WG278133-4,SN3820
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.042)
-Benzene (16.075)
-Toluene (19.251)
-Ethylbenzene (21.838)
m+p-Xylene (21.961)
-o-Xylene (22.722)
-1,2,4-trimethylbenzene (24.824)
Naphthalene (29.087)
-2,5-Dibromotoluene (PID) (31.281)
\\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10119.D

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020 **SDG:** SN3820
Lab ID : WG278133-4 **Analytical Date:** 05/21/20 09:36
Lab File ID : 2NE10119.D **Instrument ID:** GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39 **Column ID:** B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
30	C5-C8 Aliphatic	5453	4905	0.100	-10.05248	25.00000	Averaged
40	C9-C12 Aliphatic	5577	4908	0.100	-11.99198	25.00000	Averaged
60	Benzene	7821	7227	0.100	-7.59466	25.00000	Averaged
70	Ethylbenzene	7244	7025	0.100	-3.01402	25.00000	Averaged
80	Methyl tert-butylether	4480	4293	0.100	-4.18959	25.00000	Averaged
90	Naphthalene	5274	5156	0.100	-2.23869	25.00000	Averaged
100	Toluene	7687	7193	0.100	-6.43213	25.00000	Averaged
110	m+p-Xylene	7595	7346	0.100	-3.27982	25.00000	Averaged
120	o-Xylene	7677	7474	0.100	-2.64310	25.00000	Averaged
200	n-Pentane	4883	4030	0.100	-17.46315	25.00000	Averaged
210	2-Methylpentane	5508	5054	0.100	-8.24928	25.00000	Averaged
220	2,2,4-Trimethylpentane	5968	5631	0.100	-5.65263	25.00000	Averaged
230	n-Nonane	5484	4949	0.100	-9.75406	30.00000	Averaged
240	n-Decane	5155	4325	0.100	-16.10969	25.00000	Averaged
250	n-Butylcyclohexane	5999	5492	0.100	-8.45268	25.00000	Averaged
260	1,2,4-trimethylbenzene	7237	7300	0.100	0.87477	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	1999	1687	0.100	-15.59610	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: 2NE10119.D
Report Date: 02-Jun-2020 13:23

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10119.D
Lab Smp Id: WG278133-4
Inj Date : 21-MAY-2020 09:36
Operator : DL   Inst ID: gc02.i
Smp Info : WG278133-4,SN3820
Misc Info : WG278133,WG277230-4,SN3820-1
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12

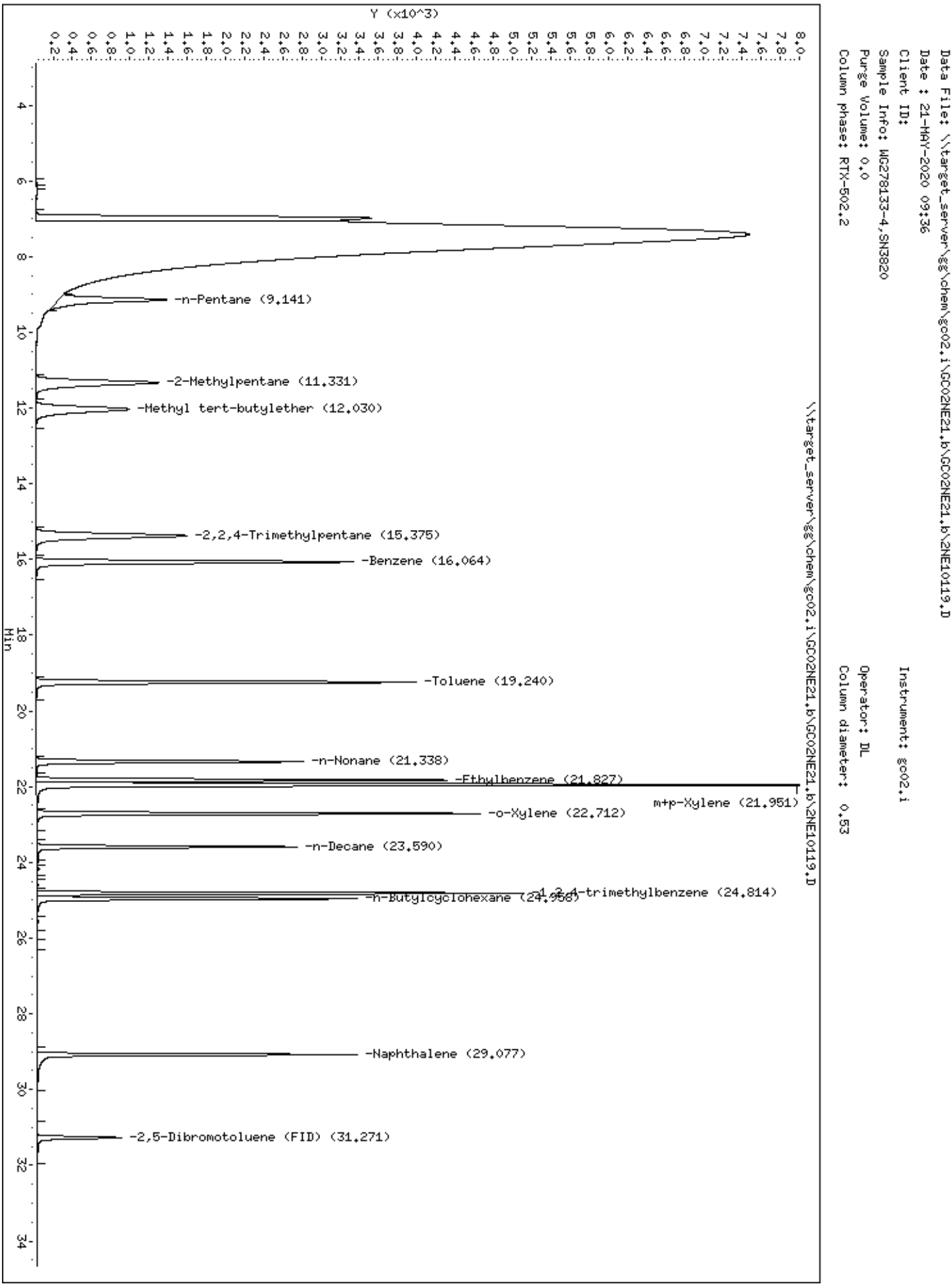
Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
5	n-Pentane	9.141	9.065	0.076	201521	50.0000	41.3(M)	M2
6	2-Methylpentane	11.331	11.282	0.049	252684	50.0000	45.9	
7	Methyl tert-butylether	12.030	11.992	0.038	214634	50.0000	47.9	
8	2,2,4-Trimethylpentane	15.374	15.386	-0.012	281529	50.0000	47.2	
9	Benzene	16.064	16.065	-0.001	361352	50.0000	46.2	
11	Toluene	19.240	19.257	-0.017	359629	50.0000	46.8	
12	n-Nonane	21.338	21.361	-0.023	247446	50.0000	45.1	
14	Ethylbenzene	21.827	21.850	-0.023	351272	50.0000	48.5	
15	m+p-Xylene	21.951	21.975	-0.024	734579	100.000	96.7	
16	o-Xylene	22.712	22.736	-0.024	373683	50.0000	48.7	
13	n-Decane	23.590	23.614	-0.024	216245	50.0000	41.9	
18	1,2,4-trimethylbenzene	24.814	24.838	-0.024	365007	50.0000	50.4	
19	n-Butylcyclohexane	24.957	24.982	-0.025	274590	50.0000	45.8	
20	Naphthalene	29.077	29.104	-0.027	257789	50.0000	48.9	
$ 21	2,5-Dibromotoluene (FID)	31.270	31.304	-0.034	84353	50.0000	42.2	

QC Flag Legend

M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10119.D
Date : 21-MAY-2020 09:36
Client ID:
Sample Info: WG278133-4,SN3820
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10119.D
Y (x10^3)
Min
-n-Pentane (9.141)
-2-Methylpentane (11.331)
-Methyl tert-butylether (12.030)
-2,2,4-Trimethylpentane (15.375)
-Benzene (16.064)
-Toluene (19.240)
-n-Nonane (21.338)
-Ethylbenzene (21.827)
m+p-Xylene (21.951)
-o-Xylene (22.712)
-n-Decane (23.590)
1,2,4-trimethylbenzene (24.814)
-n-Butylcyclohexane (24.958)
-Naphthalene (29.077)
-2,5-Dibromotoluene (FID) (31.271)

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020 **SDG:** SN3820
Lab ID : WG278133-5 **Analytical Date:** 05/22/20 01:36
Lab File ID : 2NE10139.D **Instrument ID:** GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39 **Column ID:** A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
10	C9-C10 Aromatic	2826	2849	0.100	0.84239	25.00000	Averaged	
20	Benzene	3492	3367	0.100	-3.57134	25.00000	Averaged	
30	Ethylbenzene	2689	2688	0.100	-0.05853	25.00000	Averaged	
40	Methyl tert-butylether	1642	1536	0.100	-6.48308	25.00000	Averaged	
50	Naphthalene	2769	2736	0.100	-1.21277	25.00000	Averaged	
60	Toluene	3137	3123	0.100	-0.43823	25.00000	Averaged	
70	m+p-Xylene	3137	3229	0.100	2.92852	25.00000	Averaged	
80	o-Xylene	2781	2807	0.100	0.95667	25.00000	Averaged	
90	2,5-Dibromotoluene (PID)	2155	1425	0.100	-33.86224	25.00000	Averaged	<-
180	1,2,4-trimethylbenzene	2826	2849	0.100	0.84236	25.00000	Averaged	

*** = Compound out of QC criteria**

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10139.D
Report Date: 02-Jun-2020 13:22

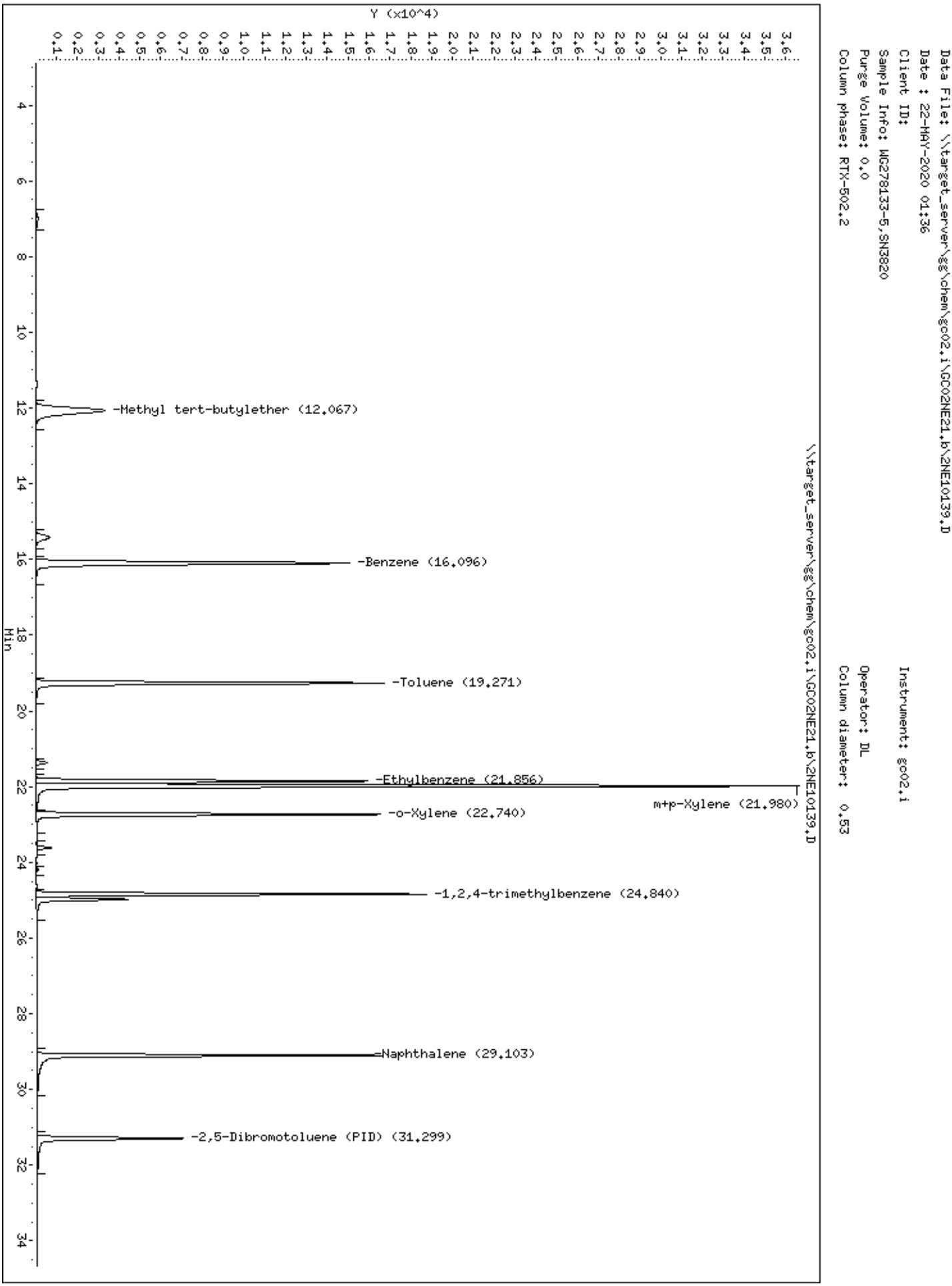
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10139.D
Lab Smp Id: WG278133-5
Inj Date : 22-MAY-2020 01:36
Operator : DL   Inst ID: gc02.i
Smp Info : WG278133-5,SN3820
Misc Info : WG278133,WG277230-4,SN3820-1
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
	2 Methyl tert-butylether	12.066	12.078	-0.012	76785	50.0000	46.8	
	3 Benzene	16.096	16.099	-0.003	168342	50.0000	48.2	
	4 Toluene	19.270	19.274	-0.004	156173	50.0000	49.8	
	5 Ethylbenzene	21.856	21.860	-0.004	134384	50.0000	50.0	
	6 m+p-Xylene	21.979	21.983	-0.004	322856	100.000	103	
	7 o-Xylene	22.740	22.745	-0.005	140372	50.0000	50.5	
	8 1,2,4-trimethylbenzene	24.839	24.844	-0.005	142470	50.0000	50.4	
	10 Naphthalene	29.103	29.110	-0.007	136780	50.0000	49.4	
M	1 C9-C10 Aromatic				142470	50.0000	50.4	
$	11 2,5-Dibromotoluene (PID)	31.299	31.309	-0.010	71257	50.0000	33.1	


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10139.D
Date : 22-MAY-2020 01:36
Client ID:
Sample Info: WG278133-5,SN3820
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10139.D
Y (x10^4)
Min
-Methyl tert-butylether (12.067)
-Benzene (16.096)
-Toluene (19.271)
-Ethylbenzene (21.856)
m+p-Xylene (21.980)
-o-Xylene (22.740)
-1,2,4-trimethylbenzene (24.840)
Naphthalene (29.103)
-2,5-Dibromotoluene (PID) (31.299)

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020 **SDG:** SN3820
Lab ID : WG278133-5 **Analytical Date:** 05/22/20 01:36
Lab File ID : 2NE10139.D **Instrument ID:** GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39 **Column ID:** B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
30	C5-C8 Aliphatic	5453	3455	0.100	-36.63294	25.00000	Averaged	<-
40	C9-C12 Aliphatic	5577	3216	0.100	-42.34226	25.00000	Averaged	<-
60	Benzene	7821	7861	0.100	0.51579	25.00000	Averaged	
70	Ethylbenzene	7244	7454	0.100	2.90583	25.00000	Averaged	
80	Methyl tert-butylether	4480	4312	0.100	-3.75302	25.00000	Averaged	
90	Naphthalene	5274	5262	0.100	-0.23332	25.00000	Averaged	
100	Toluene	7687	7845	0.100	2.05387	25.00000	Averaged	
110	m+p-Xylene	7595	7811	0.100	2.84219	25.00000	Averaged	
120	o-Xylene	7677	7877	0.100	2.61472	25.00000	Averaged	
200	n-Pentane	4883	3078	0.100	-36.97545	25.00000	Averaged	<-
210	2-Methylpentane	5508	3477	0.100	-36.88080	25.00000	Averaged	<-
220	2,2,4-Trimethylpentane	5968	3812	0.100	-36.12453	25.00000	Averaged	<-
230	n-Nonane	5484	3100	0.100	-43.47694	30.00000	Averaged	<-
240	n-Decane	5155	2639	0.100	-48.80963	25.00000	Averaged	<-
250	n-Butylcyclohexane	5999	3792	0.100	-36.78404	25.00000	Averaged	<-
260	1,2,4-trimethylbenzene	7237	7440	0.100	2.80489	25.00000	Averaged	
21	2,5-Dibromotoluene (FID)	1999	1269	0.100	-36.49971	25.00000	Averaged	<-

*** = Compound out of QC criteria**

Data File: 2NE10139.D
Report Date: 02-Jun-2020 13:23

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10139.D
Lab Smp Id: WG278133-5
Inj Date : 22-MAY-2020 01:36
Operator : DL   Inst ID: gc02.i
Smp Info : WG278133-5,SN3820
Misc Info : WG278133,WG277230-4,SN3820-1
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12
Processing Host: V200T3

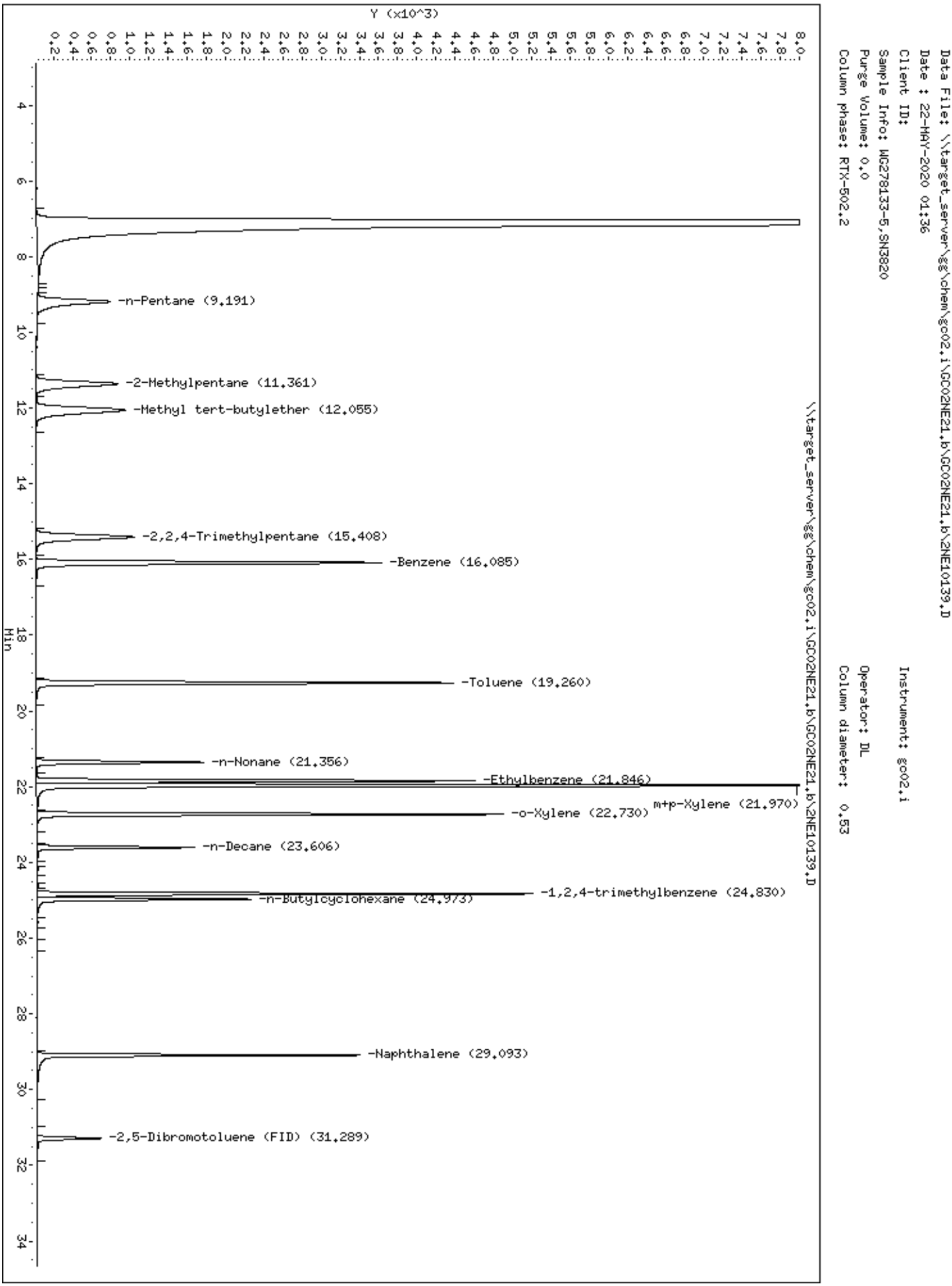
Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
5	n-Pentane	9.190	9.065	0.125	153880	50.0000	31.5	
6	2-Methylpentane	11.361	11.282	0.079	173832	50.0000	31.6	
7	Methyl tert-butylether	12.055	11.992	0.063	215612	50.0000	48.1	
8	2,2,4-Trimethylpentane	15.407	15.386	0.021	190602	50.0000	31.9	
9	Benzene	16.085	16.065	0.020	393068	50.0000	50.2	
11	Toluene	19.260	19.257	0.003	392245	50.0000	51.0	
12	n-Nonane	21.356	21.361	-0.005	154981	50.0000	28.3	
14	Ethylbenzene	21.845	21.850	-0.005	372713	50.0000	51.4	
15	m+p-Xylene	21.969	21.975	-0.006	781075	100.000	103	
16	o-Xylene	22.730	22.736	-0.006	393864	50.0000	51.3	
13	n-Decane	23.605	23.614	-0.009	131954	50.0000	25.6	
18	1,2,4-trimethylbenzene	24.829	24.838	-0.009	371991	50.0000	51.4	
19	n-Butylcyclohexane	24.973	24.982	-0.009	189612	50.0000	31.6	
20	Naphthalene	29.092	29.104	-0.012	263077	50.0000	49.9	
M 1	C5-C8 Aliphatic				518314	150.000	95.0(a)	
M 2	C9-C12 Aliphatic				321566	100.000	57.2(a)	
$ 21	2,5-Dibromotoluene (FID)	31.288	31.304	-0.016	63462	50.0000	31.8	

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10139.D
Date : 22-MAY-2020 01:36
Client ID:
Sample Info: WG278133-5,SN3820
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10139.D
Y (x10^3)
Min
-n-Pentane (9.191)
-2-Methylpentane (11.361)
-Methyl tert-butylether (12.055)
-2,2,4-Trimethylpentane (15.408)
-Benzene (16.085)
-Toluene (19.260)
-n-Nonane (21.356)
-Ethylbenzene (21.846)
m+p-Xylene (21.970)
-o-Xylene (22.730)
-n-Decane (23.606)
-1,2,4-trimethylbenzene (24.830)
-n-Butylcyclohexane (24.973)
-Naphthalene (29.093)
-2,5-Dibromotoluene (FID) (31.289)

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020
SDG: SN3820
Lab ID : WG278391-4
Analytical Date: 05/26/20 09:42
Lab File ID : 2NE10154.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	2826	2661	0.100	-5.82224	25.00000	Averaged
20	Benzene	3492	3122	0.100	-10.59576	25.00000	Averaged
30	Ethylbenzene	2689	2494	0.100	-7.24788	25.00000	Averaged
40	Methyl tert-butylether	1642	1483	0.100	-9.69592	25.00000	Averaged
50	Naphthalene	2769	2639	0.100	-4.69033	25.00000	Averaged
60	Toluene	3137	2870	0.100	-8.51675	25.00000	Averaged
70	m+p-Xylene	3137	2967	0.100	-5.39647	25.00000	Averaged
80	o-Xylene	2781	2558	0.100	-8.00395	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	2155	1913	0.100	-11.22261	25.00000	Averaged
180	1,2,4-trimethylbenzene	2826	2661	0.100	-5.82242	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10154.D
Report Date: 01-Jun-2020 09:31

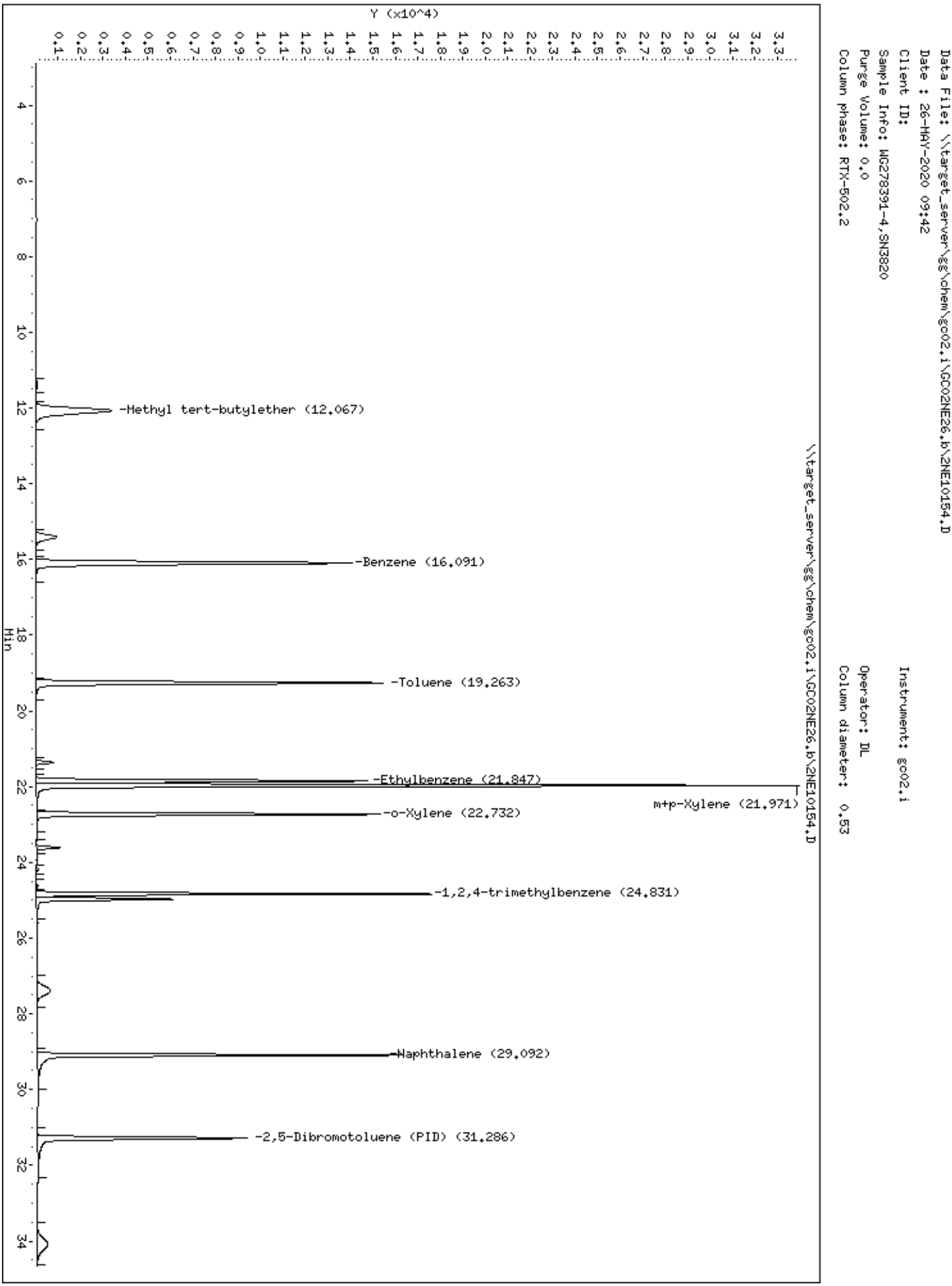
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10154.D
Lab Smp Id: WG278391-4
Inj Date : 26-MAY-2020 09:42
Operator : DL   Inst ID: gc02.i
Smp Info : WG278391-4,SN3820
Misc Info : WG278391,WG277230-4,SN3820-1
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m
Meth Date : 27-May-2020 07:24 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
	2 Methyl tert-butylether	12.066	12.078	-0.012	74147	50.0000	45.2	
	3 Benzene	16.091	16.099	-0.008	156079	50.0000	44.7	
	4 Toluene	19.262	19.274	-0.012	143501	50.0000	45.7	
	5 Ethylbenzene	21.847	21.860	-0.013	124717	50.0000	46.4	
	6 m+p-Xylene	21.971	21.983	-0.012	296743	100.000	94.6	
	7 o-Xylene	22.731	22.745	-0.014	127913	50.0000	46.0	
	8 1,2,4-trimethylbenzene	24.831	24.844	-0.013	133054	50.0000	47.1	
	10 Naphthalene	29.092	29.110	-0.018	131965	50.0000	47.6	
M	1 C9-C10 Aromatic				133054	50.0000	47.1	
$	11 2,5-Dibromotoluene (PID)	31.285	31.309	-0.024	95649	50.0000	44.4	


Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10154.D
Date : 26-MAY-2020 09:42
Client ID:
Sample Info: WG278391-4,SN3820
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.067)
-Benzene (16.091)
-Toluene (19.263)
-Ethylbenzene (21.847)
m+p-Xylene (21.971)
-o-Xylene (22.732)
-1,2,4-trimethylbenzene (24.831)
Naphthalene (29.092)
-2,5-Dibromotoluene (PID) (31.286)
\\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10154.D

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020
SDG: SN3820
Lab ID : WG278391-4
Analytical Date: 05/26/20 09:42
Lab File ID : 2NE10154.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
30	C5-C8 Aliphatic	5453	5095	0.100	-6.57112	25.00000	Averaged
40	C9-C12 Aliphatic	5577	4828	0.100	-13.43519	25.00000	Averaged
60	Benzene	7821	7589	0.100	-2.96381	25.00000	Averaged
70	Ethylbenzene	7244	7248	0.100	0.06339	25.00000	Averaged
80	Methyl tert-butylether	4480	4252	0.100	-5.09398	25.00000	Averaged
90	Naphthalene	5274	5340	0.100	1.25971	25.00000	Averaged
100	Toluene	7687	7548	0.100	-1.80563	25.00000	Averaged
110	m+p-Xylene	7595	7550	0.100	-0.59367	25.00000	Averaged
120	o-Xylene	7677	7624	0.100	-0.68650	25.00000	Averaged
200	n-Pentane	4883	4661	0.100	-4.55393	25.00000	Averaged
210	2-Methylpentane	5508	5107	0.100	-7.27580	25.00000	Averaged
220	2,2,4-Trimethylpentane	5968	5516	0.100	-7.57122	25.00000	Averaged
230	n-Nonane	5484	4944	0.100	-9.83831	30.00000	Averaged
240	n-Decane	5155	4275	0.100	-17.07450	25.00000	Averaged
250	n-Butylcyclohexane	5999	5381	0.100	-10.30737	25.00000	Averaged
260	1,2,4-trimethylbenzene	7237	7323	0.100	1.19010	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	1999	1848	0.100	-7.52524	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: 2NE10154.D
Report Date: 01-Jun-2020 09:32

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10154.D
Lab Smp Id: WG278391-4
Inj Date : 26-MAY-2020 09:42
Operator : DL   Inst ID: gc02.i
Smp Info : WG278391-4,SN3820
Misc Info : WG278391,WG277230-4,SN3820-1
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m\VPHFID91.m
Meth Date : 27-May-2020 07:31 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12
Processing Host: V200T3

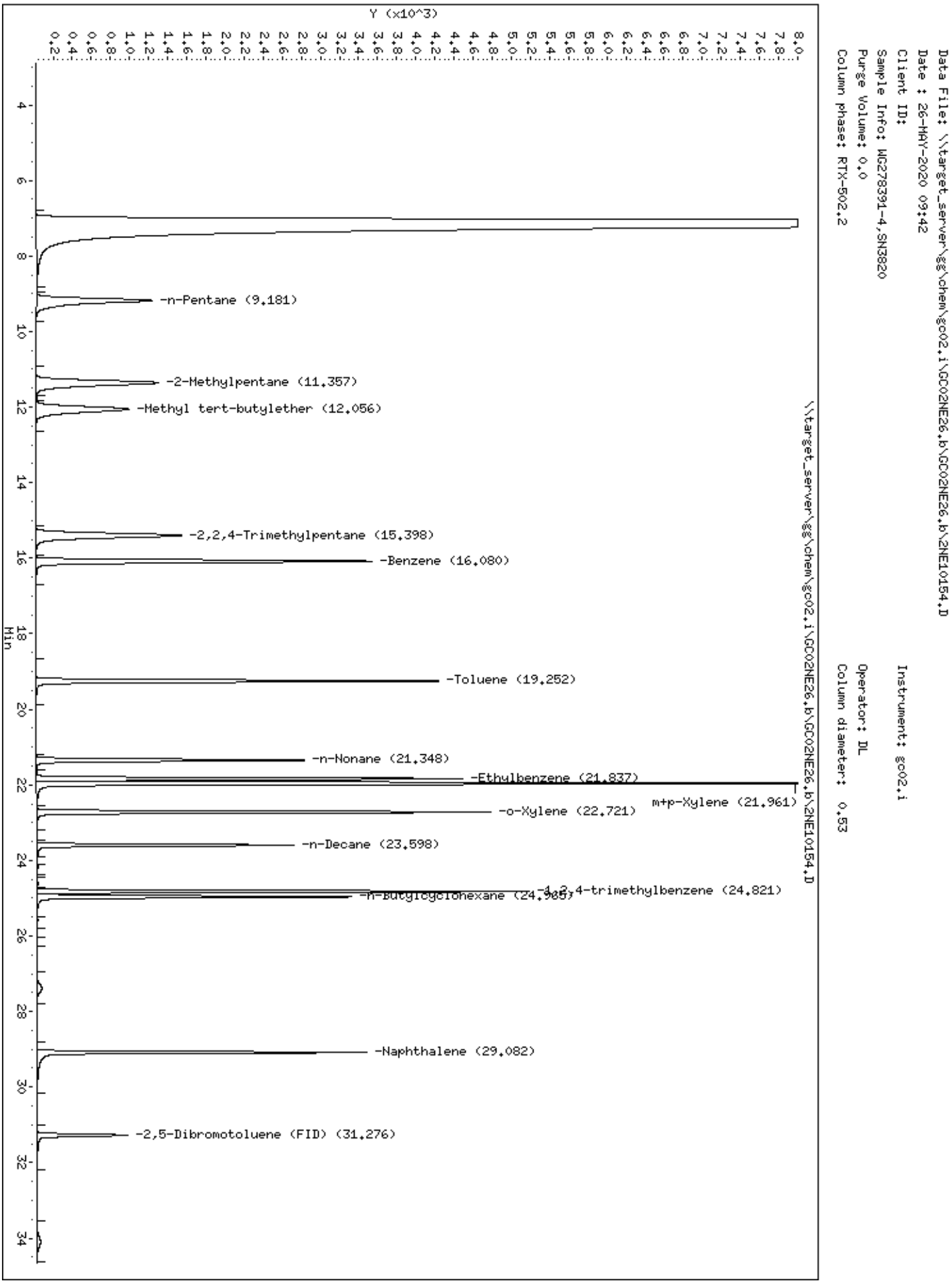
Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
5	n-Pentane	9.181	9.065	0.116	233040	50.0000	47.7	
6	2-Methylpentane	11.357	11.282	0.075	255365	50.0000	46.4	
7	Methyl tert-butylether	12.055	11.992	0.063	212608	50.0000	47.4	
8	2,2,4-Trimethylpentane	15.398	15.386	0.012	275804	50.0000	46.2	
9	Benzene	16.080	16.065	0.015	379461	50.0000	48.5	
11	Toluene	19.252	19.257	-0.005	377411	50.0000	49.1	
12	n-Nonane	21.347	21.361	-0.014	247215	50.0000	45.1	
14	Ethylbenzene	21.837	21.850	-0.013	362418	50.0000	50.0	
15	m+p-Xylene	21.960	21.975	-0.015	754980	100.000	99.4	
16	o-Xylene	22.721	22.736	-0.015	381193	50.0000	49.6	
13	n-Decane	23.597	23.614	-0.017	213758	50.0000	41.5	
18	1,2,4-trimethylbenzene	24.820	24.838	-0.018	366148	50.0000	50.6	
19	n-Butylcyclohexane	24.964	24.982	-0.018	269027	50.0000	44.8	
20	Naphthalene	29.082	29.104	-0.022	267014	50.0000	50.6	
M 1	C5-C8 Aliphatic				764209	150.000	140	
M 2	C9-C12 Aliphatic				482785	100.000	86.3(a)	
$ 21	2,5-Dibromotoluene (FID)	31.275	31.304	-0.029	92419	50.0000	46.2	

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).


Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10154.D
Date : 26-MAY-2020 09:42
Client ID:
Sample Info: WG278391-4,SN3820
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10154.D
Y (x10^3)
Min
-n-Pentane (9.181)
-2-Methylpentane (11.357)
-Methyl tert-butylether (12.056)
-2,2,4-Trimethylpentane (15.398)
-Benzene (16.080)
-Toluene (19.252)
-n-Nonane (21.348)
-Ethylbenzene (21.837)
m+p-Xylene (21.961)
-o-Xylene (22.721)
-n-Decane (23.598)
-1,2,4-trimethylbenzene (24.821)
-n-Butylcyclohexane (24.985)
-Naphthalene (29.082)
-2,5-Dibromotoluene (FID) (31.276)

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020
SDG: SN3820
Lab ID : WG278391-5
Analytical Date: 05/27/20 01:41
Lab File ID : 2NE10172.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	2826	2738	0.100	-3.11247	25.00000	Averaged
20	Benzene	3492	3264	0.100	-6.50930	25.00000	Averaged
30	Ethylbenzene	2689	2608	0.100	-3.00730	25.00000	Averaged
40	Methyl tert-butylether	1642	1543	0.100	-6.01054	25.00000	Averaged
50	Naphthalene	2769	2749	0.100	-0.71443	25.00000	Averaged
60	Toluene	3137	2999	0.100	-4.40036	25.00000	Averaged
70	m+p-Xylene	3137	3068	0.100	-2.20044	25.00000	Averaged
80	o-Xylene	2781	2673	0.100	-3.88864	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	2155	1881	0.100	-12.72065	25.00000	Averaged
180	1,2,4-trimethylbenzene	2826	2738	0.100	-3.11291	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10172.D
Report Date: 01-Jun-2020 09:31

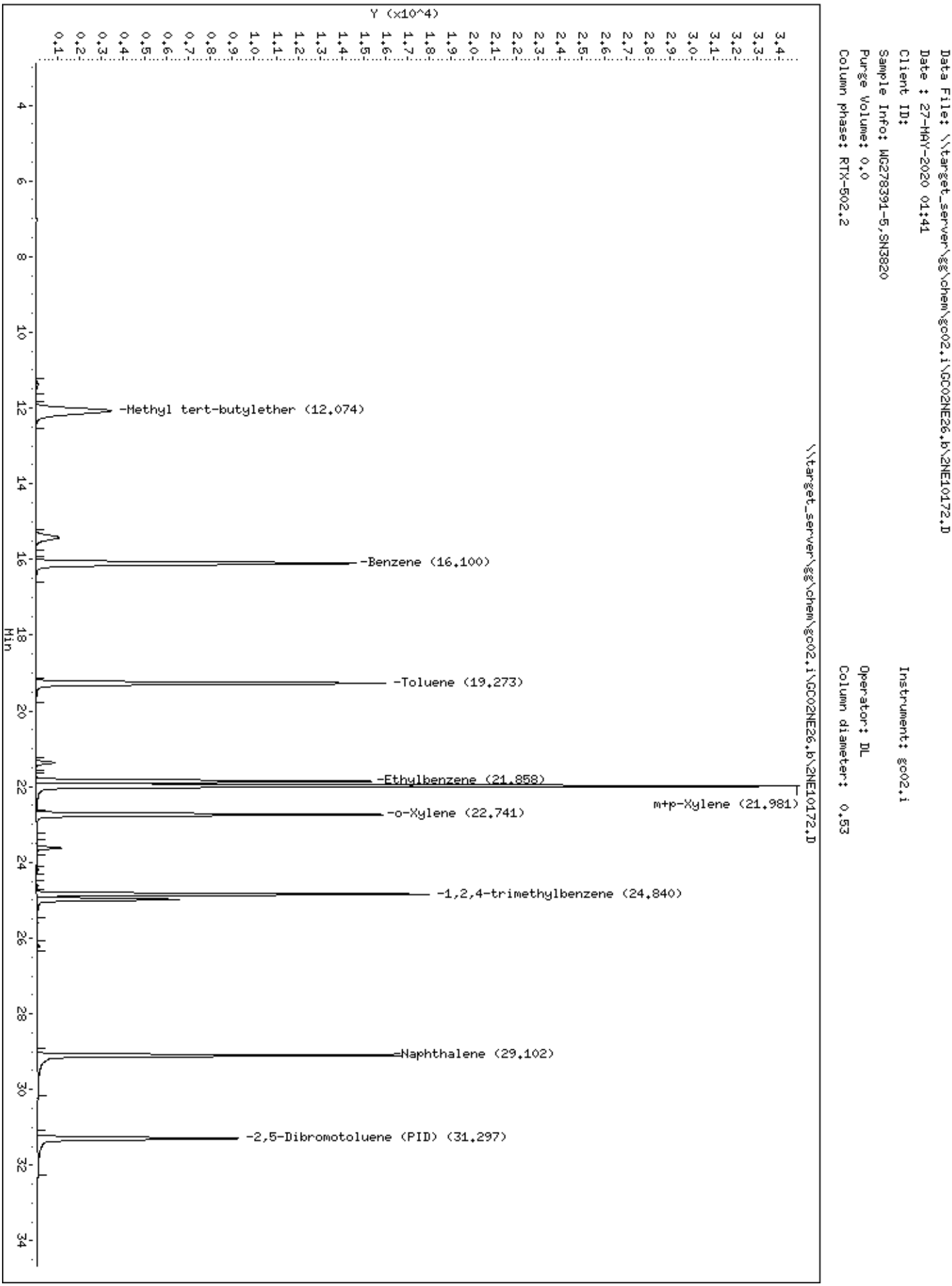
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10172.D
Lab Smp Id: WG278391-5
Inj Date : 27-MAY-2020 01:41
Operator : DL   Inst ID: gc02.i
Smp Info : WG278391-5,SN3820
Misc Info : WG278391,WG277230-4,SN3820-1
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m
Meth Date : 27-May-2020 07:24 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
	2 Methyl tert-butylether	12.073	12.078	-0.005	77173	50.0000	47.0	
	3 Benzene	16.100	16.099	0.001	163213	50.0000	46.7	
	4 Toluene	19.272	19.274	-0.002	149958	50.0000	47.8	
	5 Ethylbenzene	21.857	21.860	-0.003	130419	50.0000	48.5	
	6 m+p-Xylene	21.980	21.983	-0.003	306768	100.000	97.8	
	7 o-Xylene	22.741	22.745	-0.004	133635	50.0000	48.0	
	8 1,2,4-trimethylbenzene	24.839	24.844	-0.005	136882	50.0000	48.4	
	10 Naphthalene	29.101	29.110	-0.009	137470	50.0000	49.6	
M	1 C9-C10 Aromatic				136882	50.0000	48.4	
$	11 2,5-Dibromotoluene (PID)	31.297	31.309	-0.012	94035	50.0000	43.6	


Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10172.D
Date : 27-MAY-2020 01:41
Client ID:
Sample Info: WG278391-5,SN3820
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.074)
-Benzene (16.100)
-Toluene (19.273)
-Ethylbenzene (21.858)
m+p-Xylene (21.981)
-o-Xylene (22.741)
-1,2,4-trimethylbenzene (24.840)
Naphthalene (29.102)
-2,5-Dibromotoluene (PID) (31.297)
\\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10172.D

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020
Lab ID : WG278391-5
Lab File ID : 2NE10172.D
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39

SDG: SN3820
Analytical Date: 05/27/20 01:41
Instrument ID: GC02
Column ID: B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
30	C5-C8 Aliphatic	5453	5738	0.100	5.21757	25.00000	Averaged
40	C9-C12 Aliphatic	5577	5083	0.100	-8.85765	25.00000	Averaged
60	Benzene	7821	7737	0.100	-1.07480	25.00000	Averaged
70	Ethylbenzene	7244	7386	0.100	1.96571	25.00000	Averaged
80	Methyl tert-butylether	4480	4315	0.100	-3.70258	25.00000	Averaged
90	Naphthalene	5274	5452	0.100	3.37391	25.00000	Averaged
100	Toluene	7687	7687	0.100	0.00053	25.00000	Averaged
110	m+p-Xylene	7595	7666	0.100	0.94210	25.00000	Averaged
120	o-Xylene	7677	7734	0.100	0.75451	25.00000	Averaged
200	n-Pentane	4883	5351	0.100	9.57580	25.00000	Averaged
210	2-Methylpentane	5508	5741	0.100	4.22336	25.00000	Averaged
220	2,2,4-Trimethylpentane	5968	6121	0.100	2.56899	25.00000	Averaged
230	n-Nonane	5484	5153	0.100	-6.03220	30.00000	Averaged
240	n-Decane	5155	4508	0.100	-12.55809	25.00000	Averaged
250	n-Butylcyclohexane	5999	5658	0.100	-5.67716	25.00000	Averaged
260	1,2,4-trimethylbenzene	7237	7382	0.100	2.00344	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	1999	1762	0.100	-11.82283	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: 2NE10172.D
Report Date: 01-Jun-2020 09:32

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10172.D
Lab Smp Id: WG278391-5
Inj Date : 27-MAY-2020 01:41
Operator : DL   Inst ID: gc02.i
Smp Info : WG278391-5,SN3820
Misc Info : WG278391,WG277230-4,SN3820-1
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m\VPHFID91.m
Meth Date : 27-May-2020 07:31 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12
Processing Host: V200T3

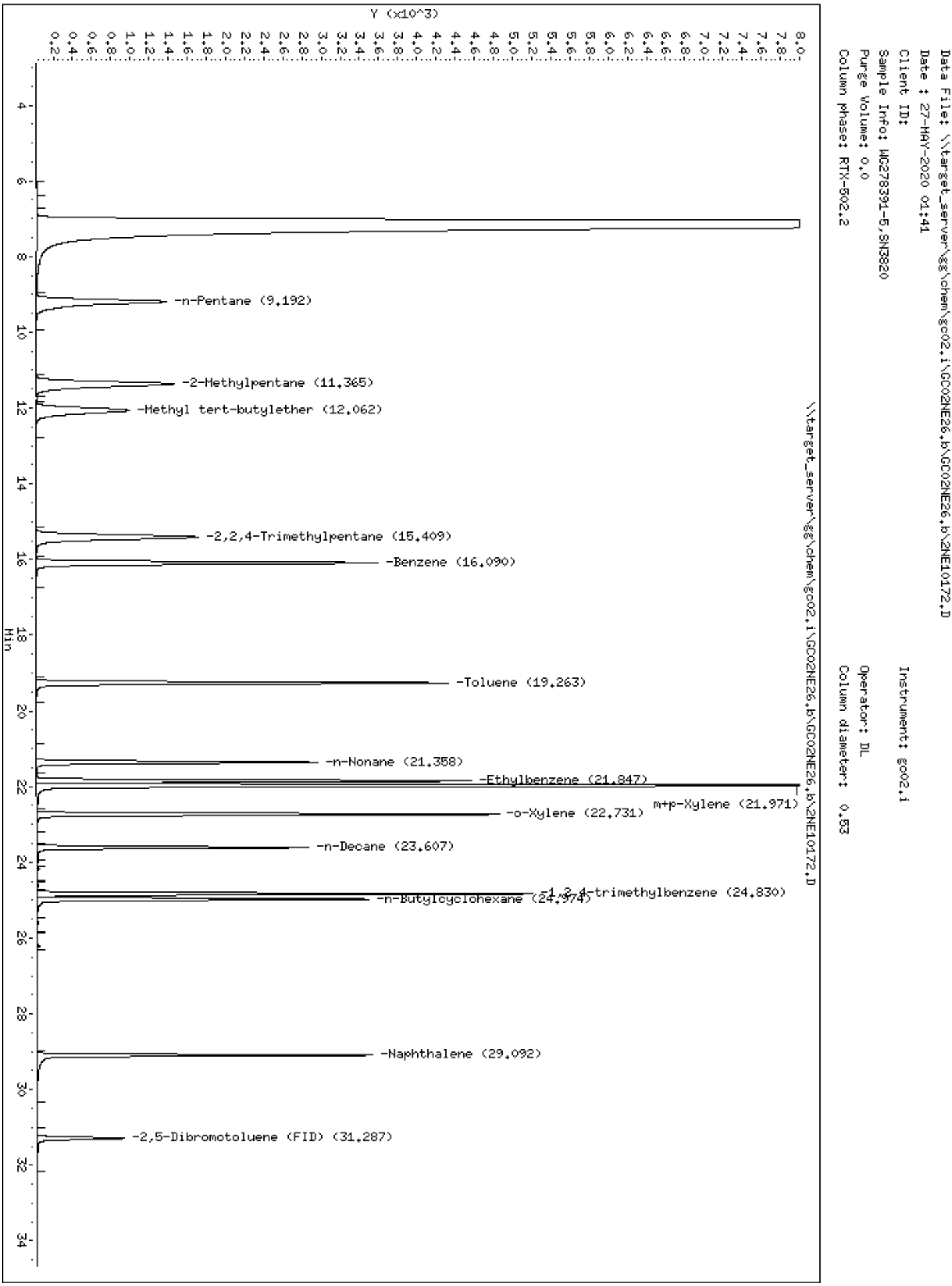
Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
5	n-Pentane	9.192	9.065	0.127	267539	50.0000	54.8	
6	2-Methylpentane	11.365	11.282	0.083	287034	50.0000	52.1	
7	Methyl tert-butylether	12.062	11.992	0.070	215725	50.0000	48.1	
8	2,2,4-Trimethylpentane	15.409	15.386	0.023	306062	50.0000	51.3	
9	Benzene	16.089	16.065	0.024	386848	50.0000	49.5	
11	Toluene	19.262	19.257	0.005	384353	50.0000	50.0	
12	n-Nonane	21.357	21.361	-0.004	257651	50.0000	47.0	
14	Ethylbenzene	21.847	21.850	-0.003	369308	50.0000	51.0	
15	m+p-Xylene	21.970	21.975	-0.005	766644	100.000	101	
16	o-Xylene	22.730	22.736	-0.006	386724	50.0000	50.4	
13	n-Decane	23.606	23.614	-0.008	225400	50.0000	43.7	
18	1,2,4-trimethylbenzene	24.829	24.838	-0.009	369091	50.0000	51.0	
19	n-Butylcyclohexane	24.973	24.982	-0.009	282915	50.0000	47.2	
20	Naphthalene	29.091	29.104	-0.013	272589	50.0000	51.7	
M 1	C5-C8 Aliphatic				860635	150.000	158	
M 2	C9-C12 Aliphatic				508315	100.000	90.9(a)	
$ 21	2,5-Dibromotoluene (FID)	31.287	31.304	-0.017	88124	50.0000	44.1	

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).


Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10172.D
Date : 27-MAY-2020 01:41
Client ID:
Sample Info: WG278391-5,SN3820
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
\\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10172.D
-n-Pentane (9.192)
-2-Methylpentane (11.365)
-Methyl tert-butylether (12.062)
-2,2,4-Trimethylpentane (15.409)
-Benzene (16.090)
-Toluene (19.263)
-n-Nonane (21.358)
-Ethylbenzene (21.847)
m+p-Xylene (21.971)
-o-Xylene (22.731)
-n-Decane (23.607)
-1,2,4-trimethylbenzene (24.830)
-n-Butylcyclohexane (24.974)
-Naphthalene (29.092)
-2,5-Dibromotoluene (FID) (31.287)

Raw QC Data Section

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG278133-1
Client ID: Method Blank Sample
Project:
SDG: SN3820
Lab File ID: 2NE10120.D

Sample Date:
Received Date:
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 02-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		71.4	%				
2,5-Dibromotoluene (PID)		72.0	%				

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029
http://www.katahdinlab.com

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10120.D
Report Date: 02-Jun-2020 13:22

Katahdin Analytical Services

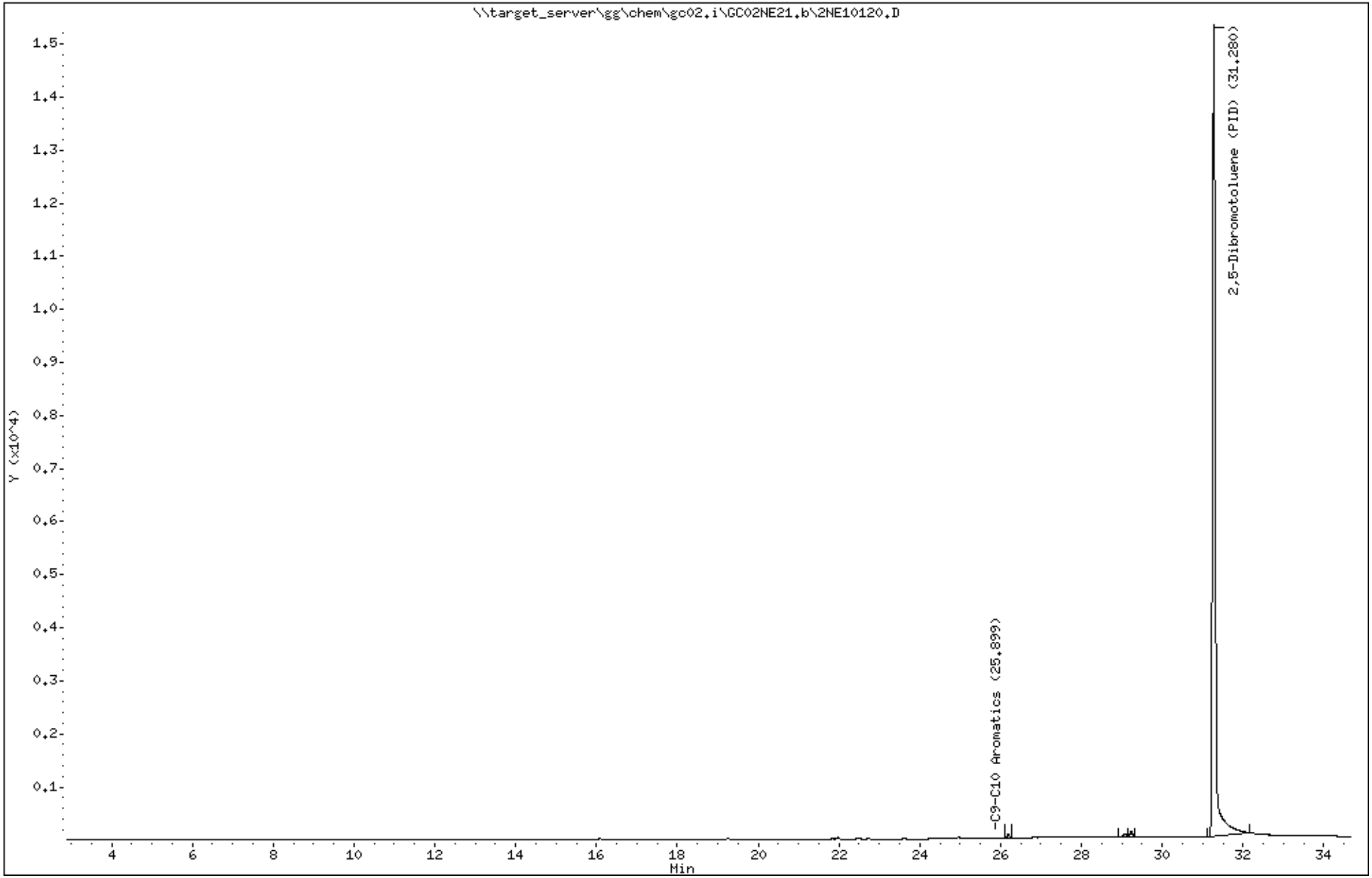
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Lab Smp Id: WG278133-1 Client Smp ID: WG278133-Blank
Inj Date : 21-MAY-2020 10:59
Operator : DL Inst ID: gc02.i
Smp Info : WG278133-1,SN3820
Misc Info : WG278133,WG277230-4,SN3820-1
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 11 2,5-Dibromotoluene (PID)	31.279	31.309	-0.030	155144	71.9991	72.0	

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10120.D
Date : 21-MAY-2020 10:59
Client ID: WG278133-Blank
Instrument: gc02.i
Sample Info: WG278133-1,SN3820
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



Data File: 2NE10120.D
Report Date: 02-Jun-2020 13:23

Katahdin Analytical Services

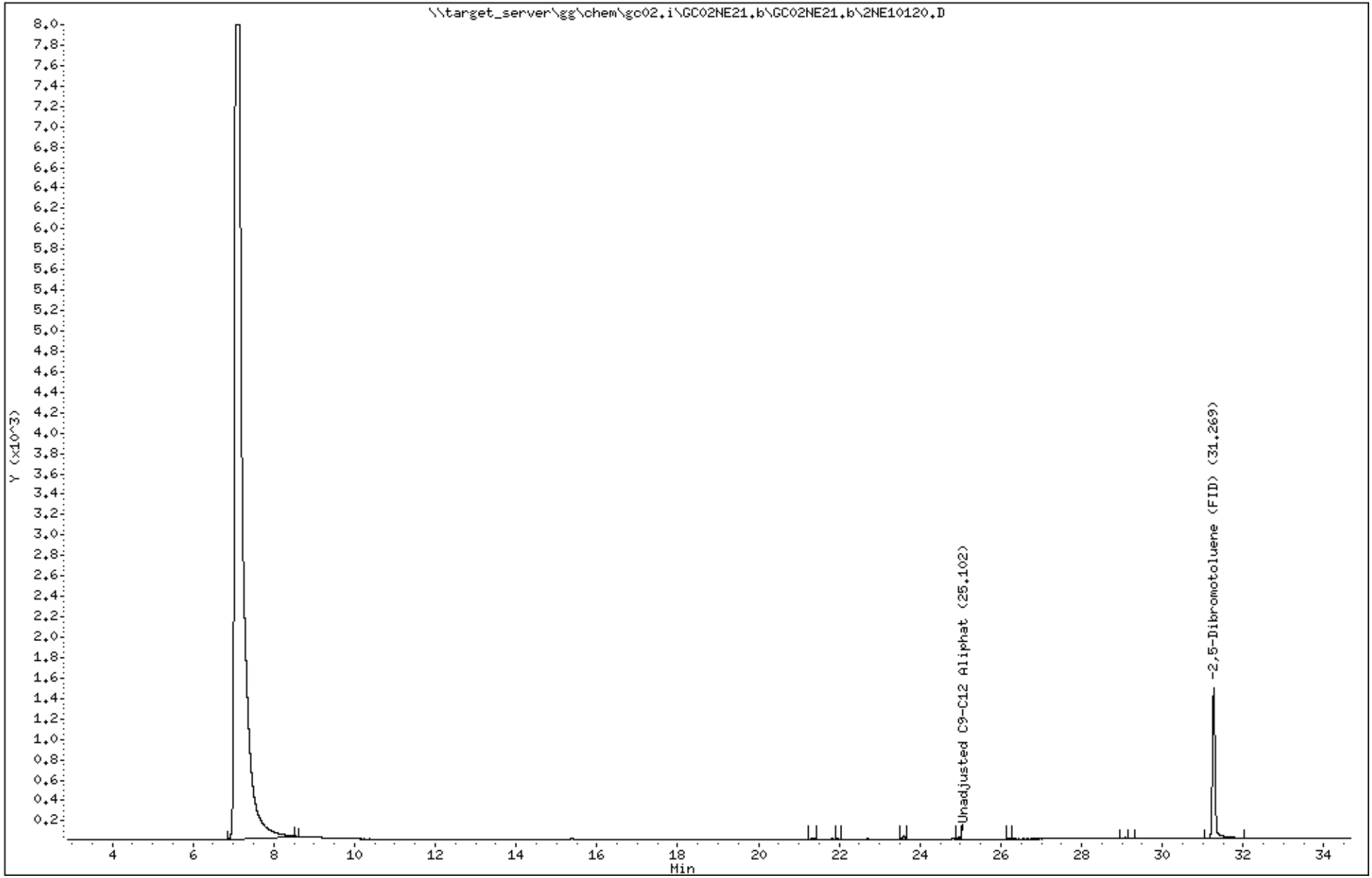
Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10120.D
Lab Smp Id: WG278133-1 Client Smp ID: WG278133-Blank
Inj Date : 21-MAY-2020 10:59
Operator : DL Inst ID: gc02.i
Smp Info : WG278133-1,SN3820
Misc Info : WG278133,WG277230-4,SN3820-1
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 21 2,5-Dibromotoluene (FID)	31.269	31.304	-0.035	142650	71.3680	71.4	

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10120.D
Date : 21-MAY-2020 10:59
Client ID: WG278133-Blank
Instrument: gc02.i
Sample Info: WG278133-1,SN3820
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



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ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG278391-1
Client ID: Method Blank Sample
Project:
SDG: SN3820
Lab File ID: 2NE10155.D

Sample Date:
Received Date:
Extract Date: 26-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391

Analysis Date: 26-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		102.	%				
2,5-Dibromotoluene (PID)		96.7	%				

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Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10155.D
Report Date: 01-Jun-2020 09:31

Katahdin Analytical Services

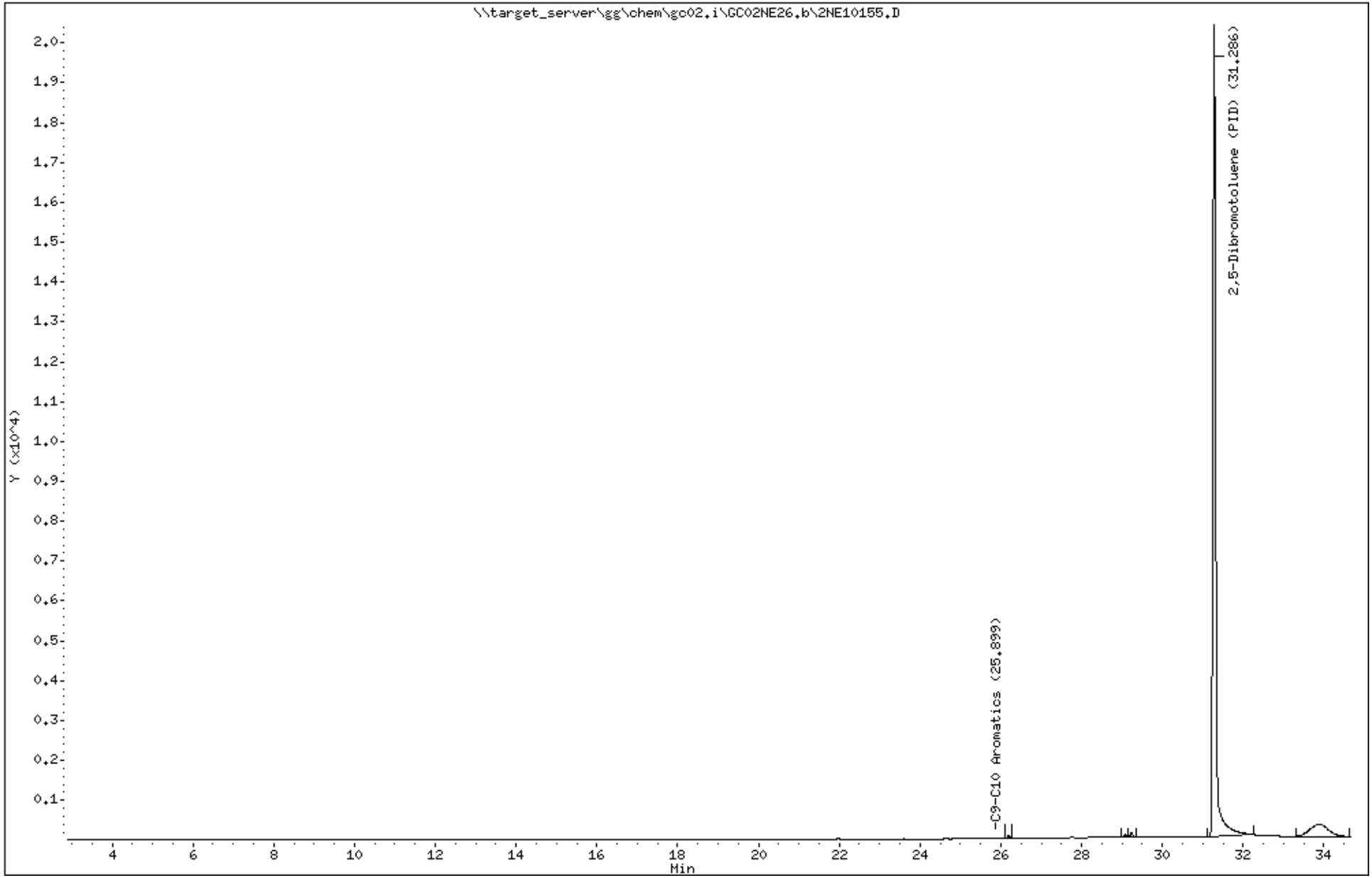
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Lab Smp Id: WG278391-1
Inj Date : 26-MAY-2020 10:43
Operator : DL   Inst ID: gc02.i
Smp Info : WG278391-1,SN3820
Misc Info : WG278391,WG277230-4,SN3820-1
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m
Meth Date : 27-May-2020 07:24 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 11 2,5-Dibromotoluene (PID)	31.285	31.309	-0.024	208453	96.7387	96.7	

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10155.D
Date : 26-MAY-2020 10:43
Client ID:
Instrument: gc02.i
Sample Info: WG278391-1,SN3820
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



Data File: 2NE10155.D
Report Date: 01-Jun-2020 09:32

Katahdin Analytical Services

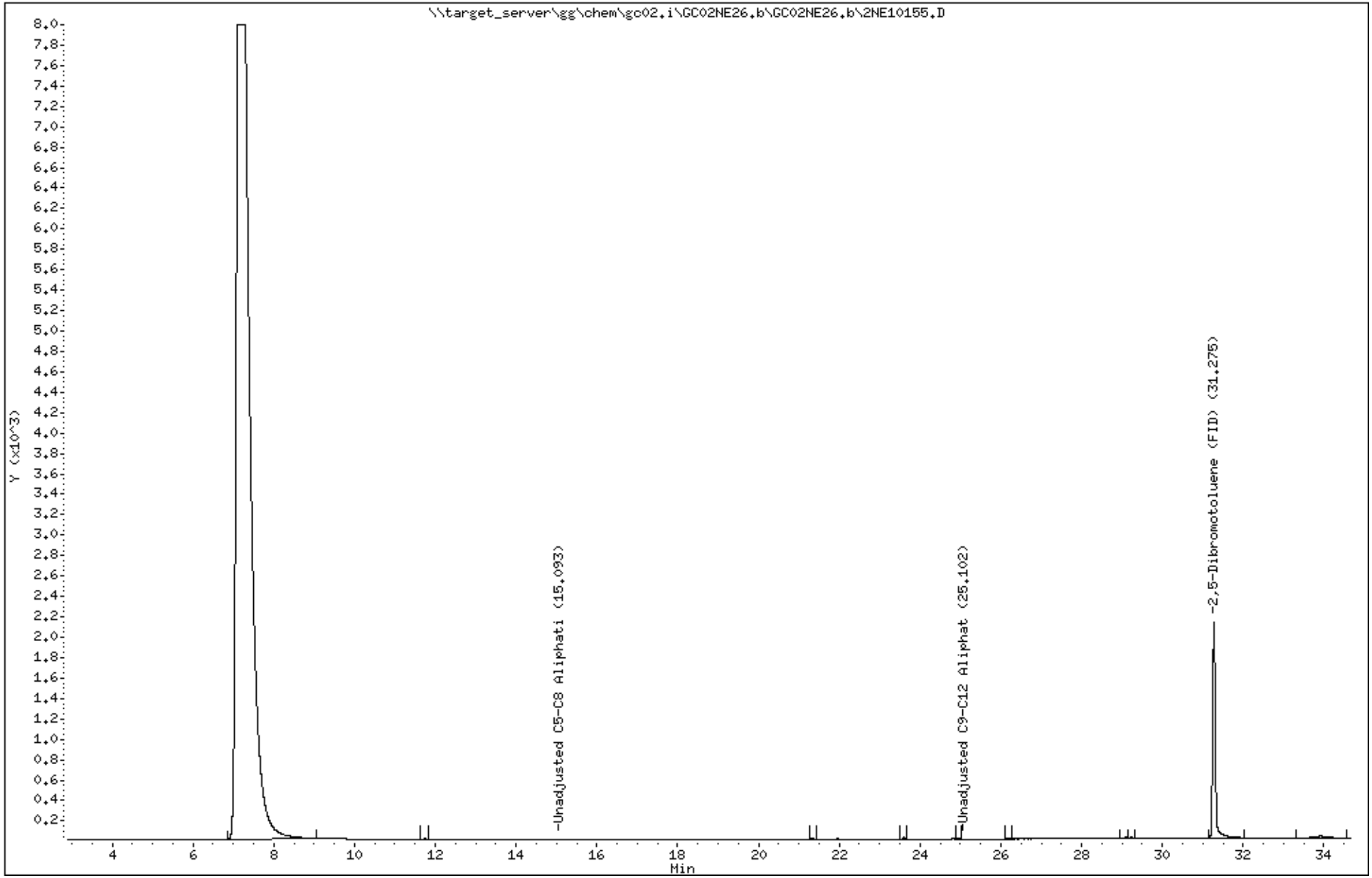
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Lab Smp Id: WG278391-1
Inj Date : 26-MAY-2020 10:43
Operator : DL   Inst ID: gc02.i
Smp Info : WG278391-1,SN3820
Misc Info : WG278391,WG277230-4,SN3820-1
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m\VPHFID91.m
Meth Date : 27-May-2020 07:31 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 21 2,5-Dibromotoluene (FID)	31.275	31.304	-0.029	204884	102.504	102	

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10155.D
Date : 26-MAY-2020 10:43
Client ID:
Instrument: gc02.i
Sample Info: WG278391-1,SN3820
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG278133-2
LCSD ID: WG278133-3
Project:
SDG: SN3820
Report Date: 02-JUN-20
LCS File ID: 2NE10121.D

Received Date:
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133
LCSD File ID: 2NE10122.D

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	269.	89.7	275.	91.7	ug/L	2	25	70-130
C9-C12 Aliphatics	200.	190.	95.0	187.	93.5	ug/L	2	25	70-130
C9-C10 Aromatics	100.	94.3	94.3	95.4	95.4	ug/L	1	25	70-130
Benzene	100.	87.9	87.9	91.1	91.1	ug/L	4	25	70-130
Ethylbenzene	100.	92.2	92.2	94.8	94.8	ug/L	3	25	70-130
Methyl tert-butylether	100.	90.4	90.4	90.4	90.4	ug/L	0	25	70-130
Naphthalene	100.	91.0	91.0	94.0	94.0	ug/L	3	25	70-130
Toluene	100.	89.2	89.2	92.6	92.6	ug/L	4	25	70-130
m+p-Xylenes	200.	183.	91.5	187.	93.5	ug/L	2	25	70-130
o-Xylene	100.	91.6	91.6	93.1	93.1	ug/L	2	25	70-130
2,5-Dibromotoluene (FID)			87.1		91.9				70-130
2,5-Dibromotoluene (PID)			89.4		96.1				70-130

600 Technology Way
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Tel:(207) 874-2400 Fax:(207) 775-4029
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Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10121.D
Report Date: 02-Jun-2020 13:22

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10121.D
Lab Smp Id: WG278133-2 Client Smp ID: WG278133-LCS
Inj Date : 21-MAY-2020 11:39
Operator : DL Inst ID: gc02.i
Smp Info : WG278133-2,SN3820
Misc Info : WG278133,WG277230-4,SN3820-1
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

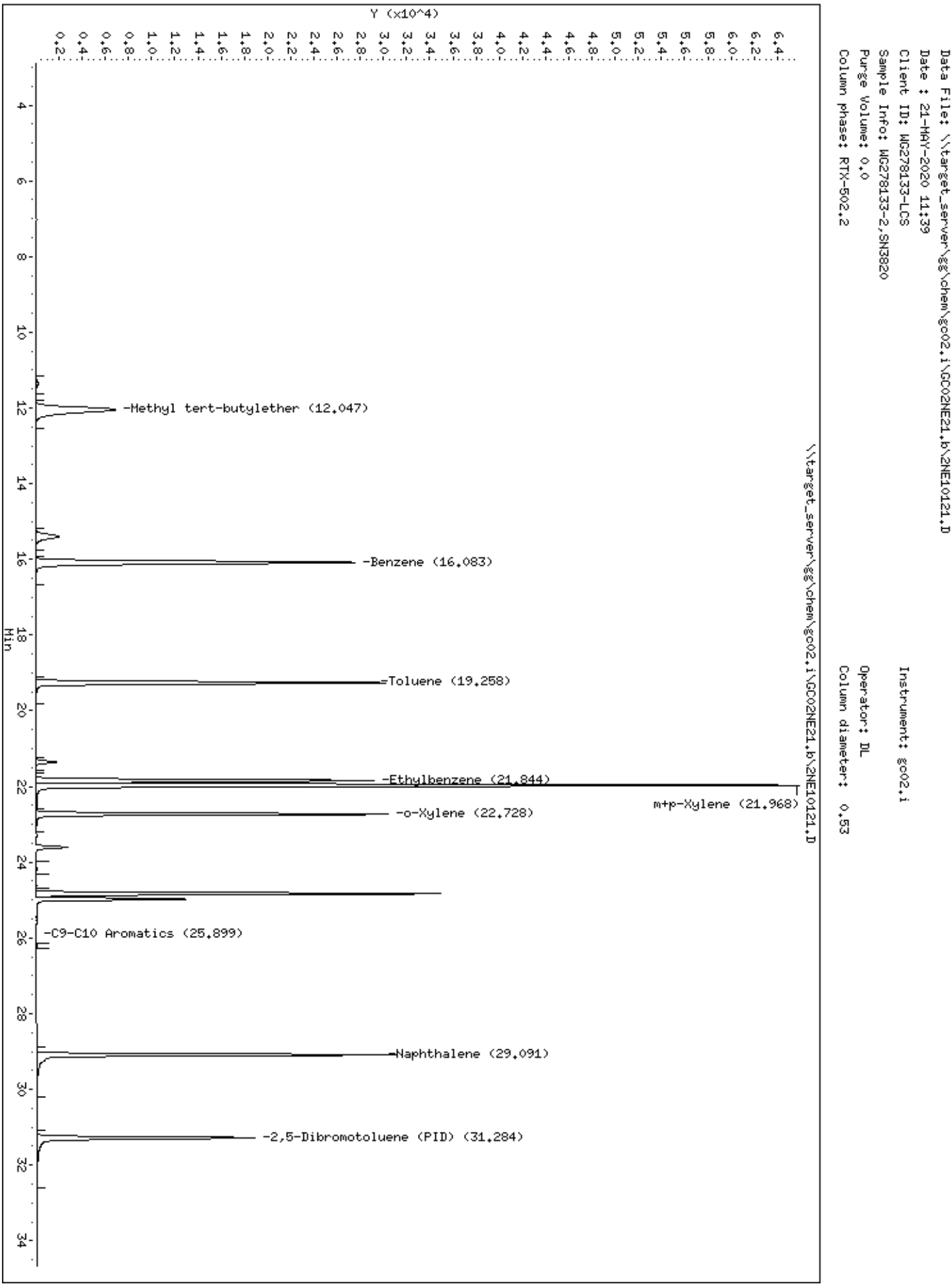
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
2	Methyl tert-butylether	12.046	12.078	-0.032	148440	90.3930	90.4	
3	Benzene	16.083	16.099	-0.016	306968	87.9178	87.9	
4	Toluene	19.257	19.274	-0.017	279754	89.1729	89.2	
5	Ethylbenzene	21.843	21.860	-0.017	248067	92.2438	92.2	
6	m+p-Xylene	21.967	21.983	-0.016	574366	183.111	183	
7	o-Xylene	22.727	22.745	-0.018	254663	91.5778	91.6	
S 9	C9-C10 Aromatics	22.818	-28.980		266585	94.3464	94.3(aM)	M3
10	Naphthalene	29.090	29.110	-0.020	251907	90.9680	91.0	
$ 11	2,5-Dibromotoluene (PID)	31.283	31.309	-0.026	192612	89.3872	89.4	

DL
1:46 pm, Jun 02, 2020

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10124.D
Date : 21-MAY-2020 11:39
Client ID: WG278133-LCS
Sample Info: WG278133-2,SN3820
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.047)
-Benzene (16.083)
-Toluene (19.258)
-Ethylbenzene (21.844)
m+p-Xylene (21.968)
-o-Xylene (22.728)
-C9-C10 Aromatics (25.899)
-Naphthalene (29.091)
-2,5-Dibromotoluene (PID) (31.284)
\\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10121.D

Data File: 2NE10121.D
Report Date: 02-Jun-2020 13:23

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10121.D
Lab Smp Id: WG278133-2 Client Smp ID: WG278133-LCS
Inj Date : 21-MAY-2020 11:39
Operator : DL Inst ID: gc02.i
Smp Info : WG278133-2,SN3820
Misc Info : WG278133,WG277230-4,SN3820-1
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

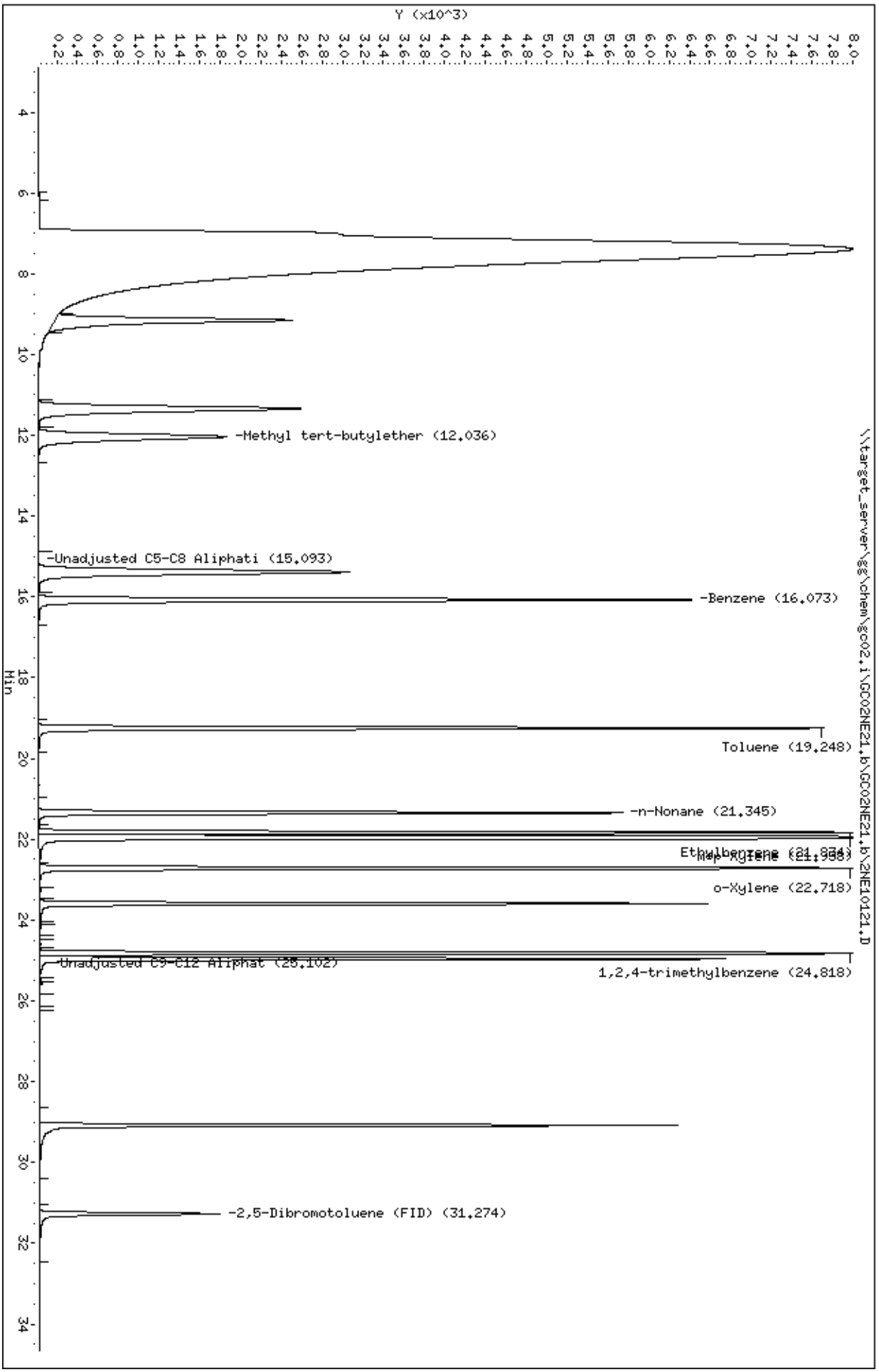
Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)	REVIEW CODE
	Compounds	RT	EXP RT	DLT RT	RESPONSE			
	7 Methyl tert-butylether	12.035	11.992	0.043	391378	87.3536	87.4	
	9 Benzene	16.072	16.065	0.007	692326	88.5212	88.5	
	11 Toluene	19.247	19.257	-0.010	685257	89.1447	89.1	
	12 n-Nonane	21.344	21.361	-0.017	498316	90.8703	90.9	
	14 Ethylbenzene	21.833	21.850	-0.017	672453	92.8319	92.8	
	15 m+p-Xylene	21.957	21.975	-0.018	1394615	183.625	184	
	16 o-Xylene	22.717	22.736	-0.019	711276	92.6556	92.6	
	18 1,2,4-trimethylbenzene	24.818	24.838	-0.020	686996	94.9305	94.9	
S	10 Unadjusted C5-C8 Aliphatics	8.953-21.233			1468377	269.276	269(M)	M2
S	17 Unadjusted C9-C12 Aliphatics	21.234-28.969			1057944	189.692	190(M)	
$	21 2,5-Dibromotoluene (FID)	31.273	31.304	-0.031	174136	87.1205	87.1	

QC Flag Legend

M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10121.D
Date : 21-MAY-2020 11:39
Client ID: WG278133-LCS
Sample Info: WG278133-2,SN3820
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
-Methyl tert-butylether (12.036)
-Unadjusted C5-C8 Aliphati (15.093)
-Benzene (16.073)
Toluene (19.248)
-n-Nonane (21.345)
Ethylbenzene (21.934)
m&p-Xylene (21.988)
o-Xylene (22.718)
Unadjusted C9-C12 Aliphat (25.102)
1,2,4-trimethylbenzene (24.818)
-2,5-Dibromotoluene (FID) (31.274)
\\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10121.D

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10122.D
Report Date: 02-Jun-2020 13:22

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10122.D
Lab Smp Id: WG278133-3 Client Smp ID: WG278133-LCSD
Inj Date : 21-MAY-2020 12:20
Operator : DL Inst ID: gc02.i
Smp Info : WG278133-3,SN3820
Misc Info : WG278133,WG277230-4,SN3820-1
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

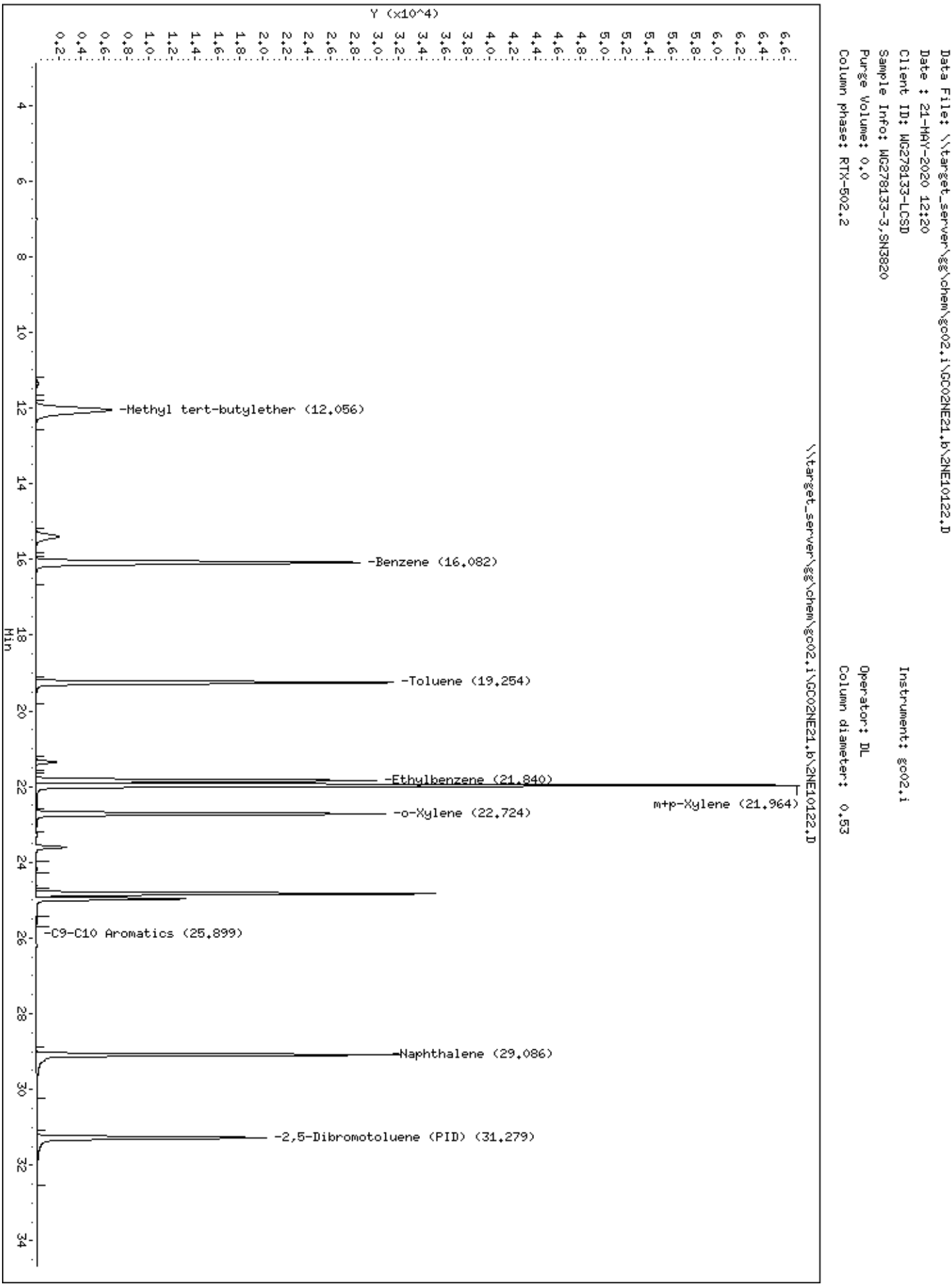
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
2	Methyl tert-butylether	12.055	12.078	-0.023	148463	90.4070	90.4	
3	Benzene	16.082	16.099	-0.017	318221	91.1407	91.1	
4	Toluene	19.254	19.274	-0.020	290580	92.6237	92.6	
5	Ethylbenzene	21.839	21.860	-0.021	255065	94.8460	94.8	
6	m+p-Xylene	21.964	21.983	-0.019	586428	186.957	187	
7	o-Xylene	22.724	22.745	-0.021	258873	93.0918	93.1	
S 9	C9-C10 Aromatics	22.818-28.980			269593	95.4109	95.4(aM)	M3
10	Naphthalene	29.086	29.110	-0.024	260421	94.0425	94.0	
$ 11	2,5-Dibromotoluene (PID)	31.279	31.309	-0.030	207160	96.1386	96.1	

DL

1:46 pm, Jun 02, 2020

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10122.D
Date : 21-MAY-2020 12:20
Client ID: WG278133-LCSD
Sample Info: WG278133-3,SN3820
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.056)
-Benzene (16.082)
-Toluene (19.254)
-Ethylbenzene (21.840)
m+p-Xylene (21.964)
-o-Xylene (22.724)
-C9-C10 Aromatics (25.899)
Naphthalene (29.086)
-2,5-Dibromotoluene (PID) (31.279)
\\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10122.D

Data File: 2NE10122.D
Report Date: 02-Jun-2020 13:23

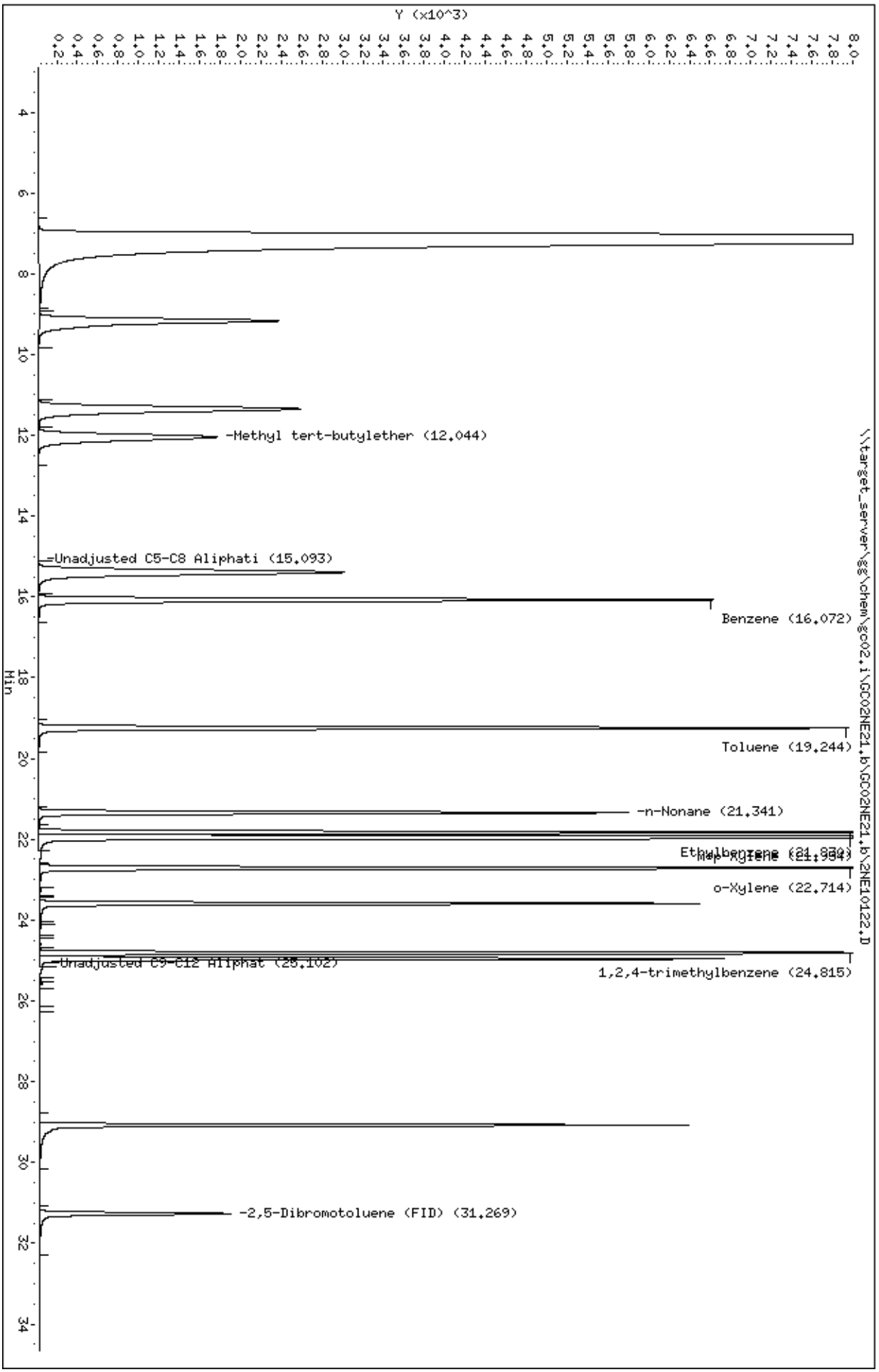
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10122.D
Lab Smp Id: WG278133-3 Client Smp ID: WG278133-LCSD
Inj Date : 21-MAY-2020 12:20
Operator : DL Inst ID: gc02.i
Smp Info : WG278133-3,SN3820
Misc Info : WG278133,WG277230-4,SN3820-1
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
	7	Methyl tert-butylether	12.043	11.992	0.051	385834	86.1162	86.1	
	9	Benzene	16.071	16.065	0.006	709024	90.6562	90.6	
	11	Toluene	19.244	19.257	-0.013	702150	91.3423	91.3	
	12	n-Nonane	21.341	21.361	-0.020	500557	91.2790	91.3	
	14	Ethylbenzene	21.829	21.850	-0.021	684399	94.4811	94.5	
	15	m+p-Xylene	21.954	21.975	-0.021	1401211	184.494	184	
	16	o-Xylene	22.714	22.736	-0.022	714228	93.0401	93.0	
	18	1,2,4-trimethylbenzene	24.814	24.838	-0.024	684529	94.5896	94.6	
S	10	Unadjusted C5-C8 Aliphatics	8.953-21.233			1502007	275.443	275	
S	17	Unadjusted C9-C12 Aliphatics	21.234-28.969			1043390	187.083	187	
$	21	2,5-Dibromotoluene (FID)	31.269	31.304	-0.035	183652	91.8814	91.9	


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10122.D
Date : 21-MAY-2020 12:20
Client ID: WG278133-LCSD
Sample Info: WG278133-3,SN3820
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
-Methyl tert-butylether (12.044)
=Unadjusted C5-C8 Aliphati (15.093)
Benzene (16.072)
Toluene (19.244)
-n-Nonane (21.341)
Ethylbenzene (21.834)
m&p-Xylene (21.994)
o-Xylene (22.714)
-Unadjusted C9-C12 Aliphat (25.102)
1,2,4-trimethylbenzene (24.815)
-2,5-Dibromotoluene (FID) (31.269)
\\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10122.D

Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG278391-2
LCSD ID: WG278391-3RA
Project:
SDG: SN3820
Report Date: 01-JUN-20
LCS File ID: 2NE10156.D

Received Date:
Extract Date: 26-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278391
LCSD File ID: 2NE10158.D

Analysis Date: 26-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	286.	95.3	268.	89.3	ug/L	6	25	70-130
C9-C12 Aliphatics	200.	191.	95.5	190.	95.0	ug/L	0	25	70-130
C9-C10 Aromatics	100.	87.3	87.3	88.2	88.2	ug/L	1	25	70-130
Benzene	100.	80.6	80.6	83.0	83.0	ug/L	3	25	70-130
Ethylbenzene	100.	84.4	84.4	86.4	86.4	ug/L	2	25	70-130
Methyl tert-butylether	100.	80.0	80.0	81.3	81.3	ug/L	2	25	70-130
Naphthalene	100.	82.9	82.9	86.8	86.8	ug/L	4	25	70-130
Toluene	100.	81.5	81.5	84.0	84.0	ug/L	3	25	70-130
m+p-Xylenes	200.	169.	84.5	172.	86.0	ug/L	2	25	70-130
o-Xylene	100.	84.5	84.5	85.8	85.8	ug/L	2	25	70-130
2,5-Dibromotoluene (FID)			93.2		95.6				70-130
2,5-Dibromotoluene (PID)			92.6		95.9				70-130

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029
http://www.katahdinlab.com

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10156.D
Report Date: 01-Jun-2020 09:31

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10156.D
Lab Smp Id: WG278391-2 Client Smp ID: WG278391-LCS
Inj Date : 26-MAY-2020 12:14
Operator : DL Inst ID: gc02.i
Smp Info : WG278391-2,SN3820
Misc Info : WG278391,WG277230-4,SN3820-1
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m
Meth Date : 27-May-2020 07:24 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

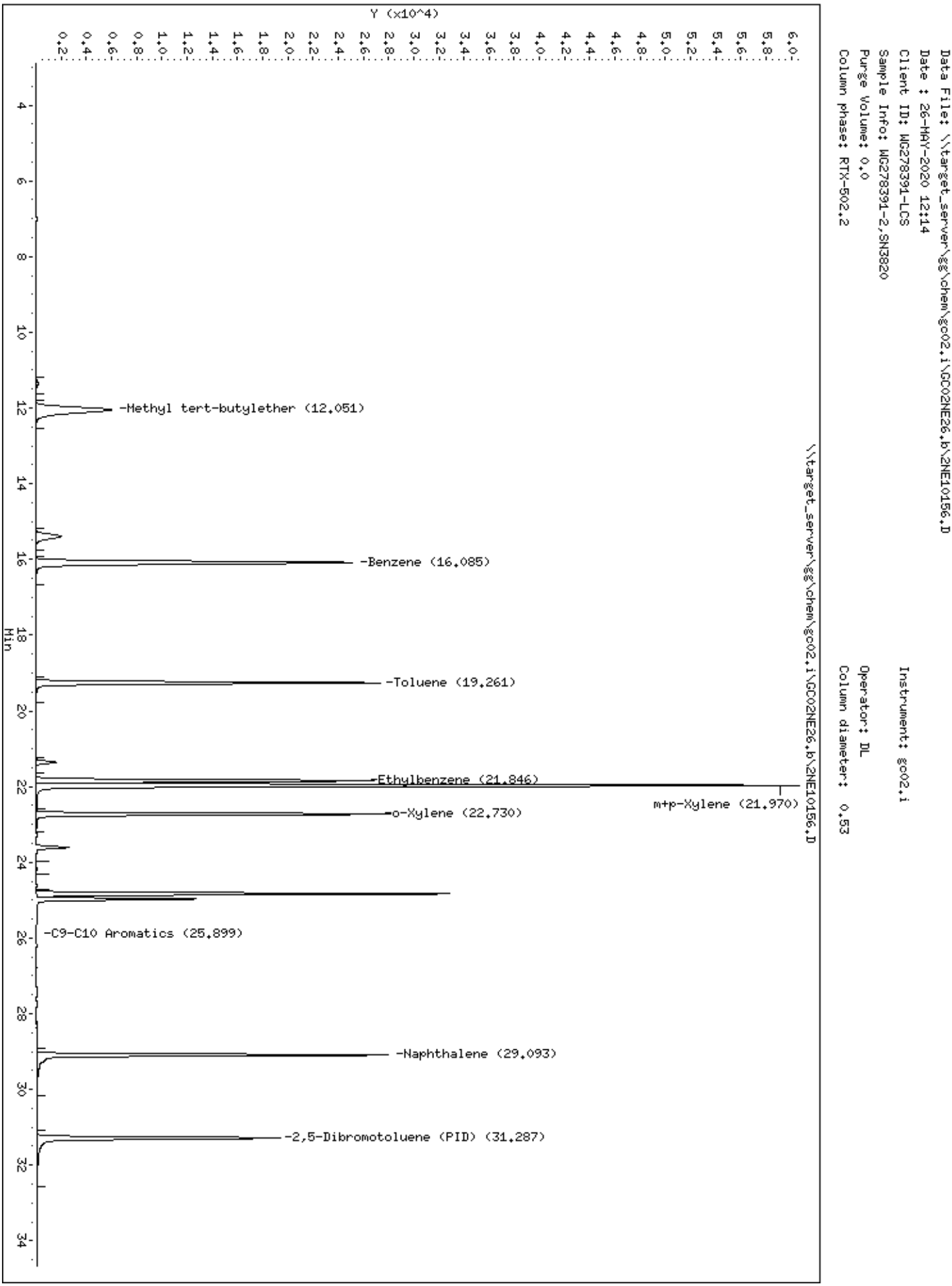
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
2	Methyl tert-butylether	12.051	12.078	-0.027	131309	79.9610	80.0	
3	Benzene	16.084	16.099	-0.015	281369	80.5861	80.6	
4	Toluene	19.260	19.274	-0.014	255610	81.4769	81.5	
5	Ethylbenzene	21.846	21.860	-0.014	226911	84.3769	84.4	
6	m+p-Xylene	21.970	21.983	-0.013	529585	168.835	169	
7	o-Xylene	22.730	22.745	-0.015	235044	84.5228	84.5	
S 9	C9-C10 Aromatics	22.818	-28.980		246799	87.3440	87.3(aM)	M3
10	Naphthalene	29.092	29.110	-0.018	229609	82.9158	82.9	
$ 11	2,5-Dibromotoluene (PID)	31.286	31.309	-0.023	199439	92.5555	92.6	

DL
12:16 pm, Jun 01, 2020

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10156.D
Date : 26-MAY-2020 12:14
Client ID: WG278391-LCS
Sample Info: WG278391-2,SN3820
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10156.D
Y (x10^4)
Min
-Methyl tert-butylether (12.051)
-Benzene (16.085)
-Toluene (19.261)
-Ethylbenzene (21.846)
m+p-Xylene (21.970)
o-Xylene (22.730)
-C9-C10 Aromatics (25.899)
-Naphthalene (29.093)
-2,5-Dibromotoluene (PID) (31.287)

Data File: 2NE10156.D
Report Date: 01-Jun-2020 09:32

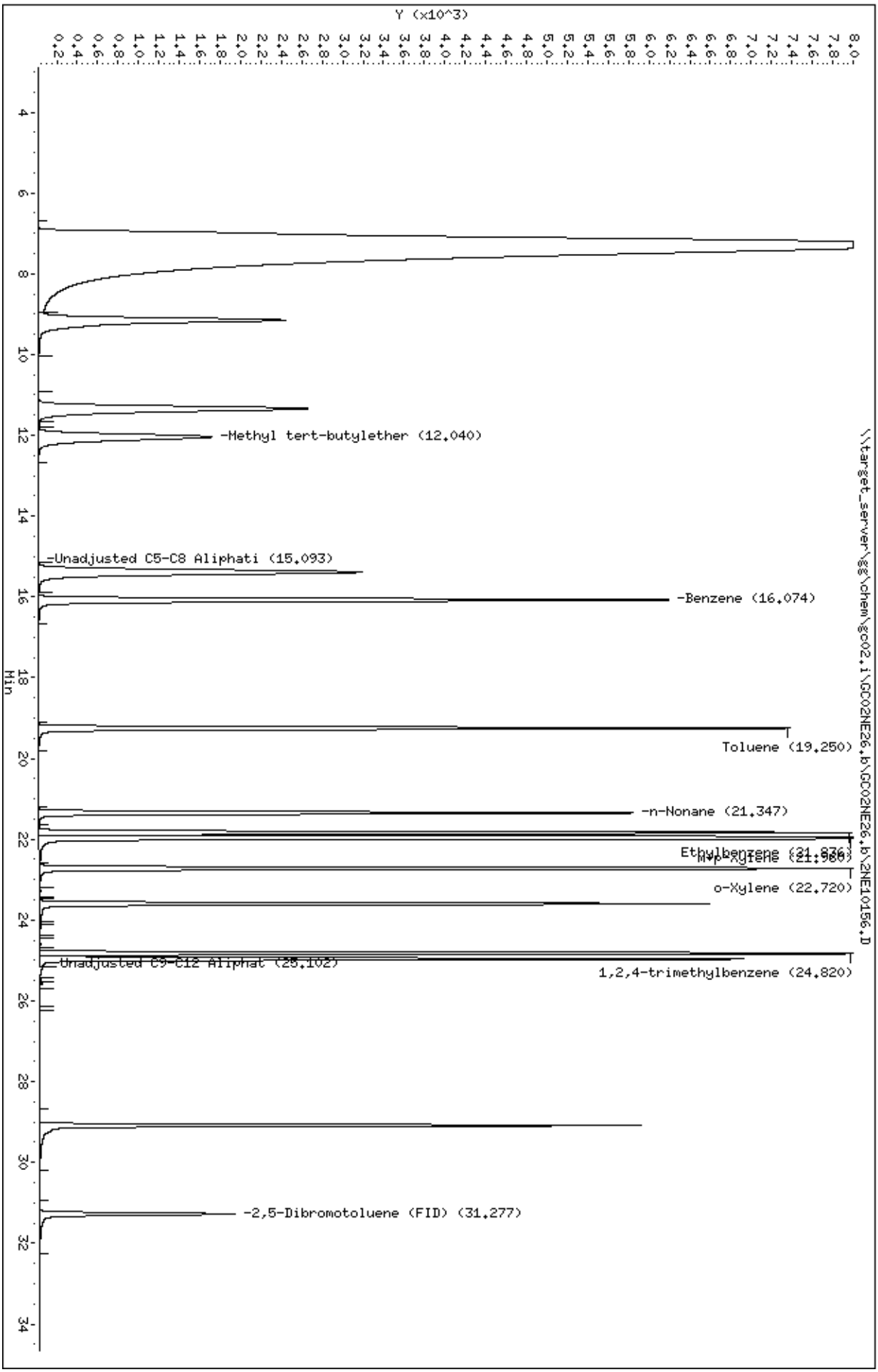
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10156.D
Lab Smp Id: WG278391-2 Client Smp ID: WG278391-LCS
Inj Date : 26-MAY-2020 12:14
Operator : DL Inst ID: gc02.i
Smp Info : WG278391-2,SN3820
Misc Info : WG278391,WG277230-4,SN3820-1
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m\VPHFID91.m
Meth Date : 27-May-2020 07:31 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
	7	Methyl tert-butylether	12.039	11.992	0.047	367391	81.9998	82.0	
	9	Benzene	16.074	16.065	0.009	668315	85.4511	85.4	
	11	Toluene	19.250	19.257	-0.007	657121	85.4845	85.5	
	12	n-Nonane	21.347	21.361	-0.014	507392	92.5254	92.5	
	14	Ethylbenzene	21.836	21.850	-0.014	647081	89.3293	89.3	
	15	m+p-Xylene	21.960	21.975	-0.015	1336881	176.024	176	
	16	o-Xylene	22.720	22.736	-0.016	685045	89.2385	89.2	
	18	1,2,4-trimethylbenzene	24.820	24.838	-0.018	665670	91.9836	92.0	
S	10	Unadjusted C5-C8 Aliphatics	8.953-21.233			1558857	285.868	286	
S	17	Unadjusted C9-C12 Aliphatics	21.234-28.969			1065810	191.103	191	
$	21	2,5-Dibromotoluene (FID)	31.276	31.304	-0.028	186268	93.1902	93.2	


Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10156.D
Date : 26-MAY-2020 12:14
Client ID: WG278391-LCS
Sample Info: WG278391-2,SN3820
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
-Methyl tert-butylether (12.040)
-Unadjusted C5-C8 Aliphati (15.093)
-Benzene (16.074)
Toluene (19.250)
-n-Nonane (21.347)
Ethylbenzene (21.836)
m+p-Xylene (21.966)
o-Xylene (22.720)
Unadjusted C9-C12 Aliphat (25.102)
1,2,4-trimethylbenzene (24.820)
-2,5-Dibromotoluene (FID) (31.277)
\\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10156.D

Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10158.D
Report Date: 01-Jun-2020 09:31

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10158.D
Lab Smp Id: WG278391-3RA Client Smp ID: WG278391-LCSD
Inj Date : 26-MAY-2020 14:10
Operator : DL Inst ID: gc02.i
Smp Info : WG278391-3RA,SN3820
Misc Info : WG278391,WG277230-4,SN3820-1
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m
Meth Date : 27-May-2020 07:24 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

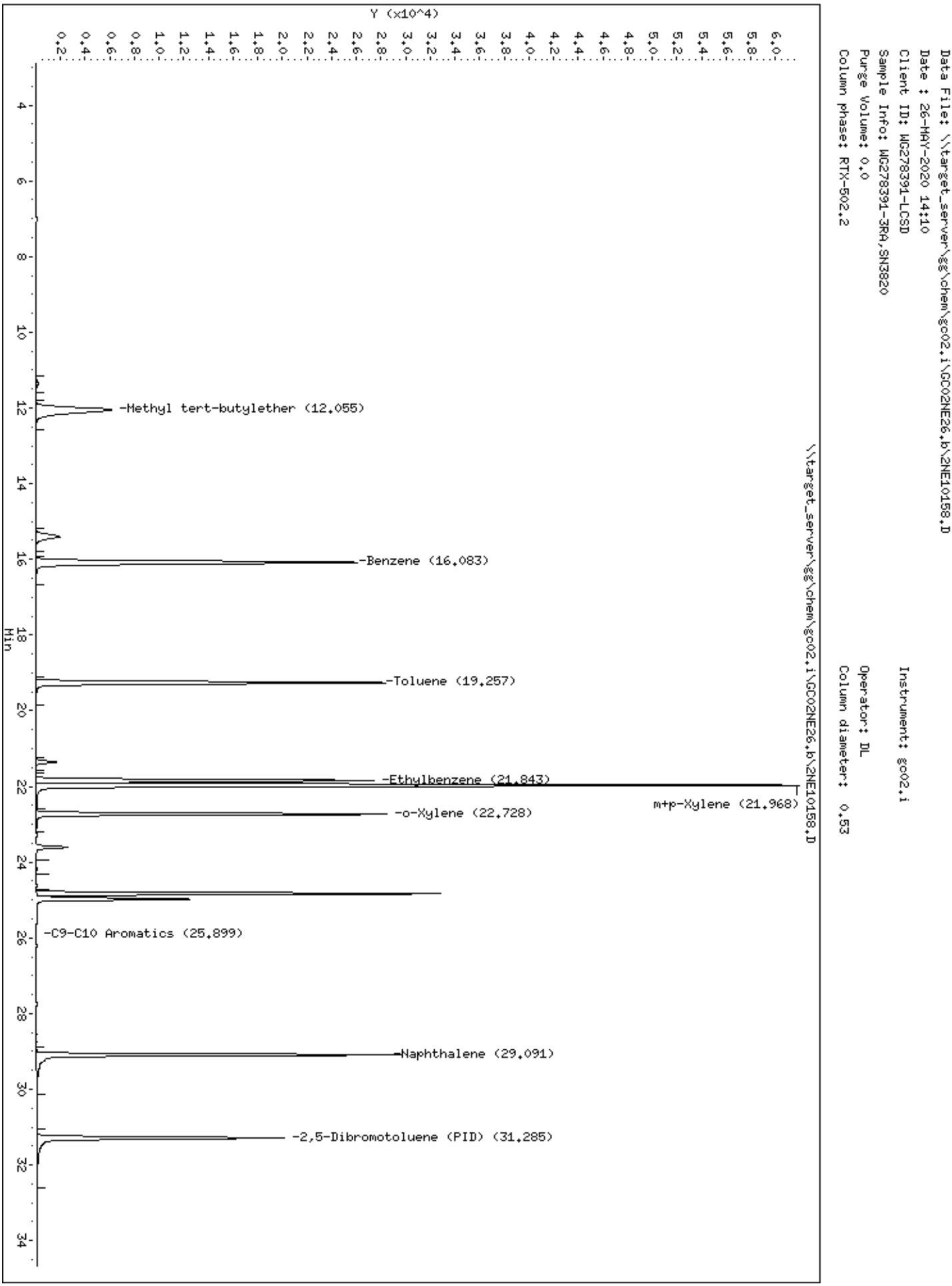
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
	2 Methyl tert-butylether	12.055	12.078	-0.023	133462	81.2721	81.3	
	3 Benzene	16.082	16.099	-0.017	289989	83.0549	83.0	
	4 Toluene	19.257	19.274	-0.017	263509	83.9947	84.0	
	5 Ethylbenzene	21.843	21.860	-0.017	232509	86.4586	86.4	
	6 m+p-Xylene	21.967	21.983	-0.016	539212	171.904	172	
	7 o-Xylene	22.727	22.745	-0.018	238603	85.8026	85.8	
S	9 C9-C10 Aromatics	22.818	-28.980		249204	88.1951	88.2(aM)	M3
	10 Naphthalene	29.091	29.110	-0.019	240383	86.8064	86.8	
$	11 2,5-Dibromotoluene (PID)	31.284	31.309	-0.025	206646	95.9001	95.9	

DL
12:16 pm, Jun 01, 2020

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10158.D
Date : 26-MAY-2020 14:10
Client ID: WG278391-LCSD
Sample Info: WG278391-3RA,SN3820
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.055)
-Benzene (16.083)
-Toluene (19.257)
-Ethylbenzene (21.843)
m+p-Xylene (21.968)
-o-Xylene (22.728)
-C9-C10 Aromatics (25.899)
Naphthalene (29.091)
-2,5-Dibromotoluene (PID) (31.285)
\\target_server\gg\chem\gc02.i\GC02NE26.b\2NE10158.D

Data File: 2NE10158.D
Report Date: 01-Jun-2020 09:32

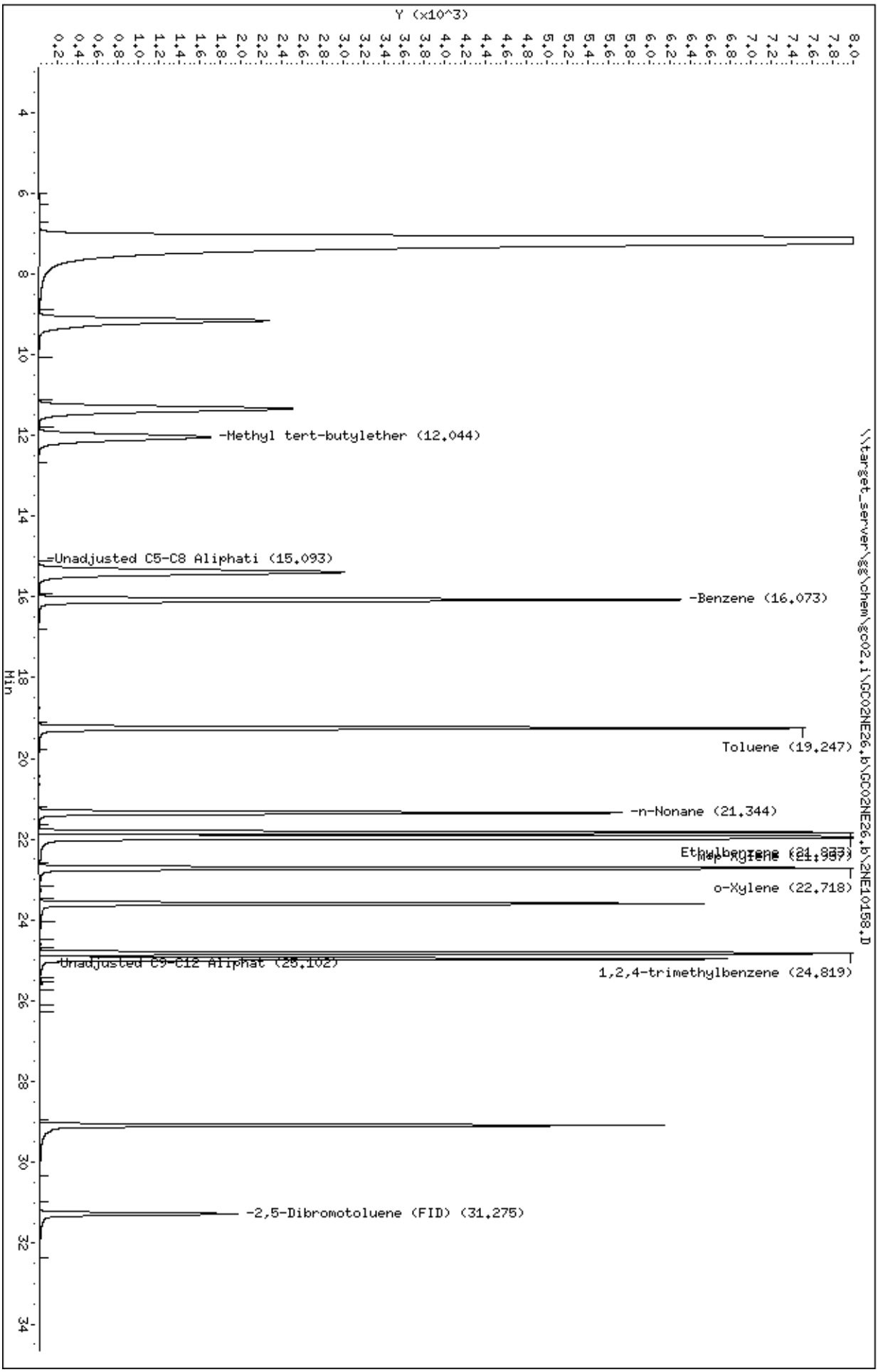
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10158.D
Lab Smp Id: WG278391-3RA Client Smp ID: WG278391-LCSD
Inj Date : 26-MAY-2020 14:10
Operator : DL Inst ID: gc02.i
Smp Info : WG278391-3RA,SN3820
Misc Info : WG278391,WG277230-4,SN3820-1
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE26.b\VPHPID91.m\VPHFID91.m
Meth Date : 27-May-2020 07:31 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)	REVIEW CODE
	Compounds	RT	EXP RT	DLT RT	RESPONSE			
7	Methyl tert-butylether	12.043	11.992	0.051	366218	81.7380	81.7	
9	Benzene	16.072	16.065	0.007	678380	86.7380	86.7	
11	Toluene	19.246	19.257	-0.011	667889	86.8853	86.9	
12	n-Nonane	21.344	21.361	-0.017	498802	90.9589	91.0	
14	Ethylbenzene	21.833	21.850	-0.017	652896	90.1321	90.1	
15	m+p-Xylene	21.957	21.975	-0.018	1355939	178.533	178	
16	o-Xylene	22.717	22.736	-0.019	690123	89.9000	89.9	
18	1,2,4-trimethylbenzene	24.818	24.838	-0.020	665962	92.0239	92.0	
S 10	Unadjusted C5-C8 Aliphatics	8.953-21.233			1463467	268.375	268	
S 17	Unadjusted C9-C12 Aliphatics	21.234-28.969			1059455	189.963	190	
$ 21	2,5-Dibromotoluene (FID)	31.274	31.304	-0.030	191203	95.6592	95.6	


Data File: \\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10158.D
Date : 26-MAY-2020 14:10
Client ID: WG278391-LCSD
Sample Info: WG278391-3RA,SN3820
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
-Methyl tert-butylether (12.044)
=Unadjusted C5-C8 Aliphati (15.093)
-Benzene (16.073)
Toluene (19.247)
-n-Nonane (21.344)
Ethylbenzene (21.837)
m&p-Xylene (21.997)
o-Xylene (22.718)
Unadjusted C9-C12 Aliphat (25.102)
1,2,4-trimethylbenzene (24.819)
-2,5-Dibromotoluene (FID) (31.275)
\\target_server\gg\chem\gc02.i\GC02NE26.b\GC02NE26.b\2NE10158.D

Logbooks and Supporting Documents

Katahdin Analytical Services
GC Laboratory Instrument Runlog

Instrument: GC02

Method (Circle): (MADEP-VPH-98-1) MEDEP 4.2.17 SW846 8015(M)

Date	Init.	Sample Name	Amt. Purged	SP. #	Result File	Dil.	Y/N	Method	pH	Comments
5-6-20	DL	CV50	5mL	7	2NE10027	1	N	VPHR1DFID90	—	
↓	↓	CV50	↓	8	↓ 28	↓	N	↓	↓	55V PID
5-7-20	DL	Rinse	5mL	1	2NE10029	1	N	VPHR1DFID91	—	
		ICal50	5mL	2	30		N			
		1	10	3	31		Y			WG-277230-1
		5	50	4	32		Y			↓ -2
		10	100	5	33		N			
		100	100	6	34		Y			WG-277230-5
		300	60	7	35		Y			-6
		50	50	8	36		Y			-4
		↓ 10	100	9	37		Y			-3
↓	↓	IND	50 ↓	10	↓ 38	↓	Y	↓	↓	↓ -7

	Std. Name	Conc.	Std. Code	Std. Code
1	VPH Cal mix	50 ug/ml	GCV 4409	GCV
2	VPH Surr. mix	100 ug/ml	GCV	GCV
3	VPH LCS mix	100 ug/ml	GCV 4413	GCV
4	GRO Cal mix	250 ug/mL Total	GCV	GCV
5	GRO Surr. Mix	50 ug/mL	GCV	GCV
6	GRO LCS mix	250 ug/mL Total	GCV	GCV
7	VPH L	5ug/mL	GCV 4410	
8	VPH H	25ug/mL	GCV 4411	

VPH CC = 50uL Std. 1
VPH LCS = 50uL Std. 3
VPH Samples = 50uL Std. 2

GRO CC = 20uL Std. 4
GRO LCS = 20uL Std. 5 and 6
GRO Samples = 20uL Std. 5

Katahdin Analytical Services
GC Laboratory Instrument Runlog

Instrument: GC02

Method (Circle): (MADEP-VPH-98-1) MEDEP 4.2.17 SW846 8015(M)

Date	Init.	Sample Name	Amt. Purged	SP. #	Result File	Dil.	Y/N	Method	pH	Comments
5-20-20	DL	SN3760-3REB	20mL	10	2NE10114	1	Y	VPHPIDFID91	—	
		-4REB		11	115		Y			
		CV50	5mL	12	116		Y			SS WG278045-5
5-21-20	DL	Rinse	5mL	1	2NE10117	1	N	VPHPIDFID91	—	DL 6-1-20
		CV50		2	118		N			SS WG278[illegible]-4
				3	119		Y			
		WG278[illegible]-1		4	120		Y			*DL 6-1-20
		-2		5	121		Y			
		-3		6	122		Y			
		SN3818-1A		7	123		Y		12	
		-2A		8	124		N			SS
		-3A		9	125		Y			
		-4A		10	126		Y			C9-C10 overlap RTB C9-C12
		-5A		11	127		Y			
		SN3819-1AB*		12	128		Y			*DL 5-22-20
		SN3820-1A		13	129		N			SS
		-2A		14	130		N			
		-3A		15	131		N			
		-4A		16	132		N			
		SN3830-1A		17	133		N			
		-2A		18	134		N			
		-3A		19	135		N			
		-4A		20	136		N			
5-22-20		-5A		21	137		N			
		-6A		22	138		N			
		CV50		23	139		Y		—	SS 6 FID
5-22-20	DL	Rinse	5mL	1	2NE10140	1	N	VPHPIDFID90	—	DL 5-27-20*
		CV50		2	141		Y			WG278[illegible]-5 DL 6-1-20
		WG278236-1		3	142		N			News MIX SS

	Std. Name	Conc.	Std. Code	Std. Code
1	VPH Cal mix	50 ug/ml	GCV 4415	GCV
2	VPH Surr. mix	100 ug/ml	GCV 4418	GCV 4425
3	VPH LCS mix	100 ug/ml	GCV 4417	GCV
4	GRO Cal mix	250 ug/mL Total	GCV	GCV
5	GRO Surr. Mix	50 ug/mL	GCV	GCV
6	GRO LCS mix	250 ug/mL Total	GCV	GCV
7				
8				

VPH CC = 50uL Std. 1
VPH LCS = 50uL Std. 3
VPH Samples = 50uL Std. 2

GRO CC = 20uL Std. 4
GRO LCS = 20uL Std. 5 and 6
GRO Samples = 20uL Std. 5

pH lot # 690803

QAGC394 Katahdin Analytical Services 1000123

Katahdin Analytical Services
GC Laboratory Instrument Runlog

Instrument: GC02

Method (Circle) MADEP-VPH-98-1 MEDEP 4.2.17 SW846 8015(M)

Date	Init.	Sample Name	Amt. Purged	SP. #	Result File	Dil.	Y/N	Method	pH	Comments
5-22-20	DL	Mblank	5mL	4	2NE0143	1	Y	VPHPIDFID91	—	
				5	144		N			SSV
		↓		6	145		Y			
		Rinse		7	146		N			
		CV50		8	147		Y			
		↓		9	148		Y			
		↓		10	149		Y			
		mblank		11	150		Y			
		↓		12	151		~~Y~~ *			N DL 5-26-20 SSV
↓	↓	↓	↓	13	↓ 152	↓	N	↓	↓	↓
5-26-20	DL	Rinse	5mL	1	2NE0153	1	N	VPHPIDFID91	—	
		CV50		2	154		Y			New MX WG278391-4
		WG278391-1		3	155		Y			
		-2		4	156		Y			
		-3		5	157		N			SSV
		-3RA		6	158		Y		↓	
		SN3820-1RAB		7	159		Y			SSV
		-2RAB		8	160		Y			
		-3RAB		9	161		Y			
		-4RAB		10	162		Y			
		SN3830-1RAB		11	163		Y			SSV PID
		-2RAB		12	164		Y			130th
		-3RAB		13	165		Y			
		-4RAB		14	166		Y			
		-5RAB		15	167		Y			
		-6RAB		16	168		Y			↓
↓		SN3818-2RAB	↓	17	169	↓	Y			PID
5-27-20		-4PLB	~~5mL~~	18	170	4	Y		L2	~~PDL~~ 5-26-20 SSV
↓	↓	-5PLB		19	↓ 171	↓	Y	↓	↓	↓

	Std. Name	Conc.	Std. Code	Std. Code
1	VPH Cal mix	50 ug/ml	GCV 4415	GCV 4426
2	VPH Surr. mix	100 ug/ml	GCV 4405	GCV
3	VPH LCS mix	100 ug/ml	GCV 4417	GCV
4	GRO Cal mix	250 ug/mL Total	GCV	GCV
5	GRO Surr. Mix	50 ug/mL	GCV	GCV
6	GRO LCS mix	250 ug/mL Total	GCV	GCV
7				
8				

VPH CC = 50uL Std. 1
VPH LCS = 50uL Std. 3
VPH Samples = 50uL Std. 2

GRO CC = 20uL Std. 4
GRO LCS = 20uL Std. 5 and 6
GRO Samples = 20uL Std. 5

PH lot ~~HC~~ 08003

Katahdin Analytical Services
GC Laboratory Instrument Runlog

Instrument: GC02

Method (Circle): MADEP-VPH-98-1 MEDEP 4.2.17 SW846 8015(M)

Date	Init.	Sample Name	Amt. Purged	SP. #	Result File	Dil.	Y/N	Method	pH	Comments
5-22-20	TL	CV50	5mL	20	2NE10172	1	Y	VPHEJDFJD91	—	WG-278391-5

	Std. Name	Conc.	Std. Code	Std. Code
1	VPH Cal mix	50 ug/ml	GCV 4426	GCV
2	VPH Surr. mix	100 ug/ml	GCV	GCV
3	VPH LCS mix	100 ug/ml	GCV	GCV
4	GRO Cal mix	250 ug/mL Total	GCV	GCV
5	GRO Surr. Mix	50 ug/mL	GCV	GCV
6	GRO LCS mix	250 ug/mL Total	GCV	GCV
7				
8				

VPH CC = 50uL Std. 1
VPH LCS = 50uL Std. 3
VPH Samples = 50uL Std. 2

GRO CC = 20uL Std. 4
GRO LCS = 20uL Std. 5 and 6
GRO Samples = 20uL Std. 5

EXTRACTABLE PETROLEUM HYDROCARBON DATA

QC Summary Section

Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** JV, LTM, DCL Spring 2020 **Matrix:** AQ
Lab Code: KAS **SDG:** SN3820

Client Sample ID	Lab Sample ID	Col. ID	2BN	#	2FBP	#	5AA	#	OTP	#
DCL-DUP01-SPR20	SN3820-1	B	73.3		73.4		55.3		69.2	
LFM-03-07-SPR20	SN3820-2	B	79.2		80.8		40.1		53.0	
LFM-99-05A-SPR20	SN3820-3	B	75.0		74.8		53.4		65.4	
LFM-99-06ARP-SPR20	SN3820-4	B	68.7		69.8		50.0		62.2	
Method Blank Sample	WG278026-1	B	56.4		56.7		58.0		53.7	
Laboratory Control S	WG278026-2	B	79.1		78.9		62.2		76.1	
Laboratory Control S	WG278026-3	B	62.1		61.7		46.0		54.8	

		QC Limits
5AA	5-ALPHA ANDROSTANE	40-140
OTP	O-TERPHENYL	40-140
2FBP	2-FLUOROBIPHENYL	40-140
2BN	2-BROMONAPHTHALENE	40-140

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://katahdinlab.com
sales@katahdinlab.com

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020
Lab File ID : CNE1113.D
Instrument ID : GC12

SDG : SN3820
Lab Sample ID : WG278026-1
Date Analyzed : 22-MAY-20
Time Analyzed : 17:16
Date Extracted : 20-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278026-2	CNE1114.I	05/22/20	18:03
Laboratory Control S	WG278026-3	CNE1115.I	05/22/20	18:49
DCL-DUP01-SPR20	SN3820-1	CNE1117.I	05/22/20	20:22
LFM-03-07-SPR20	SN3820-2	CNE1118.I	05/22/20	21:08
LFM-99-05A-SPR20	SN3820-3	CNE1119.I	05/22/20	21:54
LFM-99-06ARP-SPR20	SN3820-4	CNE1120.I	05/22/20	22:40

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020
Lab File ID : CNE1113A.D
Instrument ID : GC12

SDG : SN3820
Lab Sample ID : WG278026-1
Date Analyzed : 22-MAY-20
Time Analyzed : 17:16
Date Extracted : 20-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278026-2	CNE1114A	05/22/20	18:03
Laboratory Control S	WG278026-3	CNE1115A	05/22/20	18:49
DCL-DUP01-SPR20	SN3820-1	CNE1117A	05/22/20	20:22
LFM-03-07-SPR20	SN3820-2	CNE1118A	05/22/20	21:08
LFM-99-05A-SPR20	SN3820-3	CNE1119A	05/22/20	21:54
LFM-99-06ARP-SPR20	SN3820-4	CNE1120A	05/22/20	22:40

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020
Lab File ID : CNE2113.D
Instrument ID : GC12

SDG : SN3820
Lab Sample ID : WG278026-1
Date Analyzed : 22-MAY-20
Time Analyzed : 17:16
Date Extracted : 20-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278026-2	CNE2114.I	05/22/20	18:03
Laboratory Control S	WG278026-3	CNE2115.I	05/22/20	18:49
DCL-DUP01-SPR20	SN3820-1	CNE2117.I	05/22/20	20:22
LFM-03-07-SPR20	SN3820-2	CNE2118.I	05/22/20	21:08
LFM-99-05A-SPR20	SN3820-3	CNE2119.I	05/22/20	21:54
LFM-99-06ARP-SPR20	SN3820-4	CNE2120.I	05/22/20	22:40

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: GC12 ICAL SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 9.06 S2 : 10.44

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	S2 RT #
01		WG273574-5	03/06/20	1158	9.07	10.45
02		WG273574-4	03/06/20	1243	9.06	10.44
03		WG273574-3	03/06/20	1329	9.06	10.44
04		WG273574-2	03/06/20	1414	9.05	10.43
05		WG273574-1	03/06/20	1500	9.06	10.44
06		WG273574-6	03/09/20	0623		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: GC12 ICAL SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.36

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG273574-5	03/06/20	1158	15.37	
02		WG273574-4	03/06/20	1243	15.35	
03		WG273574-3	03/06/20	1329	15.36	
04		WG273574-2	03/06/20	1414	15.35	
05		WG273574-1	03/06/20	1500	15.35	
06		WG273574-6	03/09/20	0623		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SN3820

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 9.05 S2 : 10.43

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	S2 RT	#
01		WG278377-1	05/22/20	1157	9.05		10.43	
02	WG278026-BLA	WG278026-1	05/22/20	1716	9.03		10.40	
03	WG278026-LCS	WG278026-2	05/22/20	1803	9.01		10.39	
04	WG278026-LCS	WG278026-3	05/22/20	1849	9.02		10.39	
05	DCL-DUP01-SP	SN3820-1	05/22/20	2022	9.02		10.40	
06	LFM-03-07-SP	SN3820-2	05/22/20	2108	9.02		10.39	
07	LFM-99-05A-S	SN3820-3	05/22/20	2154	9.02		10.40	
08	LFM-99-06ARP	SN3820-4	05/22/20	2240	9.03		10.41	
09		WG278377-2	05/23/20	0811	9.12		10.49	
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

QC LIMITS

S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SN3820

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.35

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG278377-1	05/22/20	1157	15.35	
02	WG278026-BLA	WG278026-1	05/22/20	1716	15.31	
03	WG278026-LCS	WG278026-2	05/22/20	1803	15.31	
04	WG278026-LCS	WG278026-3	05/22/20	1849	15.31	
05	DCL-DUP01-SP	SN3820-1	05/22/20	2022	15.32	
06	LFM-03-07-SP	SN3820-2	05/22/20	2108	15.31	
07	LFM-99-05A-S	SN3820-3	05/22/20	2154	15.32	
08	LFM-99-06ARP	SN3820-4	05/22/20	2240	15.33	
09		WG278377-2	05/23/20	0811	15.41	
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: GC12 ICAL SDG No.: SDGA02536

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.71

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01		WG273574-11	03/06/20	1158	16.72	
02		WG273574-10	03/06/20	1243	16.70	
03		WG273574-9	03/06/20	1329	16.71	
04		WG273574-8	03/06/20	1414	16.69	
05		WG273574-7	03/06/20	1500	16.69	
06		WG273574-12	03/09/20	0623		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.33 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SN3820

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.78

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01		WG278377-3	05/22/20	1157	16.78	
02	WG278026-BLA	WG278026-1	05/22/20	1716	16.76	
03	WG278026-LCS	WG278026-2	05/22/20	1803	16.75	
04	WG278026-LCS	WG278026-3	05/22/20	1849	16.76	
05	DCL-DUP01-SP	SN3820-1	05/22/20	2022	16.76	
06	LFM-03-07-SP	SN3820-2	05/22/20	2108	16.76	
07	LFM-99-05A-S	SN3820-3	05/22/20	2154	16.76	
08	LFM-99-06ARP	SN3820-4	05/22/20	2240	16.77	
09		WG278377-4	05/23/20	0811	16.81	
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.34 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII DRO

Sample Data Section

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N Presumptive evidence of a compound based on a mass spectral library search.

A Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3820-1
Client ID: DCL-DUP01-SPR20
Project: JV, LTM, DCL Spring 2020
SDG: SN3820
Lab File ID: CNE2117.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 20-MAY-20
Extracted By: MR
Extraction Method: SW846 3510C
Lab Prep Batch: WG278026

Analysis Date: 22-MAY-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 28-MAY-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	96	ug/L	1	100	96.	48.	72.
C19-C36 Aliphatics	U	96	ug/L	1	100	96.	48.	72.
C11-C22 Aromatics	U	96	ug/L	1	100	96.	48.	72.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.86	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.96	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.77	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		55.3	%					
o-Terphenyl		69.2	%					
2-Fluorobiphenyl		73.4	%					
2-Bromonaphthalene		73.3	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029
http://www.katahdinlab.com

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2117.d
Report Date: 28-May-2020 20:09

Katahdin Analytical Services

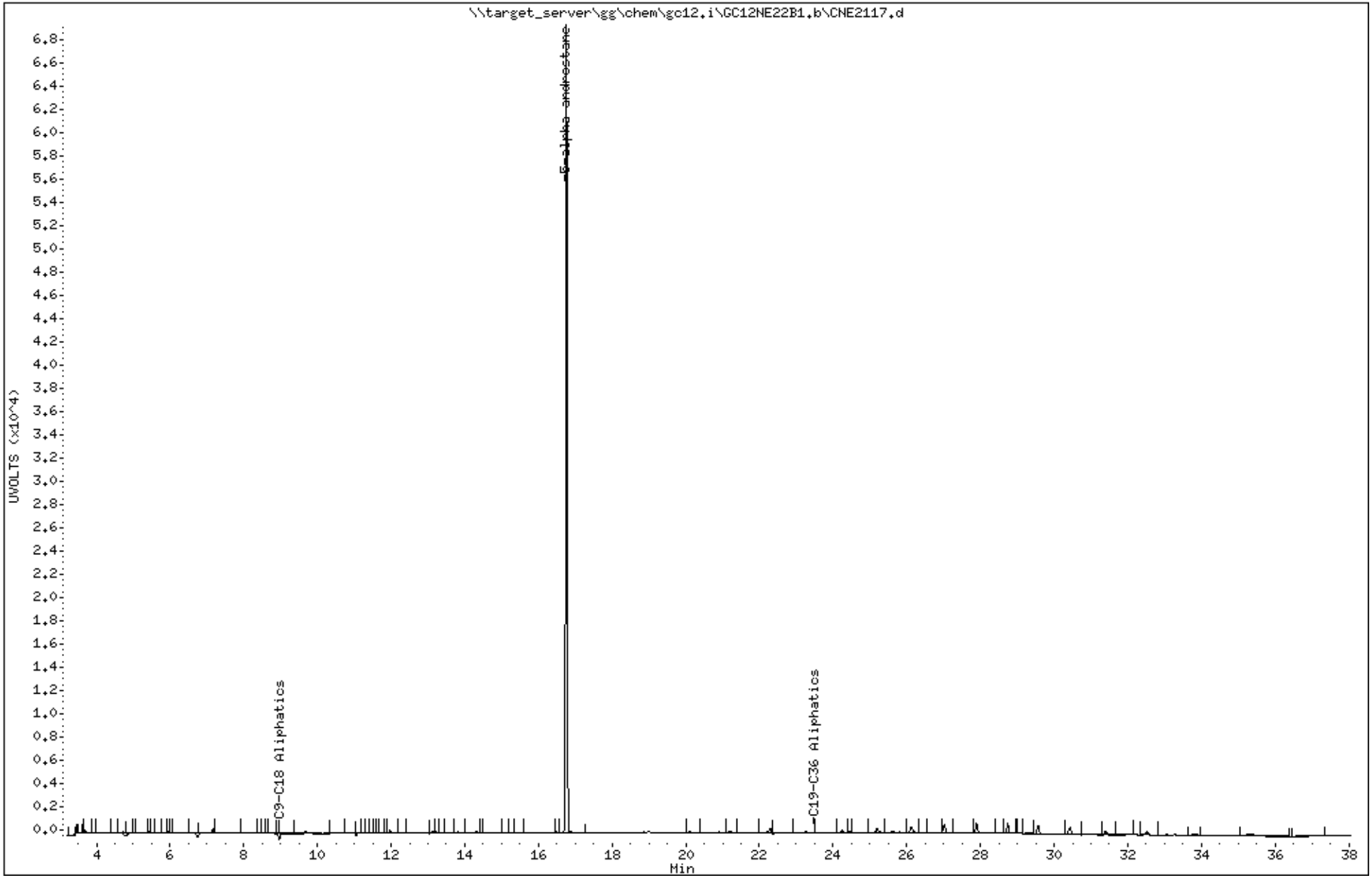
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Inj Date : 22-MAY-2020 20:22
Operator : AAB Inst ID: gc12.i
Smp Info : SN3820-1
Misc Info : WG278377,WG278026,WG273574-9
Comment :
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Meth Date : 26-May-2020 10:25 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC2023.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: ALIPHATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.040	Sample Volume (L)
Cpnd Variable		Local Compound Variable

					CONCENTRATIONS		
					ON-COLUMN	FINAL	
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/ml)	(ug/L)	REVIEW CODE
$ 44 5-alpha androstane	16.759	16.778	-0.019	247734	24.8477	47.8	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2117.d
Date : 22-MAY-2020 20:22
Client ID: DCL-DUP01-SPR20
Instrument: gc12.i
Sample Info: SN3820-1
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-1
Column diameter: 0.53



Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1117a.d
Report Date: 28-May-2020 20:06

Katahdin Analytical Services

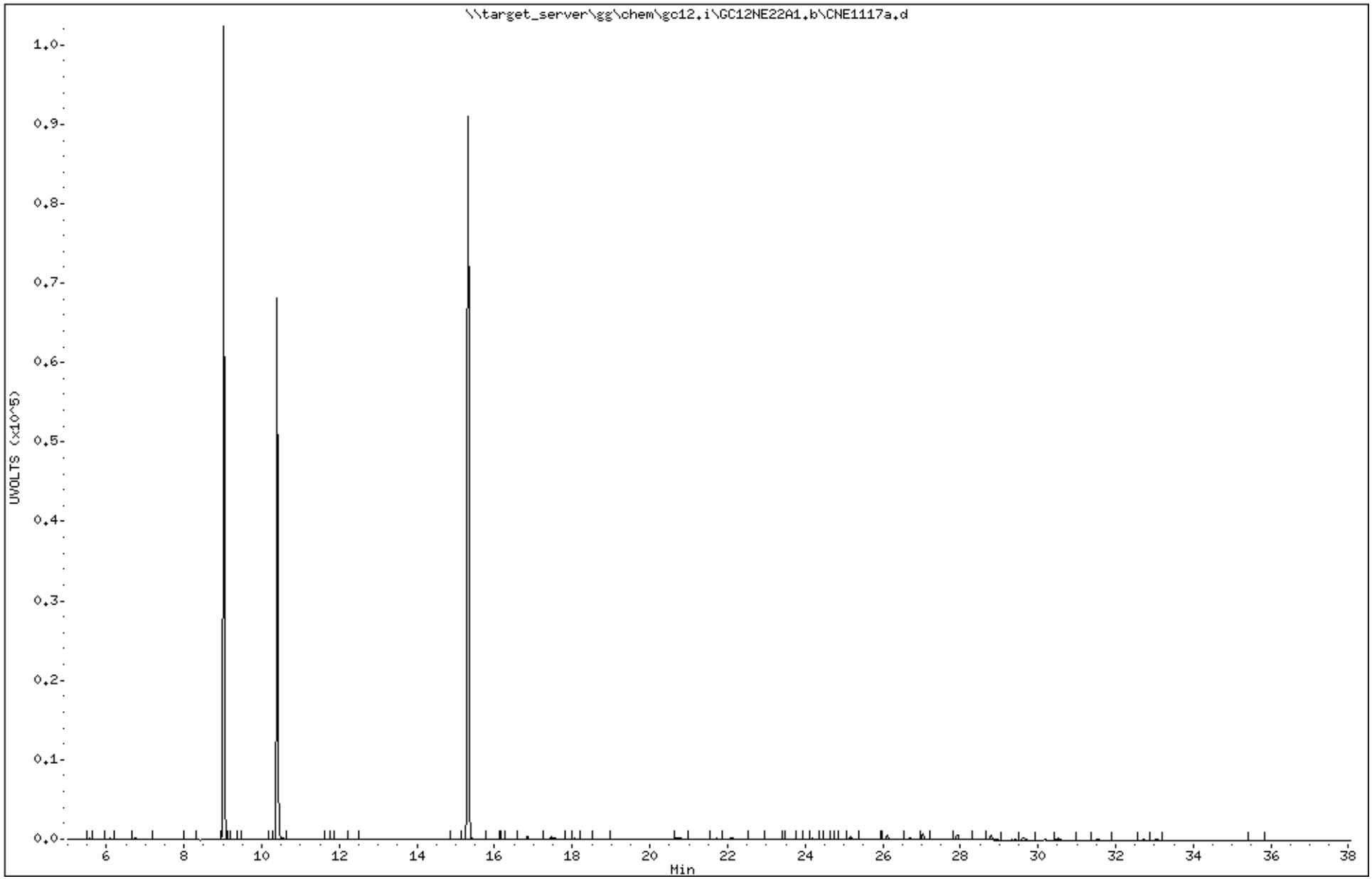
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Inj Date : 22-MAY-2020 20:22
Operator : AAB Inst ID: gc12.i
Smp Info : SN3820-1
Misc Info : WG278377,WG278026,WG273574-3
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: PAH.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.040	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1117a.d
Date : 22-MAY-2020 20:22
Client ID: DCL-DUP01-SPR20 Instrument: gc12.i
Sample Info: SN3820-1
Purge Volume: 1.0 Operator: AAB
Column phase: RTX-5 Column diameter: 0.53



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Report Date: 28-May-2020 20:06

Katahdin Analytical Services

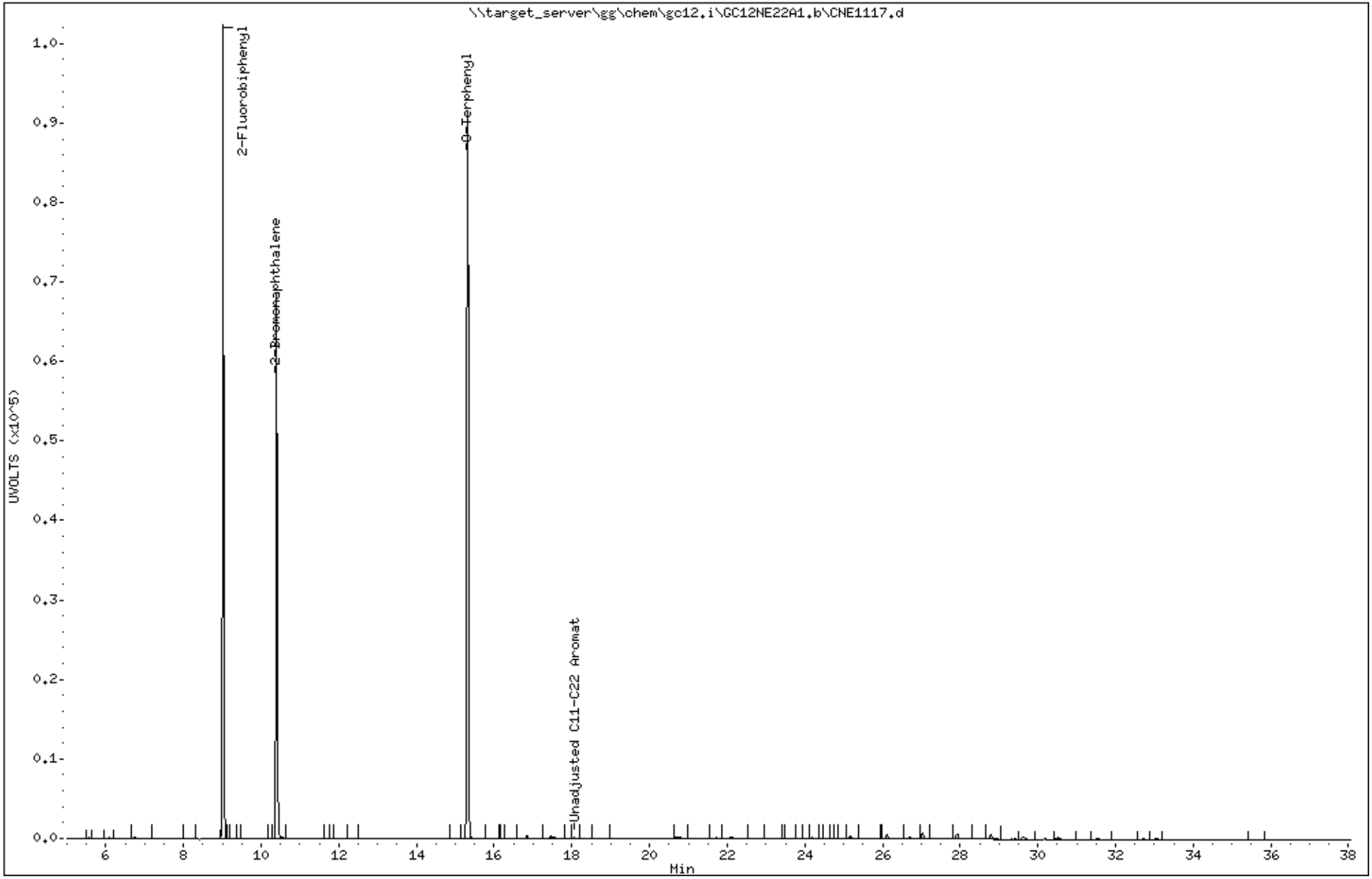
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Inj Date : 22-MAY-2020 20:22
Operator : AAB Inst ID: gc12.i
Smp Info : SN3820-1
Misc Info : WG278377,WG278026,WG273574-3
Comment :
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Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: AROMATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.040	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 4 2-Fluorobiphenyl	9.017	9.054	-0.037	287031	33.0371	63.5	
$ 6 2-Bromonaphthalene	10.396	10.430	-0.034	196996	32.9563	63.4	
$ 11 O-Terphenyl	15.315	15.346	-0.031	322074	31.1297	59.9	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1117.d
Date : 22-MAY-2020 20:22
Client ID: DCL-DUP01-SPR20
Instrument: gc12.i
Sample Info: SN3820-1
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-5
Column diameter: 0.53



Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3820-2
Client ID: LFM-03-07-SPR20
Project: JV, LTM, DCL Spring 2020
SDG: SN3820
Lab File ID: CNE2118.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 20-MAY-20
Extracted By: MR
Extraction Method: SW846 3510C
Lab Prep Batch: WG278026

Analysis Date: 22-MAY-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 28-MAY-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	93	ug/L	1	100	93.	47.	70.
C19-C36 Aliphatics	U	93	ug/L	1	100	93.	47.	70.
C11-C22 Aromatics	U	93	ug/L	1	100	93.	47.	70.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.84	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.93	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		40.1	%					
o-Terphenyl		53.0	%					
2-Fluorobiphenyl		80.8	%					
2-Bromonaphthalene		79.2	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

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Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2118.d
Report Date: 28-May-2020 20:09

Katahdin Analytical Services

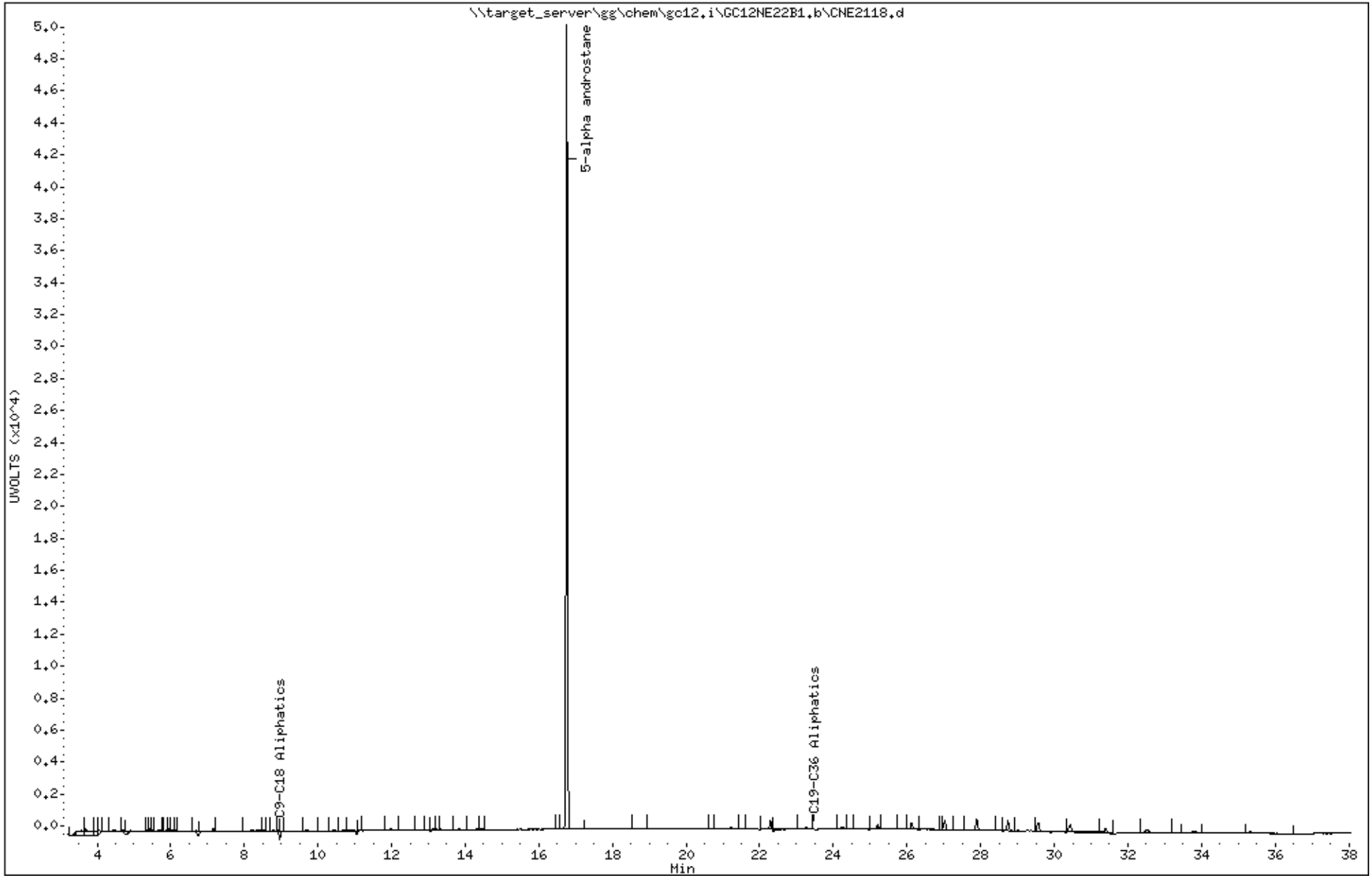
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Inj Date : 22-MAY-2020 21:08
Operator : AAB Inst ID: gc12.i
Smp Info : SN3820-2
Misc Info : WG278377,WG278026,WG273574-9
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\ALIB070A.m
Meth Date : 26-May-2020 10:25 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC2023.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: ALIPHATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.070	Sample Volume (L)
Cpnd Variable		Local Compound Variable

					CONCENTRATIONS		
					ON-COLUMN	FINAL	
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/ml)	(ug/L)	REVIEW CODE
$ 44 5-alpha androstane	16.758	16.778	-0.020	179843	18.0382	33.7	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2118.d
Date : 22-MAY-2020 21:08
Client ID: LFM-03-07-SPR20
Instrument: gc12.i
Sample Info: SN3820-2
Purge Volume: 1.1
Operator: AAB
Column phase: RTX-1
Column diameter: 0.53



06/07/2020
Katahdin Analytical Services 2000025

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1118a.d
Report Date: 28-May-2020 20:07

Katahdin Analytical Services

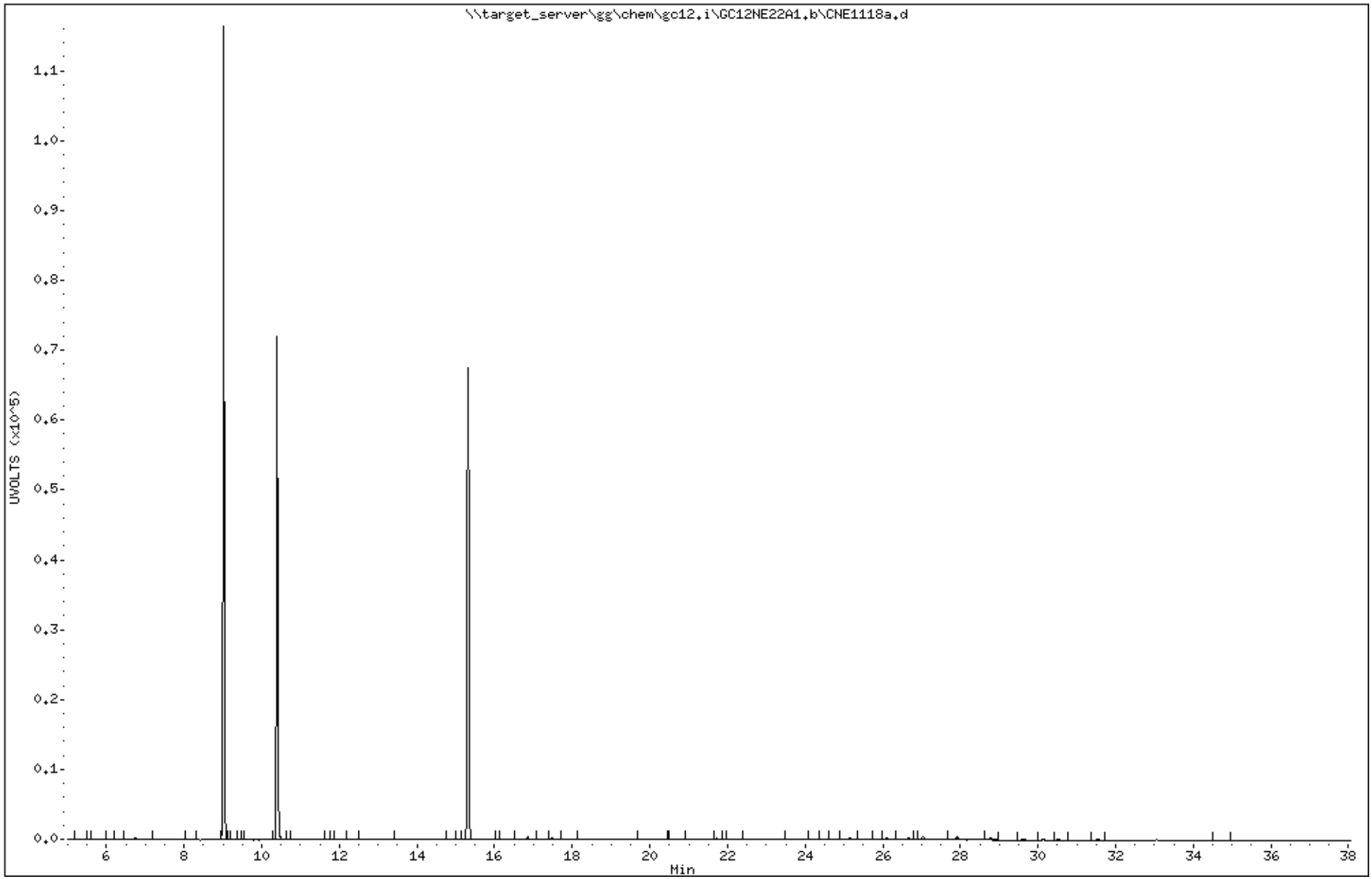
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Operator : AAB Inst ID: gc12.i
Smp Info : SN3820-2
Misc Info : WG278377,WG278026,WG273574-3
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Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: PAH.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.070	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1118a.d
Date : 22-MAY-2020 21:08
Client ID: LFM-03-07-SPR20
Instrument: gc12.i
Sample Info: SN3820-2
Purge Volume: 1.1
Operator: AAB
Column phase: RTX-5
Column diameter: 0.53



Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1118.d
Report Date: 28-May-2020 20:07

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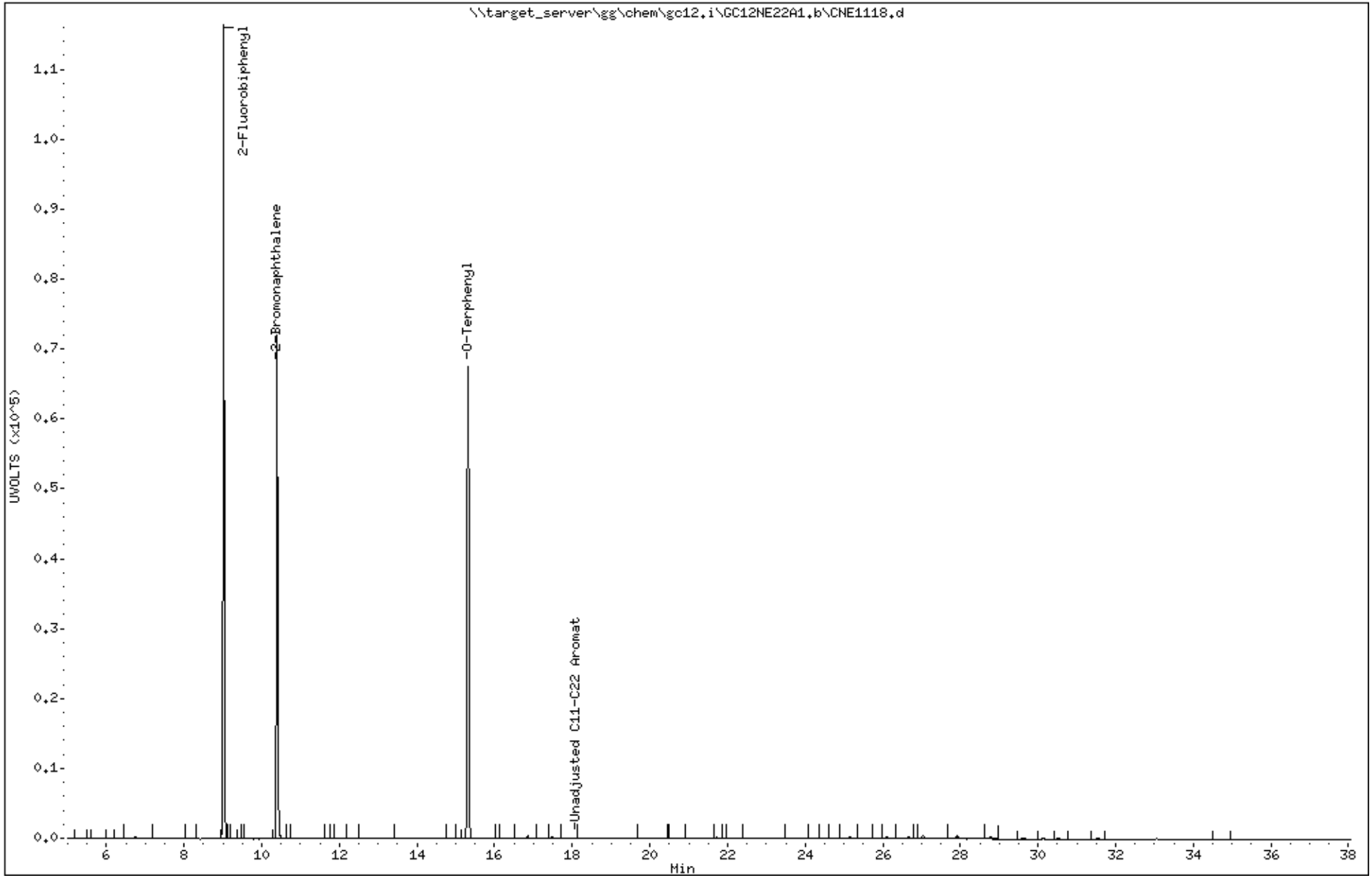
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Lab Smp Id: SN3820-2 Client Smp ID: LFM-03-07-SPR20
Inj Date : 22-MAY-2020 21:08
Operator : AAB Inst ID: gc12.i
Smp Info : SN3820-2
Misc Info : WG278377,WG278026,WG273574-3
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: AROMATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.070	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 4 2-Fluorobiphenyl	9.016	9.054	-0.038	316112	36.3843	68.0	
$ 6 2-Bromonaphthalene	10.394	10.430	-0.036	212882	35.6139	66.6	
$ 11 O-Terphenyl	15.313	15.346	-0.033	246631	23.8379	44.6	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1118.d
Date : 22-MAY-2020 21:08
Client ID: LFM-03-07-SPR20
Instrument: gc12.i
Sample Info: SN3820-2
Purge Volume: 1.1
Operator: AAB
Column phase: RTX-5
Column diameter: 0.53



Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3820-3
Client ID: LFM-99-05A-SPR20
Project: JV, LTM, DCL Spring 2020
SDG: SN3820
Lab File ID: CNE2119.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 20-MAY-20
Extracted By: MR
Extraction Method: SW846 3510C
Lab Prep Batch: WG278026

Analysis Date: 22-MAY-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 28-MAY-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	110	ug/L	1	100	110	54.	81.
C19-C36 Aliphatics	U	110	ug/L	1	100	110	54.	81.
C11-C22 Aromatics	U	110	ug/L	1	100	110	54.	81.
Naphthalene	U	2.2	ug/L	1	2	2.2	0.97	1.6
2-Methylnaphthalene	U	2.2	ug/L	1	2	2.2	0.86	1.6
Phenanthrene	U	2.2	ug/L	1	2	2.2	0.97	1.6
Acenaphthylene	U	2.2	ug/L	1	2	2.2	0.86	1.6
Acenaphthene	U	2.2	ug/L	1	2	2.2	1.9	2.0
Anthracene	U	2.2	ug/L	1	2	2.2	1.5	1.6
Benzo(a)anthracene	U	2.2	ug/L	1	2	2.2	1.5	1.6
Benzo(a)pyrene	U	2.2	ug/L	1	2	2.2	1.4	1.6
Benzo(b)fluoranthene	U	2.2	ug/L	1	2	2.2	0.86	1.6
Benzo(g,h,i)perylene	U	2.2	ug/L	1	2	2.2	1.4	1.6
Benzo(k)fluoranthene	U	2.2	ug/L	1	2	2.2	1.1	1.6
Chrysene	U	2.2	ug/L	1	2	2.2	0.97	1.6
Dibenzo(a,h)anthracene	U	2.2	ug/L	1	2	2.2	1.3	1.6
Fluoranthene	U	2.2	ug/L	1	2	2.2	0.86	1.6
Fluorene	U	2.2	ug/L	1	2	2.2	0.97	1.6
Indeno(1,2,3-cd)pyrene	U	2.2	ug/L	1	2	2.2	1.5	1.6
Pyrene	U	2.2	ug/L	1	2	2.2	1.2	1.6
5-Alpha Androstane		53.4	%					
o-Terphenyl		65.4	%					
2-Fluorobiphenyl		74.8	%					
2-Bromonaphthalene		75.0	%					

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Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2119.d
Report Date: 28-May-2020 20:09

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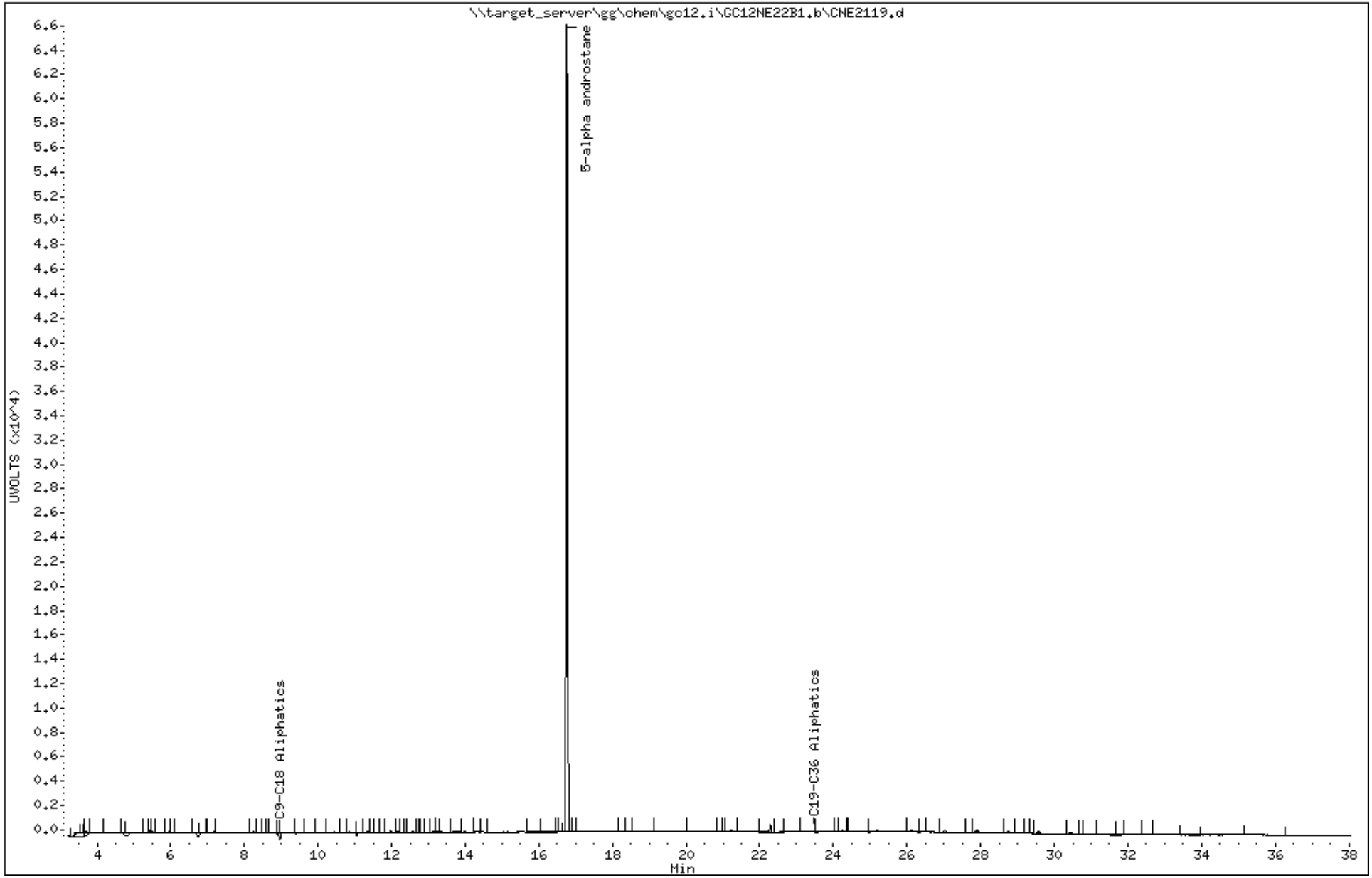
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Inj Date : 22-MAY-2020 21:54
Operator : AAB Inst ID: gc12.i
Smp Info : SN3820-3
Misc Info : WG278377,WG278026,WG273574-9
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\ALIB070A.m
Meth Date : 26-May-2020 10:25 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC2023.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: ALIPHATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	0.93000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

					CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	
Compounds	RT	EXP RT	DLT RT	RESPONSE			REVIEW CODE
$ 44 5-alpha androstane	16.762	16.778	-0.016	239758	24.0477	51.7	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2119.d
Date : 22-MAY-2020 21:54
Client ID: LFM-99-05A-SPR20
Instrument: gc12.i
Sample Info: SN3820-3
Purge Volume: 0.9
Operator: AAB
Column phase: RTX-1
Column diameter: 0.53



Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1119.d
Report Date: 28-May-2020 20:07

Katahdin Analytical Services

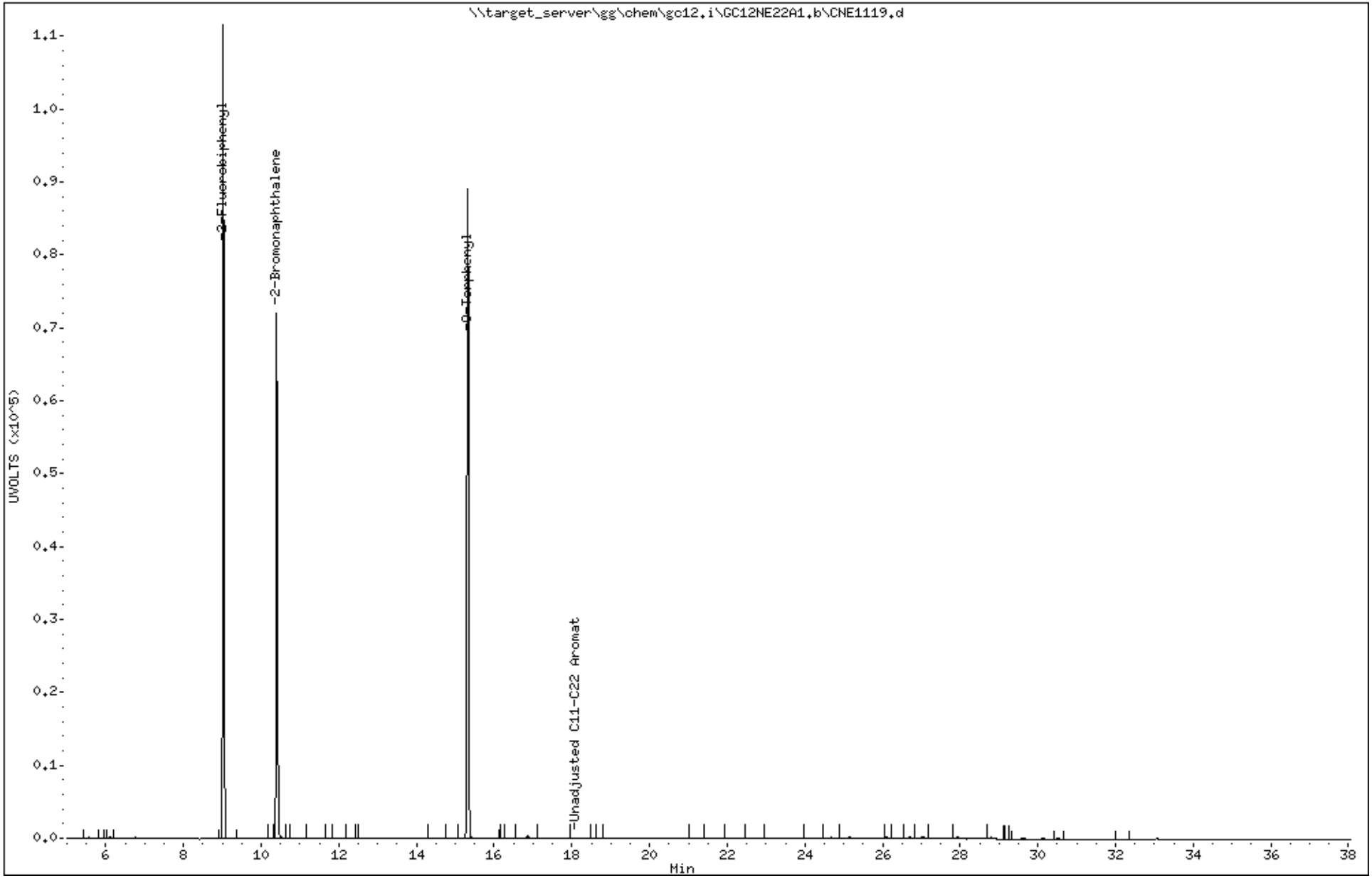
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Inj Date : 22-MAY-2020 21:54
Operator : AAB Inst ID: gc12.i
Smp Info : SN3820-3
Misc Info : WG278377,WG278026,WG273574-3
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: AROMATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	0.93000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 4 2-Fluorobiphenyl	9.024	9.054	-0.030	292404	33.6556	72.4	
$ 6 2-Bromonaphthalene	10.401	10.430	-0.029	201668	33.7379	72.6	
$ 11 O-Terphenyl	15.319	15.346	-0.027	304389	29.4204	63.3	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1119.d
Date : 22-MAY-2020 21:54
Client ID: LFM-99-05A-SPR20
Instrument: gc12.i
Sample Info: SN3820-3
Purge Volume: 0.9
Operator: AAB
Column phase: RTX-5
Column diameter: 0.53



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Report Date: 28-May-2020 20:07

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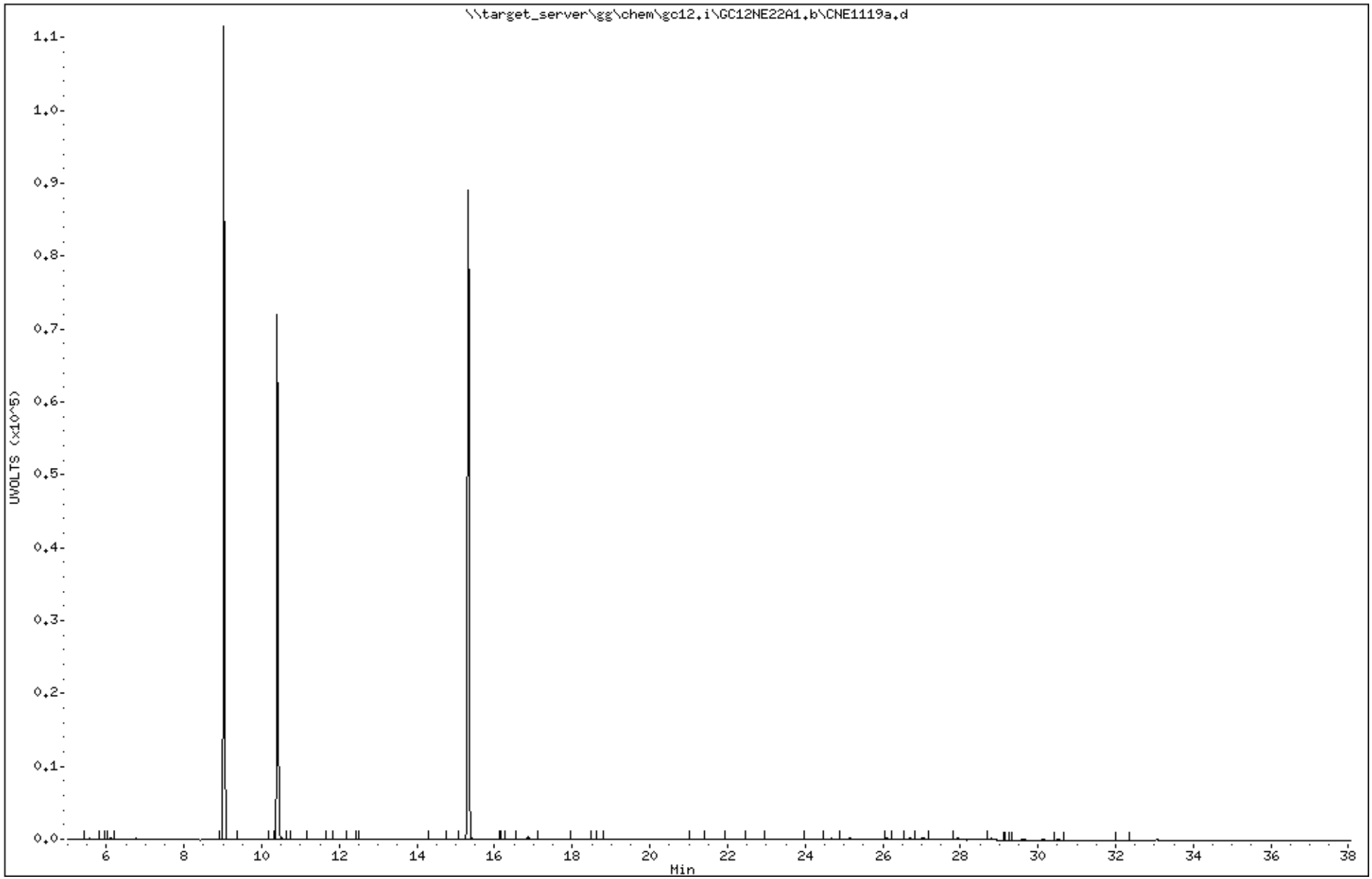
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Lab Smp Id: SN3820-3 Client Smp ID: LFM-99-05A-SPR20
Inj Date : 22-MAY-2020 21:54
Operator : AAB Inst ID: gc12.i
Smp Info : SN3820-3
Misc Info : WG278377,WG278026,WG273574-3
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: PAH.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	0.93000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1119a.d
Date : 22-MAY-2020 21:54
Client ID: LFM-99-05A-SPR20
Instrument: gc12.i
Sample Info: SN3820-3
Purge Volume: 0.9
Operator: AAB
Column phase: RTX-5
Column diameter: 0.53



06/07/2020
Katahdin Analytical Services 2000036

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3820-4
Client ID: LFM-99-06ARP-SPR20
Project: JV, LTM, DCL Spring 2020
SDG: SN3820
Lab File ID: CNE2120.D

Sample Date: 14-MAY-20
Received Date: 19-MAY-20
Extract Date: 20-MAY-20
Extracted By: MR
Extraction Method: SW846 3510C
Lab Prep Batch: WG278026

Analysis Date: 22-MAY-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 28-MAY-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	93	ug/L	1	100	93.	47.	70.
C19-C36 Aliphatics	U	93	ug/L	1	100	93.	47.	70.
C11-C22 Aromatics	U	93	ug/L	1	100	93.	47.	70.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.84	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.93	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		50.0	%					
o-Terphenyl		62.2	%					
2-Fluorobiphenyl		69.8	%					
2-Bromonaphthalene		68.7	%					

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Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2120.d
Report Date: 28-May-2020 20:09

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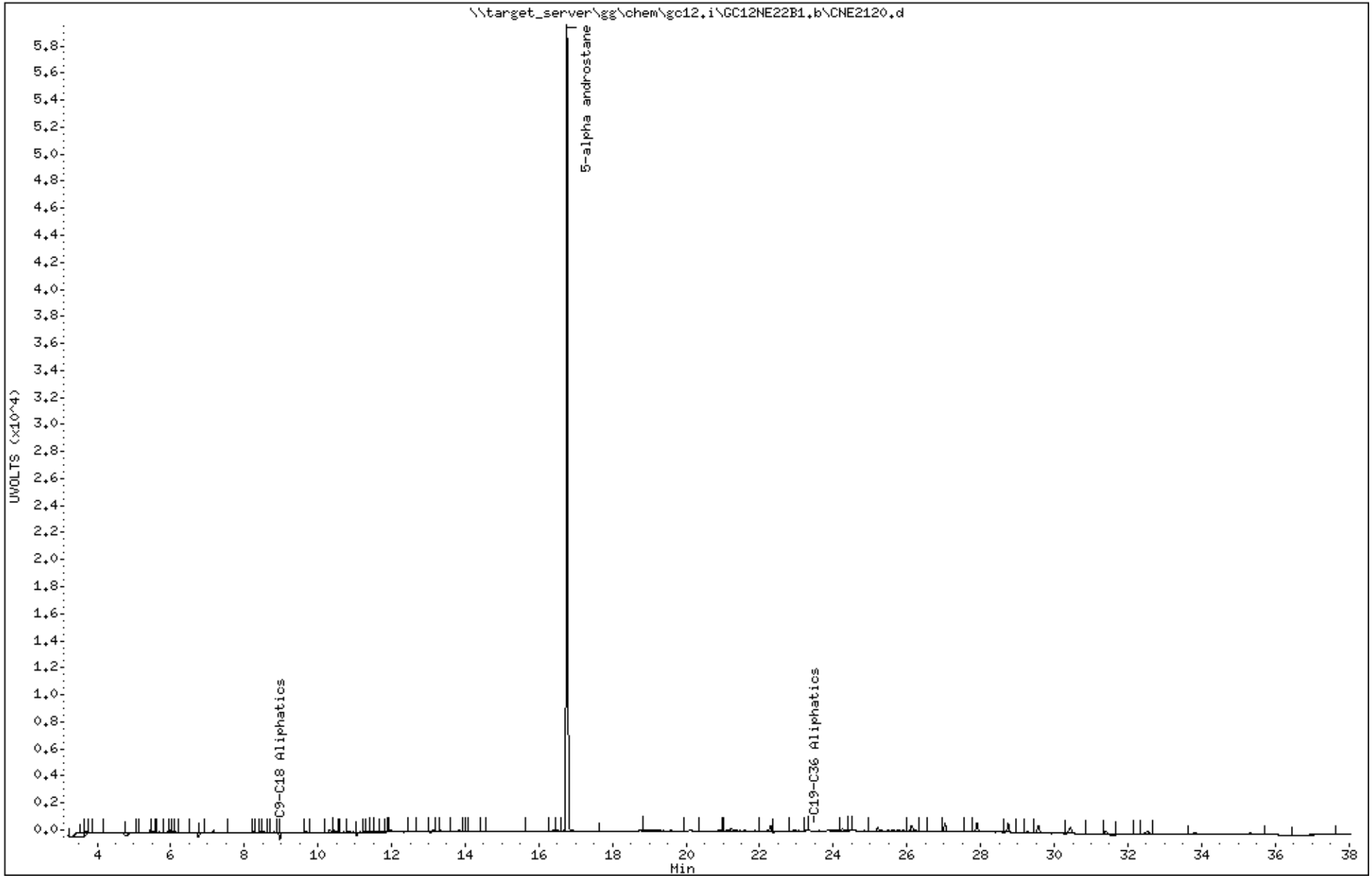
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Lab Smp Id: SN3820-4 Client Smp ID: LFM-99-06ARP-SPR20
Inj Date : 22-MAY-2020 22:40
Operator : AAB Inst ID: gc12.i
Smp Info : SN3820-4
Misc Info : WG278377,WG278026,WG273574-9
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\ALIB070A.m
Meth Date : 26-May-2020 10:25 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC2023.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: ALIPHATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.070	Sample Volume (L)
Cpnd Variable		Local Compound Variable

					CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	
Compounds	RT	EXP RT	DLT RT	RESPONSE			REVIEW CODE
$ 44 5-alpha androstane	16.765	16.778	-0.013	224727	22.5401	42.1	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2120.d
Date : 22-MAY-2020 22:40
Client ID: LFM-99-06ARP-SPR20
Instrument: gc12.i
Sample Info: SN3820-4
Purge Volume: 1.1
Operator: AAB
Column phase: RTX-1
Column diameter: 0.53



Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1120a.d
Report Date: 28-May-2020 20:07

Katahdin Analytical Services

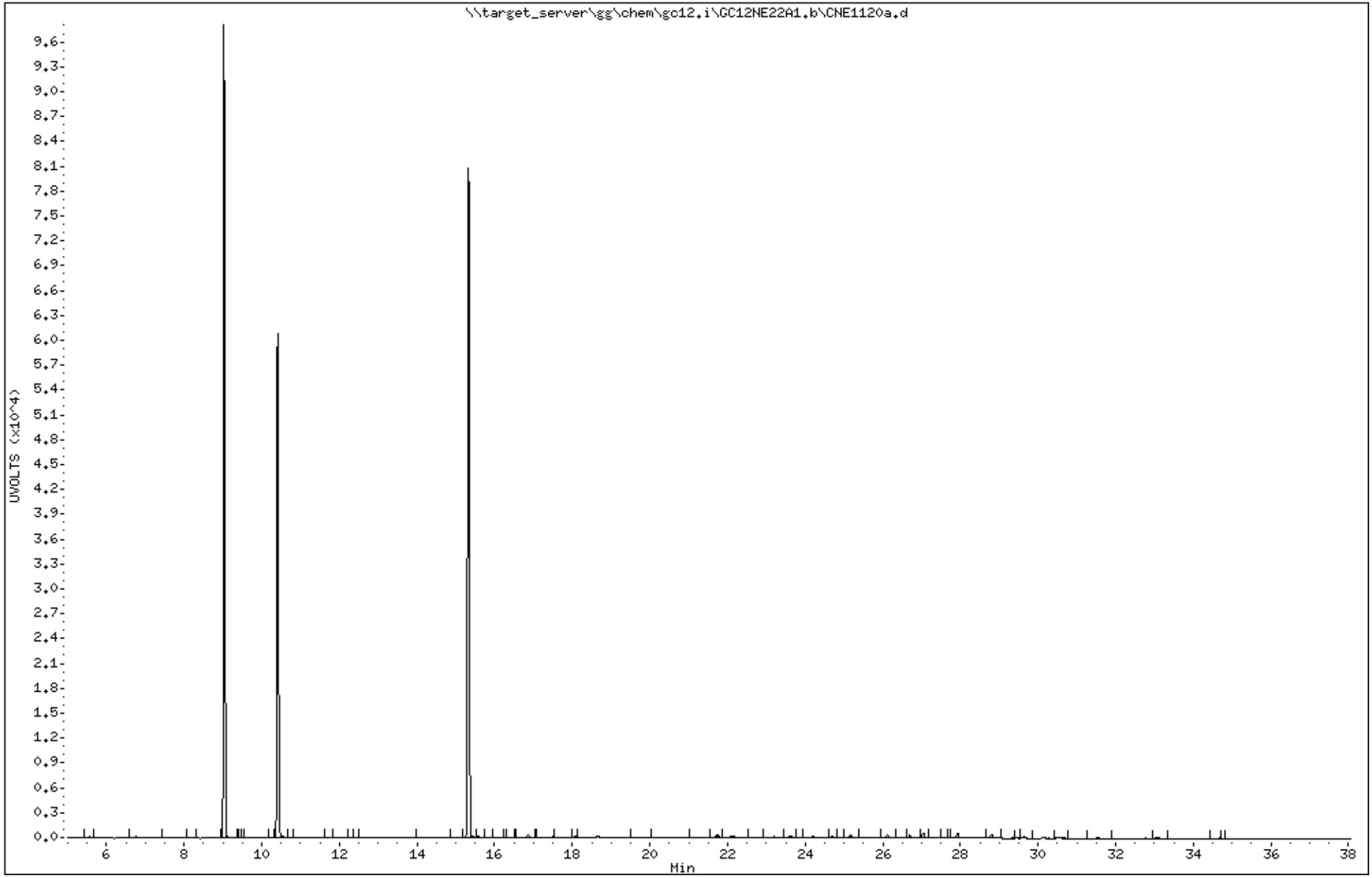
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Lab Smp Id: SN3820-4 Client Smp ID: LFM-99-06ARP-SPR20
Inj Date : 22-MAY-2020 22:40
Operator : AAB Inst ID: gc12.i
Smp Info : SN3820-4
Misc Info : WG278377,WG278026,WG273574-3
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: PAH.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.070	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1120a.d
Date : 22-MAY-2020 22:40
Client ID: LFM-99-06ARP-SPR20
Instrument: gc12.i
Sample Info: SN3820-4
Purge Volume: 1.1
Operator: AAB
Column phase: RTX-5
Column diameter: 0.53



06/07/2020
Katahdin Analytical Services 2000041

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1120.d
Report Date: 28-May-2020 20:07

Katahdin Analytical Services

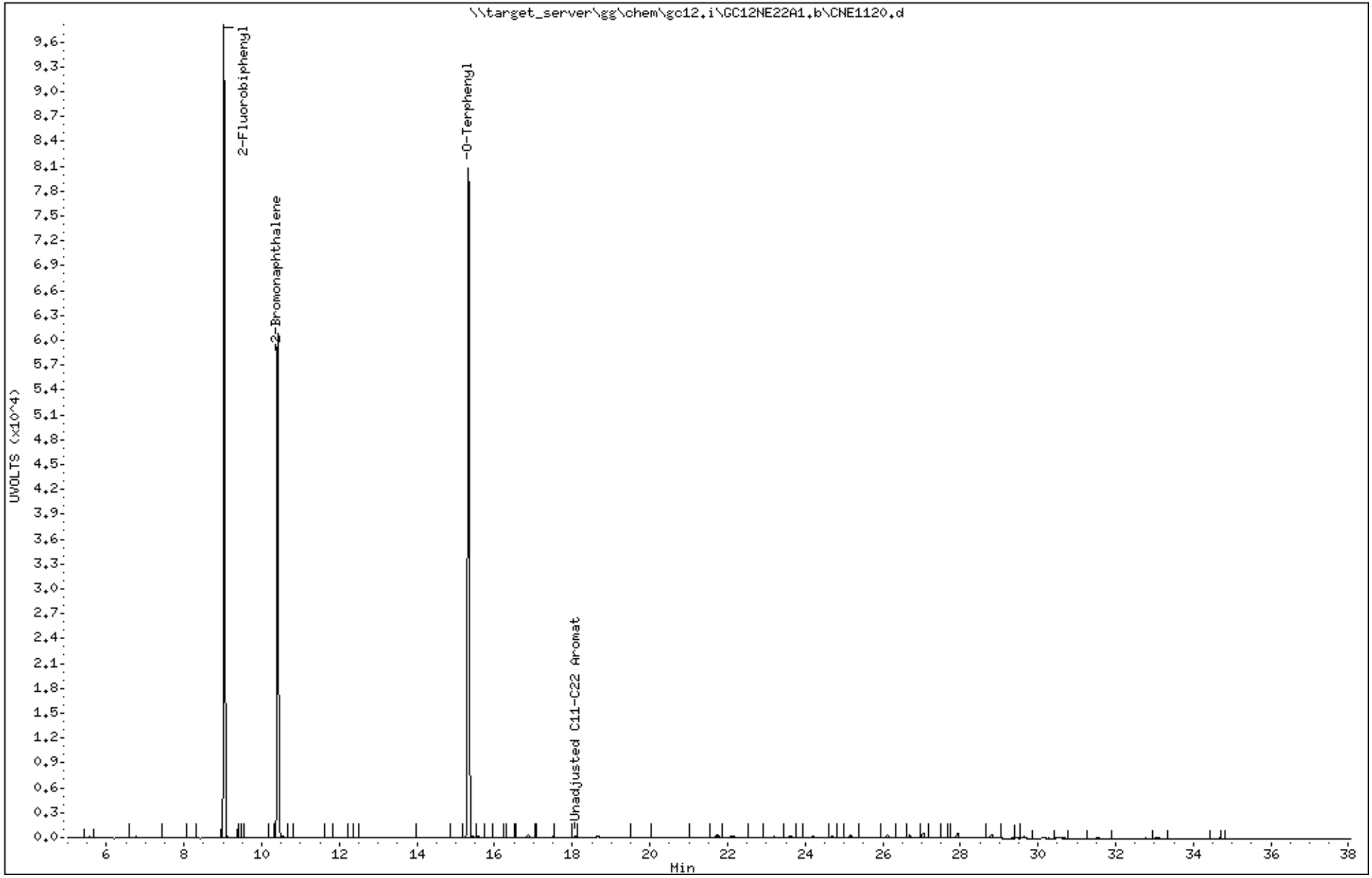
Data file : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1120.d
Lab Smp Id: SN3820-4 Client Smp ID: LFM-99-06ARP-SPR20
Inj Date : 22-MAY-2020 22:40
Operator : AAB Inst ID: gc12.i
Smp Info : SN3820-4
Misc Info : WG278377,WG278026,WG273574-3
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: AROMATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.070	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 4 2-Fluorobiphenyl	9.030	9.054	-0.024	273071	31.4303	58.7	
$ 6 2-Bromonaphthalene	10.407	10.430	-0.023	184900	30.9327	57.8	
$ 11 O-Terphenyl	15.325	15.346	-0.021	289412	27.9728	52.3	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1120.d
Date : 22-MAY-2020 22:40
Client ID: LFM-99-06ARP-SPR20
Instrument: gc12.i
Sample Info: SN3820-4
Purge Volume: 1.1
Operator: AAB
Column phase: RTX-5
Column diameter: 0.53



Standards Data Section

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN3820
Project : JV, LTM, DCL Spring 2020 **Instrument ID:** GC12
Lab File IDs : CNC1023.d CNC1022.d CNC1021.d CNC1020.d CNC1019.d **Calibration Date(s):** 06-MAR-20 11:58 06-MAR-20 15:00

	1.0000 Level 1	10.0000 Level 2	50.0000 Level 3	100.0000 Level 4	200.0000 Level 5		New Crv	b	m1	m2	%RSD	Max %RSD	
Unadjusted C11-C22 Aromatic	11371	10074	9250	9133	9951		AVG		9956		8.97242	25.00000	M (
Naphthalene	10735	9813	9200	9191	9943		AVG		9776		6.51655	25.00000	O
2-Methylnaphthalene	10255	9764	9180	9120	9882		AVG		9640		5.01227	25.00000	O
Acenaphthylene	11004	9891	9211	9119	9929		AVG		9831		7.68065	25.00000	O
Acenaphthene	11490	10086	9327	9240	10053		AVG		10039		8.98320	25.00000	O
Fluorene	10794	9842	9123	9086	9872		AVG		9743		7.16230	25.00000	O
Phenanthrene	9628	9614	9037	8959	9792		AVG		9406		4.03949	25.00000	O
Anthracene	12544	10063	9093	9009	9851		AVG		10112		14.19291	25.00000	O
Fluoranthene	11860	10138	9231	9100	9944		AVG		10055		10.97242	25.00000	O
Pyrene	11940	10456	9427	9272	10125		AVG		10244		10.40901	25.00000	O
Benzo(a)Anthracene	9587	10127	9251	9178	9993		AVG		9627		4.43352	25.00000	O
Chrysene	12869	10556	9337	9132	9925		AVG		10364		14.53464	25.00000	O
Benzo(b)Fluoranthene	11494	10613	10180	10298	11263		AVG		10770		5.41892	25.00000	O
Benzo(k)Fluoranthene	13075	10075	8763	8314	9042		AVG		9854		19.41921	25.00000	O
Benzo(a)Pyrene	12804	10095	9245	9087	9912		AVG		10229		14.68255	25.00000	O
Indeno(1,2,3-cd)Pyrene	9476	10307	10177	10130	11311		AVG		10280		6.42112	25.00000	O
Dibenzo(a,h)Anthracene	11876	9910	8476	8208	8717		AVG		9438		16.00254	25.00000	O
Benzo(g,h,i)Perylene	11871	9907	8998	8819	9618		AVG		9842		12.37185	25.00000	O
2-Fluorobiphenyl	8755	8953	8389	8295	9049		AVG		8688		3.85622	25.00000	
2-Bromonaphthalene	6115	6013	5760	5733	6267		AVG		5977		3.84577	25.00000	
O-Terphenyl	12500	10279	9412	9370	10169		AVG		10346		12.32082	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1026.d
Report Date: 18-Mar-2020 20:28

Katahdin Analytical Services

RECOVERY REPORT

Client Name: Client SDG: SDGa02536
Sample Matrix: LIQUID Fraction: DRO
Lab Smp Id: WG273574-6
Level: LOW Operator: AAB
Data Type: GC DATA SampleType: LCS
SpikeList File: ind.spk Quant Type: ESTD
Sublist File: ind.sub
Method File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\AROA081A.m
Misc Info: WG273574,WG273574,WG273574-3,SN1975-1

SPIKE	COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
2	Naphthalene	100	91.5	91.50	75-125
3	2-Methylnaphthalen	100	94.2	94.20	75-125
5	Acenaphthylene	100	86.7	86.71	75-125
7	Acenaphthene	100	89.1	89.08	75-125
8	Fluorene	100	91.7	91.72	75-125
9	Phenanthrene	100	95.4	95.41	75-125
10	Anthracene	100	88.2	88.26	75-125
12	Fluoranthene	100	91.7	91.69	75-125
13	Pyrene	100	89.5	89.47	75-125
16	Benzo(a)Anthracene	100	92.2	92.17	75-125
17	Chrysene	100	88.5	88.50	75-125
18	Benzo(b)Fluoranthe	100	89.6	89.63	75-125
19	Benzo(k)Fluoranthe	100	87.8	87.80	75-125
20	Benzo(a)Pyrene	100	89.8	89.76	75-125
21	Indeno(1,2,3-cd)Py	100	95.8	95.79	75-125
22	Dibenzo(a,h)Anthra	100	88.9	88.92	75-125
23	Benzo(g,h,i)Peryle	100	92.0	92.01	75-125

Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1026.d
Report Date: 18-Mar-2020 20:28

Katahdin Analytical Services

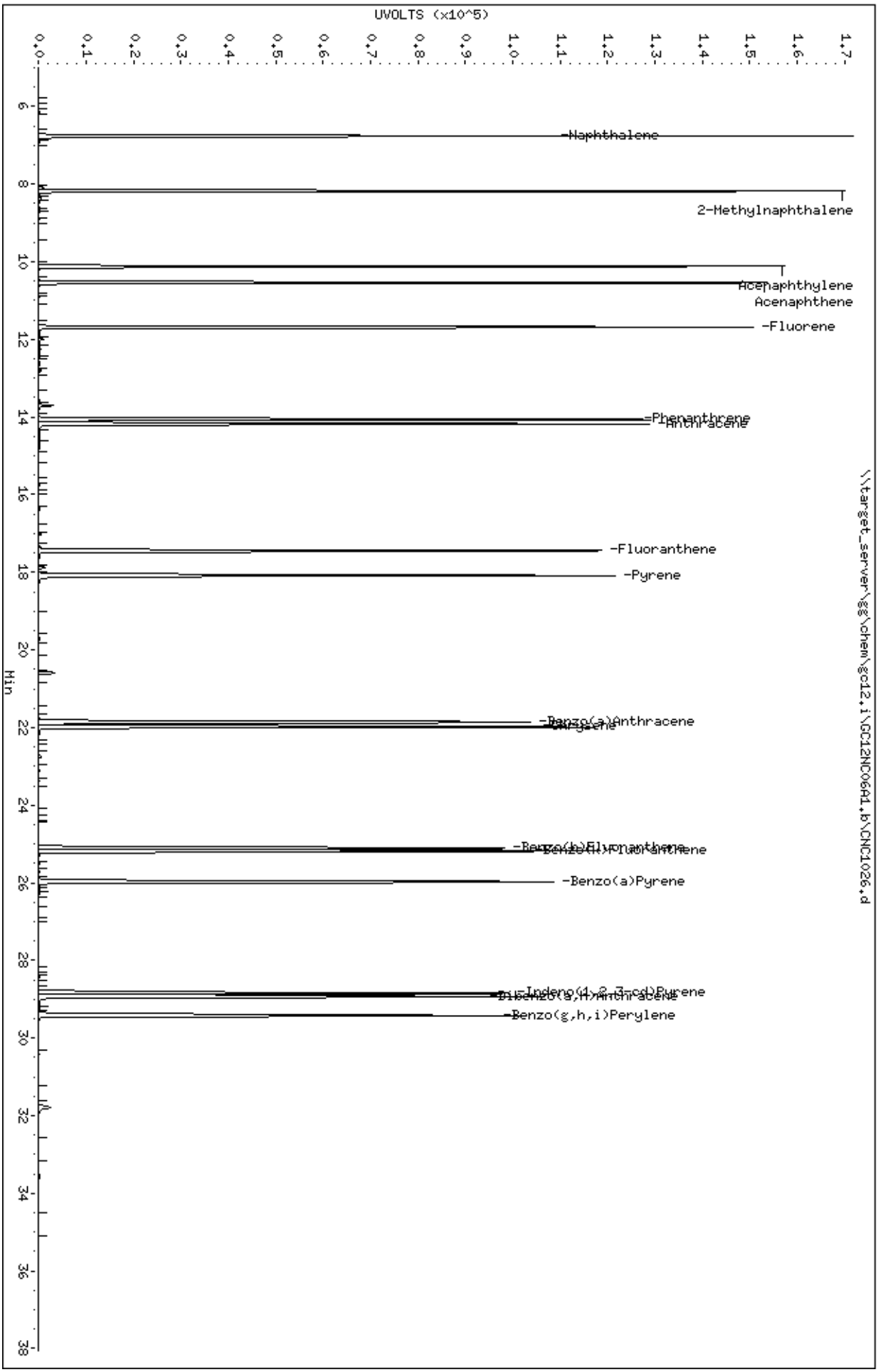
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Lab Smp Id: WG273574-6
Inj Date : 09-MAR-2020 06:23
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-6,SN1975
Misc Info : WG273574,WG273574,WG273574-3,SN1975-1
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\AROA081A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00   Cal File: CNC1023.d
Als bottle: 1   QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: ind.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
2 Naphthalene	6.759	6.784	-0.025	447250	45.7490	91.5	
3 2-Methylnaphthalene	8.174	8.200	-0.026	454031	47.0979	94.2	
5 Acenaphthylene	10.121	10.149	-0.028	426217	43.3553	86.7	
7 Acenaphthene	10.538	10.567	-0.029	447169	44.5419	89.1	
8 Fluorene	11.683	11.716	-0.033	446847	45.8620	91.7	
9 Phenanthrene	14.060	14.098	-0.038	448734	47.7062	95.4	
10 Anthracene	14.179	14.218	-0.039	446229	44.1285	88.2	
12 Fluoranthene	17.446	17.487	-0.041	460971	45.8471	91.7	
13 Pyrene	18.082	18.124	-0.042	458282	44.7372	89.5	
16 Benzo(a)Anthracene	21.859	21.900	-0.041	443651	46.0838	92.2	
17 Chrysene	21.983	22.023	-0.040	458604	44.2501	88.5	
18 Benzo(b)Fluoranthene	25.112	25.155	-0.043	482642	44.8147	89.6(M)	M6
19 Benzo(k)Fluoranthene	25.184	25.225	-0.041	432587	43.9011	87.8(M)	
20 Benzo(a)Pyrene	25.975	26.016	-0.041	459065	44.8806	89.8	
21 Indeno(1,2,3-cd)Pyrene	28.845	28.887	-0.042	492346	47.8931	95.8	
22 Dibenzo(a,h)Anthracene	28.931	28.971	-0.040	419594	44.4597	88.9	
23 Benzo(g,h,i)Perylene	29.422	29.462	-0.040	452808	46.0058	92.0	

AAB
8:32 pm, Mar 18, 2020


Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1026.d
Date : 09-MAR-2020 06:23
Client ID:
Sample Info: WG273574-6,SN1975
Purge Volume: 1.0
Column phase: RTX-5
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1026.d
UVOLTS (x10^5)
Min
-Naphthalene
2-Methylnaphthalene
Acenaphthylene
Acenaphthene
-Fluorene
-Phenanthrene
Anthracene
-Fluoranthene
-Pyrene
-Benzo(a)Anthracene
Chrysene
-Benzo(b)Fluoranthene
Benzo(k)Fluoranthene
-Benzo(a)Pyrene
-Indeno(1,2,3-cd)Pyrene
Dibenzo(a,h)Anthracene
-Benzo(g,h,i)Perylene

Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1019.d
Report Date: 18-Mar-2020 20:22

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1019.d
Lab Smp Id: WG273574-5
Inj Date : 06-MAR-2020 11:58
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-5
Misc Info :
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\AROA081A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 11:58   Cal File: CNC1019.d
Als bottle: 1   Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: ICAL.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1018.d
Target Version: 4.12
Processing Host: V200T1

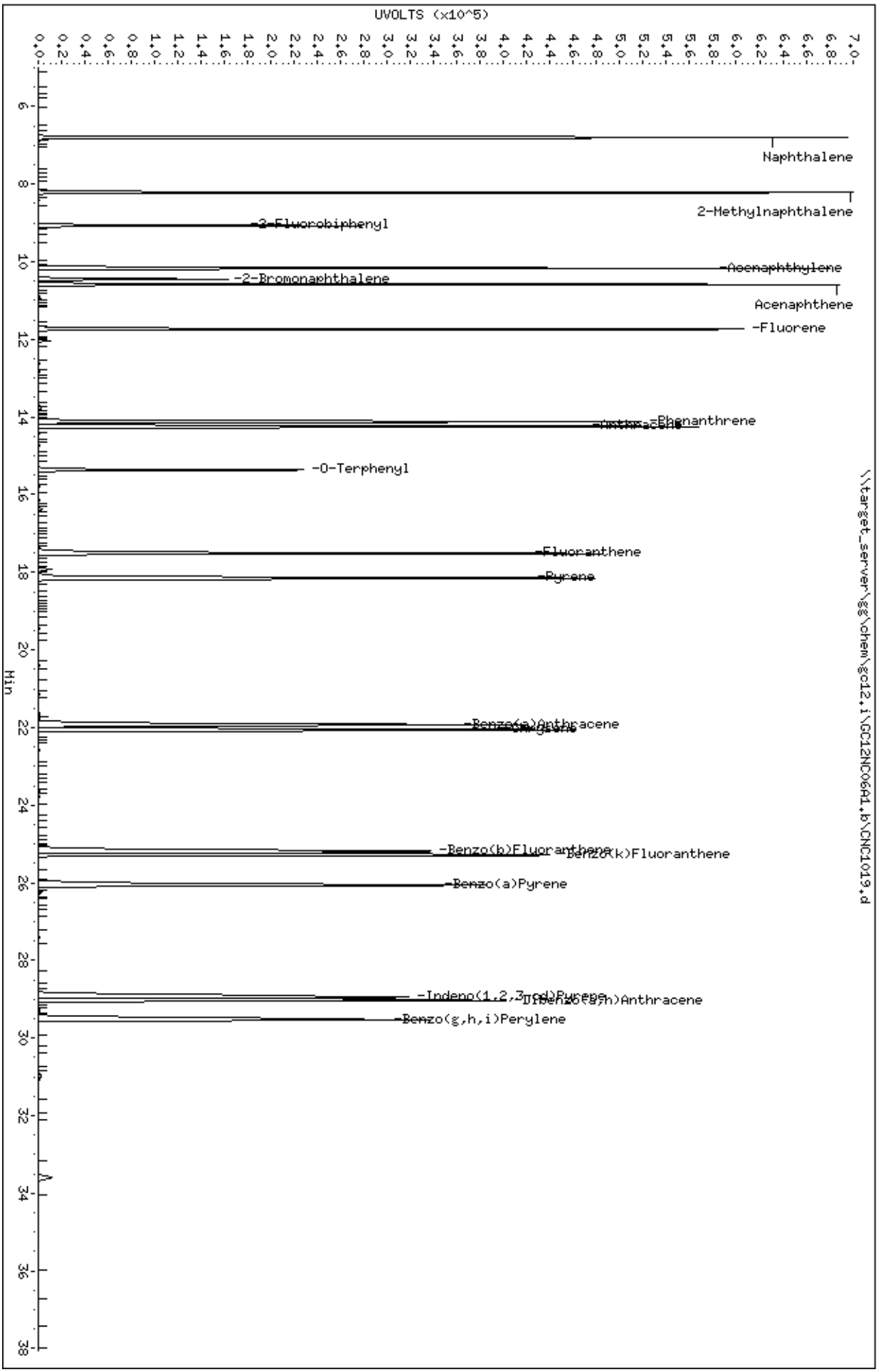
Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
2	Naphthalene	6.794	6.784	0.010	1988564	200.000	210(A)	
3	2-Methylnaphthalene	8.215	8.200	0.015	1976334	200.000	210(A)	
$ 4	2-Fluorobiphenyl	9.066	9.057	0.009	723892	80.0000	84.4	
5	Acenaphthylene	10.169	10.149	0.020	1985803	200.000	211(A)	
$ 6	2-Bromonaphthalene	10.447	10.436	0.011	501364	80.0000	84.7	
7	Acenaphthene	10.587	10.567	0.020	2010683	200.000	211(A)	
8	Fluorene	11.737	11.716	0.021	1974467	200.000	211(A)	
9	Phenanthrene	14.125	14.098	0.027	1958470	200.000	211(A)	
10	Anthracene	14.250	14.218	0.032	1970168	200.000	211(A)	
$ 11	O-Terphenyl	15.365	15.355	0.010	813552	80.0000	84.3	
12	Fluoranthene	17.517	17.487	0.030	1988713	200.000	211(A)	
13	Pyrene	18.156	18.124	0.032	2024935	200.000	211(A)	
16	Benzo(a)Anthracene	21.932	21.900	0.032	1998556	200.000	211(A)	
17	Chrysene	22.065	22.023	0.042	1985002	200.000	210(A)	
18	Benzo(b)Fluoranthene	25.193	25.155	0.038	2252634	200.000	213(AM)	M6
19	Benzo(k)Fluoranthene	25.283	25.225	0.058	1808380	200.000	208(AM)	
20	Benzo(a)Pyrene	26.064	26.016	0.048	1982440	200.000	210(A)	
21	Indeno(1,2,3-cd)Pyrene	28.947	28.887	0.060	2262164	200.000	215(AM)	
22	Dibenzo(a,h)Anthracene	29.030	28.971	0.059	1743472	200.000	206(AM)	
23	Benzo(g,h,i)Perylene	29.531	29.462	0.069	1923620	200.000	210(A)	
M 1	Unadjusted C11-C22 Aromatic				33834405	3400.00	3580	



8:23 pm, Mar 18, 2020



Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1019.d
Date : 06-MAR-2020 11:58
Client ID:
Sample Info: WG273574-5
Purge Volume: 1.0
Column phase: RTX-5

Instrument: gc12.i
Operator: AAB
Column diameter: 0.53

Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1020.d
Report Date: 18-Mar-2020 20:22

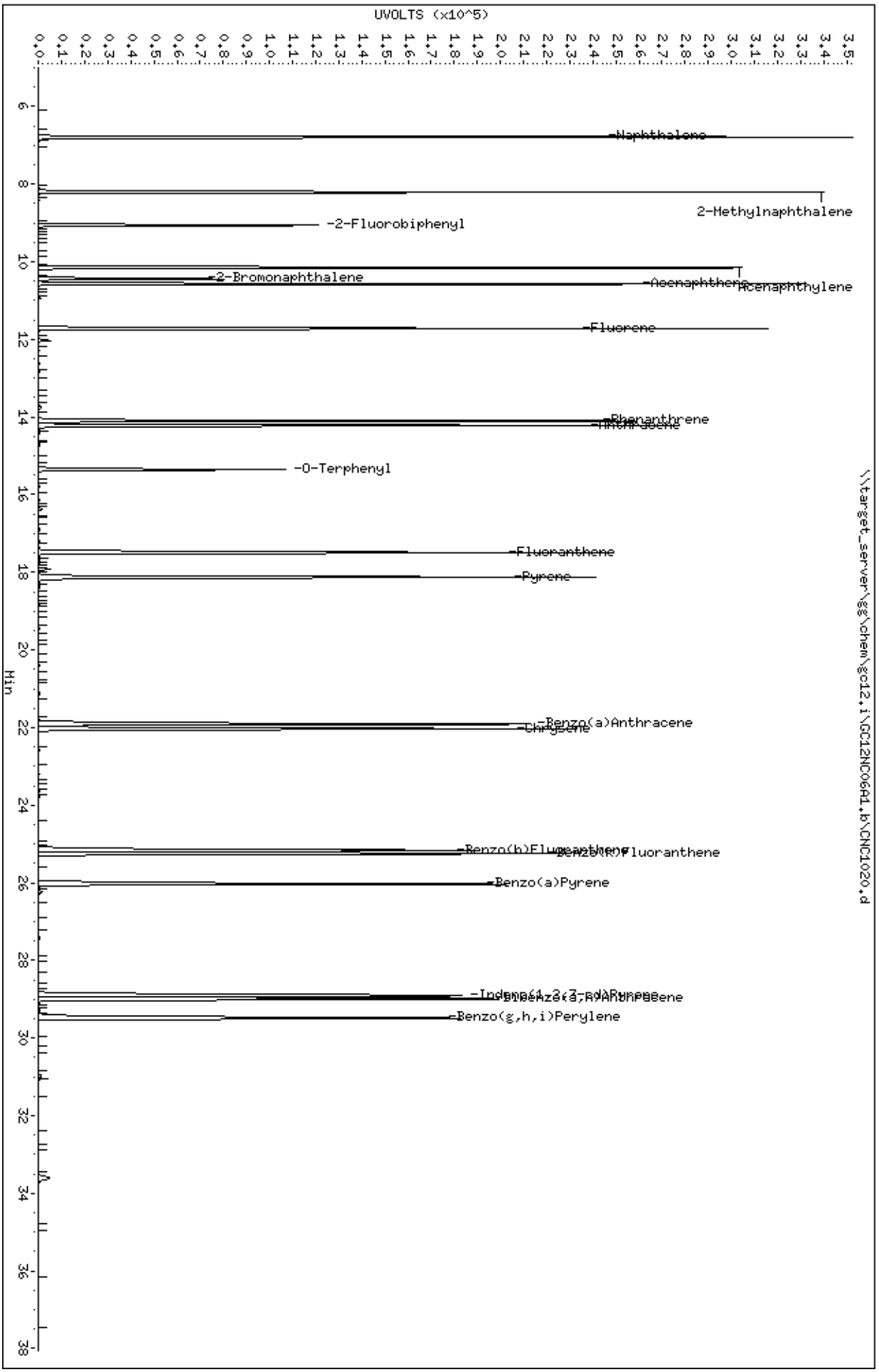
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1020.d
Lab Smp Id: WG273574-4
Inj Date : 06-MAR-2020 12:43
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-4
Misc Info :
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\AROA081A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 12:43   Cal File: CNC1020.d
Als bottle: 1   Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: ICAL.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/ml)	AMOUNTS ON-COL (ug/ml)	REVIEW CODE
2	Naphthalene	6.785	6.784	0.001	919056	100.000	97.3	
3	2-Methylnaphthalene	8.201	8.200	0.001	912000	100.000	97.1	
$ 4	2-Fluorobiphenyl	9.056	9.057	-0.001	331781	40.0000	38.7	
5	Acenaphthylene	10.152	10.149	0.003	911908	100.000	96.8	
$ 6	2-Bromonaphthalene	10.436	10.436	0.000	229300	40.0000	38.7	
7	Acenaphthene	10.570	10.567	0.003	924012	100.000	96.8	
8	Fluorene	11.718	11.716	0.002	908584	100.000	97.1	
9	Phenanthrene	14.101	14.098	0.003	895921	100.000	96.7	
10	Anthracene	14.223	14.218	0.005	900934	100.000	96.7	
$ 11	O-Terphenyl	15.351	15.355	-0.004	374793	40.0000	38.8	
12	Fluoranthene	17.492	17.487	0.005	910005	100.000	96.6	
13	Pyrene	18.131	18.124	0.007	927228	100.000	96.5	
16	Benzo(a)Anthracene	21.909	21.900	0.009	917762	100.000	96.9	
17	Chrysene	22.037	22.023	0.014	913198	100.000	96.5	
18	Benzo(b)Fluoranthene	25.170	25.155	0.015	1029810	100.000	105	
19	Benzo(k)Fluoranthene	25.247	25.225	0.022	831353	100.000	88.0	
20	Benzo(a)Pyrene	26.035	26.016	0.019	908654	100.000	96.5	
21	Indeno(1,2,3-cd)Pyrene	28.909	28.887	0.022	1012962	100.000	105	
22	Dibenzo(a,h)Anthracene	28.994	28.971	0.023	820838	100.000	88.0	
23	Benzo(g,h,i)Perylene	29.488	29.462	0.026	881868	100.000	96.4	
M 1	Unadjusted C11-C22 Aromatic				15526093	1700.00	1640	


Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1020.d
Date : 06-MAR-2020 12:43
Client ID:
Sample Info: WG273574-4
Purge Volume: 1.0
Column phase: RTX-5
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
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UVOLTS (x10^5)
Min
Naphthalene
2-Methylnaphthalene
2-Fluorobiphenyl
2-Bromonaphthalene
Acenaphthene
Acenaphthylene
Fluorene
Phenanthrene
Anthracene
o-Terphenyl
Fluoranthene
Pyrene
Benzo(a)Anthracene
Chrysene
Benzo(b)Fluoranthene
Benzo(k)Fluoranthene
Benzo(a)Pyrene
Indeno(1,2,3-cd)Pyrene
Dibenz(a,h)Anthracene
Benzo(g,h,i)Perylene

Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1021.d
Report Date: 18-Mar-2020 20:22

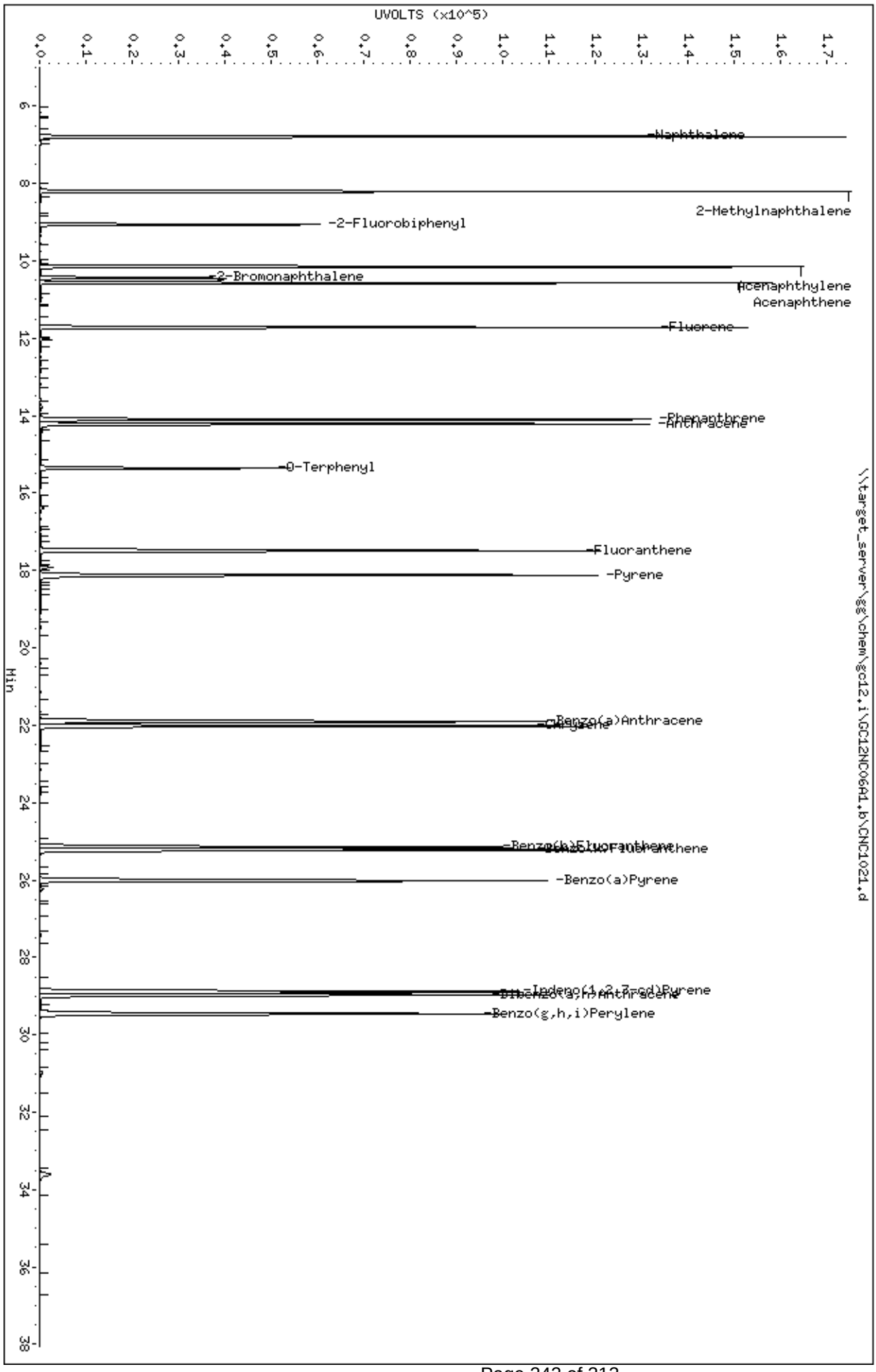
Katahdin Analytical Services

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Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-3
Misc Info :
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\AROA081A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 13:29   Cal File: CNC1021.d
Als bottle: 1   Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: ICAL.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	2 Naphthalene	6.784	6.784	0.000	459997	50.0000	50.0	
	3 2-Methylnaphthalene	8.200	8.200	0.000	459006	50.0000	50.0	
$	4 2-Fluorobiphenyl	9.057	9.057	0.000	167785	20.0000	20.0	
	5 Acenaphthylene	10.149	10.149	0.000	460544	50.0000	50.0	
$	6 2-Bromonaphthalene	10.436	10.436	0.000	115198	20.0000	20.0	
	7 Acenaphthene	10.567	10.567	0.000	466338	50.0000	50.0	
	8 Fluorene	11.716	11.716	0.000	456126	50.0000	50.0	
	9 Phenanthrene	14.098	14.098	0.000	451863	50.0000	50.0	
	10 Anthracene	14.218	14.218	0.000	454659	50.0000	50.0	
$	11 O-Terphenyl	15.355	15.355	0.000	188249	20.0000	20.0	
	12 Fluoranthene	17.487	17.487	0.000	461545	50.0000	50.0	
	13 Pyrene	18.124	18.124	0.000	471331	50.0000	50.0	
	16 Benzo(a)Anthracene	21.900	21.900	0.000	462545	50.0000	50.0	
	17 Chrysene	22.023	22.023	0.000	466870	50.0000	50.0	
	18 Benzo(b)Fluoranthene	25.155	25.155	0.000	509021	50.0000	50.0	
	19 Benzo(k)Fluoranthene	25.225	25.225	0.000	438159	50.0000	50.0	
	20 Benzo(a)Pyrene	26.016	26.016	0.000	462267	50.0000	50.0	
	21 Indeno(1,2,3-cd)Pyrene	28.887	28.887	0.000	508859	50.0000	50.0	
	22 Dibenzo(a,h)Anthracene	28.971	28.971	0.000	423803	50.0000	50.0	
	23 Benzo(g,h,i)Perylene	29.462	29.462	0.000	449888	50.0000	50.0	
M	1 Unadjusted C11-C22 Aromatic				7862821	850.000	850	


Data File: \\target_server\gc\chem\gc12.i\GC12NC06A1.b\CNC1021.d
Date : 06-MAR-2020 13:29
Client ID:
Sample Info: WG273574-3
Purge Volume: 1.0
Column phase: RTX-5
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gc\chem\gc12.i\GC12NC06A1.b\CNC1021.d
UVOLTS (x10^5)
Min
Naphthalene
2-Methylnaphthalene
-2-Fluorobiphenyl
2-Bromonaphthalene
Acenaphthylene
Acenaphthene
Fluorene
Phenanthrene
Anthracene
0-Terphenyl
Fluoranthene
Pyrene
Benzo(a)Anthracene
Chrysene
Benzo(b)Fluoranthene
Benzo(k)Fluoranthene
Benzo(a)Pyrene
Indeno(1,2,3-cd)Pyrene
Dibenzo(a,h)Anthracene
Benzo(g,h,i)Perylene

Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1022.d
Report Date: 18-Mar-2020 20:22

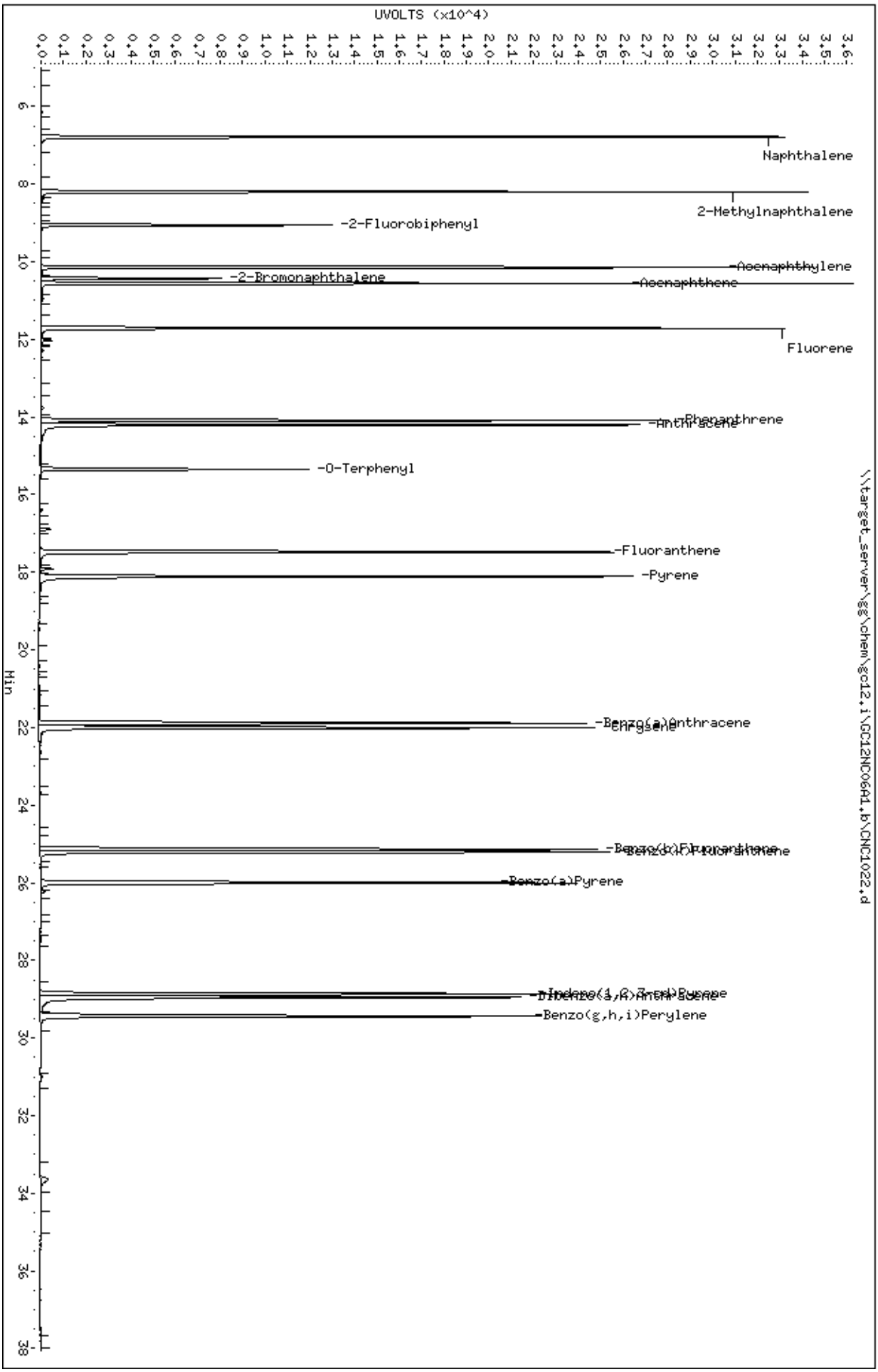
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1022.d
Lab Smp Id: WG273574-2
Inj Date : 06-MAR-2020 14:14
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-2
Misc Info :
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\AROA081A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 14:14   Cal File: CNC1022.d
Als bottle: 1   Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: ICAL.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	2 Naphthalene	6.780	6.784	-0.004	98125	10.0000	10.3	
	3 2-Methylnaphthalene	8.195	8.200	-0.005	97640	10.0000	10.3	
$	4 2-Fluorobiphenyl	9.053	9.057	-0.004	35813	4.00000	4.13	
	5 Acenaphthylene	10.142	10.149	-0.007	98910	10.0000	10.4	
$	6 2-Bromonaphthalene	10.430	10.436	-0.006	24052	4.00000	4.05	
	7 Acenaphthene	10.558	10.567	-0.009	100861	10.0000	10.4	
	8 Fluorene	11.707	11.716	-0.009	98418	10.0000	10.4	
	9 Phenanthrene	14.085	14.098	-0.013	96142	10.0000	10.3	
	10 Anthracene	14.205	14.218	-0.013	100628	10.0000	10.6	
$	11 O-Terphenyl	15.346	15.355	-0.009	41117	4.00000	4.19	
	12 Fluoranthene	17.473	17.487	-0.014	101381	10.0000	10.6	
	13 Pyrene	18.110	18.124	-0.014	104558	10.0000	10.6	
	16 Benzo(a)Anthracene	21.884	21.900	-0.016	101269	10.0000	10.5	
	17 Chrysene	22.005	22.023	-0.018	105562	10.0000	10.8	
	18 Benzo(b)Fluoranthene	25.136	25.155	-0.019	106129	10.0000	10.0	
	19 Benzo(k)Fluoranthene	25.202	25.225	-0.023	100748	10.0000	11.1	
	20 Benzo(a)Pyrene	25.999	26.016	-0.017	100948	10.0000	10.5	
	21 Indeno(1,2,3-cd)Pyrene	28.862	28.887	-0.025	103069	10.0000	9.83	
	22 Dibenzo(a,h)Anthracene	28.951	28.971	-0.020	99103	10.0000	11.2	
	23 Benzo(g,h,i)Perylene	29.434	29.462	-0.028	99065	10.0000	10.6	
M	1 Unadjusted C11-C22 Aromatic				1712556	170.000	178	



Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1022.d
Date : 06-MAR-2020 14:14
Client ID:
Sample Info: WG273574-2
Purge Volume: 1.0
Column phase: RTX-5

Instrument: gc12.i
Operator: AAB
Column diameter: 0.53

Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1023.d
Report Date: 18-Mar-2020 20:22

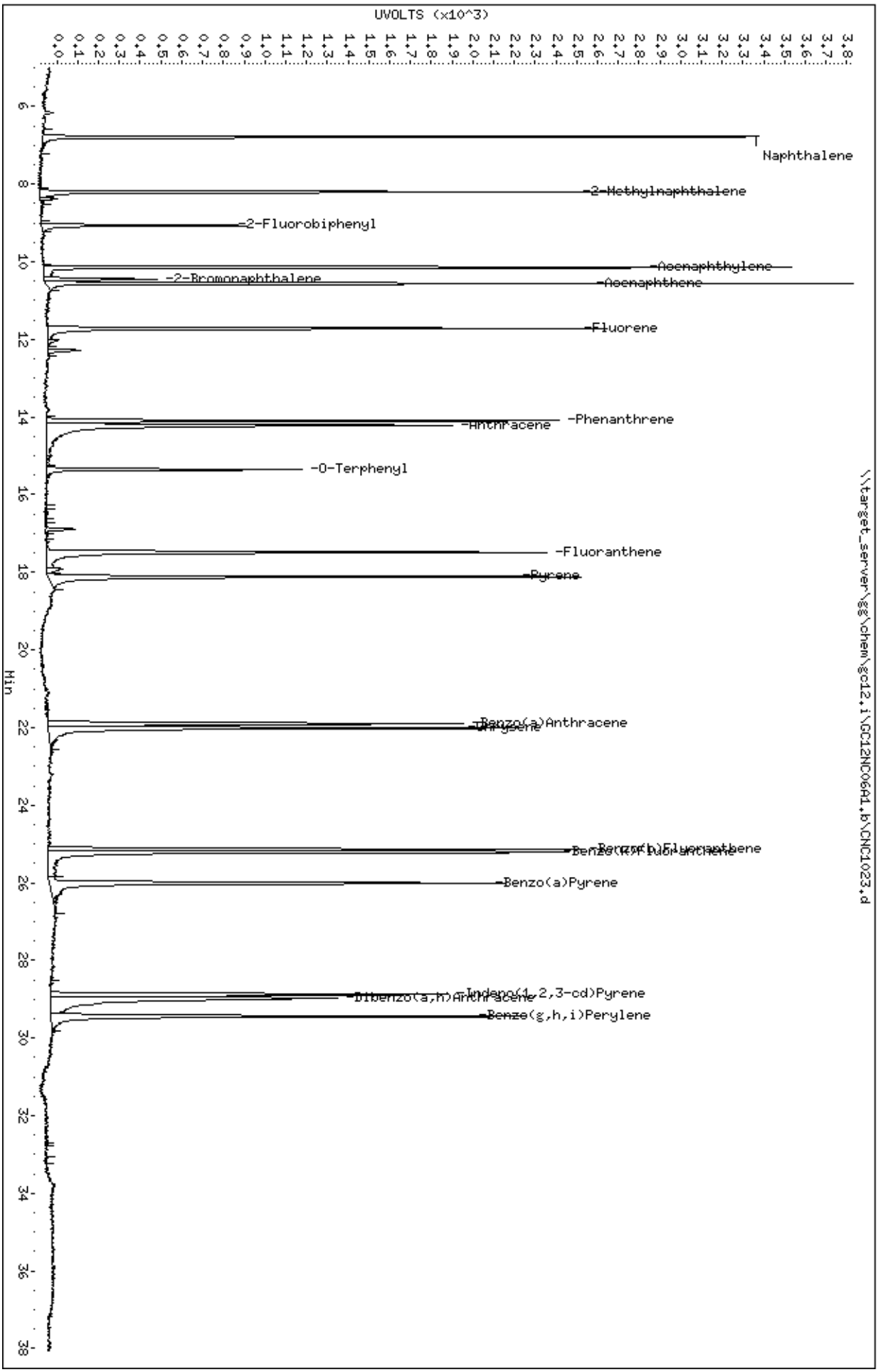
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1023.d
Lab Smp Id: WG273574-1
Inj Date : 06-MAR-2020 15:00
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-1
Misc Info :
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\AROA081A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00   Cal File: CNC1023.d
Als bottle: 1   Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: ICAL.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/ml)	(ug/ml)	REVIEW CODE
	2 Naphthalene	6.779	6.784	-0.005	10735	1.00000	1.10	
	3 2-Methylnaphthalene	8.197	8.200	-0.003	10255	1.00000	1.06	
$	4 2-Fluorobiphenyl	9.062	9.057	0.005	3502	0.40000	0.403	
	5 Acenaphthylene	10.144	10.149	-0.005	11004	1.00000	1.12	
$	6 2-Bromonaphthalene	10.444	10.436	0.008	2446	0.40000	0.409	
	7 Acenaphthene	10.559	10.567	-0.008	11490	1.00000	1.14	
	8 Fluorene	11.715	11.716	-0.001	10794	1.00000	1.11	
	9 Phenanthrene	14.094	14.098	-0.004	9628	1.00000	1.02	
	10 Anthracene	14.217	14.218	-0.001	12544	1.00000	1.24	
$	11 O-Terphenyl	15.351	15.355	-0.004	5000	0.40000	0.483	
	12 Fluoranthene	17.481	17.487	-0.006	11860	1.00000	1.18	
	13 Pyrene	18.118	18.124	-0.006	11940	1.00000	1.16	
	16 Benzo(a)Anthracene	21.895	21.900	-0.005	9587	1.00000	0.996	
	17 Chrysene	22.012	22.023	-0.011	12869	1.00000	1.24	
	18 Benzo(b)Fluoranthene	25.138	25.155	-0.017	11494	1.00000	1.07	
	19 Benzo(k)Fluoranthene	25.208	25.225	-0.017	13075	1.00000	1.33	
	20 Benzo(a)Pyrene	26.008	26.016	-0.008	12804	1.00000	1.25	
	21 Indeno(1,2,3-cd)Pyrene	28.873	28.887	-0.014	9476	1.00000	0.922	
	22 Dibenzo(a,h)Anthracene	28.974	28.971	0.003	11876	1.00000	1.26	
	23 Benzo(g,h,i)Perylene	29.439	29.462	-0.023	11871	1.00000	1.21	
M	1 Unadjusted C11-C22 Aromatic				193302	17.0000	19.4(a)	


Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1023.d
Date : 06-MAR-2020 15:00
Client ID:
Sample Info: WG273574-1
Purge Volume: 1.0
Column phase: RTX-5
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1023.d
UVOLTS (x10^3)
Min
Naphthalene
2-Methylnaphthalene
2-Fluorobiphenyl
Acenaphthylene
2-Bromonaphthalene
Acenaphthene
Fluorene
Phenanthrene
Anthracene
O-Terphenyl
Fluoranthene
Pyrene
Benzo(a)Anthracene
Chrysene
Benzo(b)Fluoranthene
Benzo(k)Fluoranthene
Benzo(a)Pyrene
Indeno(1,2,3-cd)Pyrene
Dibenzo(a,h)Anthracene
Benzo(g,h,i)Perylene

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN3820
Project : JV, LTM, DCL Spring 2020 **Instrument ID:** GC12
Lab File IDs : CNC2023.d CNC2022.d CNC2021.d CNC2020.d CNC2019.d **Calibration Date(s):** 06-MAR-20 11:58 06-MAR-20 15:00

	Level 1 1.0000	Level 2 10.0000	Level 3 50.0000	Level 4 100.0000	Level 5 200.0000		Crv New	b	m1	m2	%RSD	Max %RSD	
C9-C18 Aliphatic	8740	8199	7921	7515	7446		AVG		7964		6.67229	25.00000	M C
C19-C36 Aliphatic	8522	8717	8076	7576	7541		AVG		8086		6.61570	25.00000	S O
C-9	8370	7551	7922	7595	7503		AVG		7788		4.68116	30.00000	O
C-10	9415	8576	7968	7609	7482		AVG		8210		9.69960	25.00000	O
C-12	8515	8400	8002	7594	7506		AVG		8004		5.70440	25.00000	O
C-14	8800	8177	7914	7452	7395		AVG		7948		7.25834	25.00000	O
C-16	8935	8290	7898	7486	7445		AVG		8011		7.74490	25.00000	O
C-18	8403	8201	7822	7351	7343		AVG		7824		6.17061	25.00000	O
C-19	8990	8577	8050	7649	7611		AVG		8175		7.32983	25.00000	O
C-20	7989	8477	8003	7534	7568		AVG		7914		4.86903	25.00000	O
C-22	8213	8485	8050	7622	7613		AVG		7997		4.74652	25.00000	O
C-24	9359	9332	8168	7607	7603		AVG		8414		10.4734	25.00000	O
C-26	9889	9499	8071	7561	7402		AVG		8484		13.4369	25.00000	O
C-28	8999	8787	8137	7586	7523		AVG		8206		8.22594	25.00000	O
C-30	8088	8681	8187	7608	7536		AVG		8020		5.82428	25.00000	O
C-36	6645	7895	7942	7442	7472		AVG		7479		6.96091	25.00000	O
5-alpha androstane	13400	10104	9174	8620	8553		AVG		9970		20.2140	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2026.d
Report Date: 18-Mar-2020 20:27

Katahdin Analytical Services

RECOVERY REPORT

Client Name: Client SDG: SDGa02536
Sample Matrix: LIQUID Fraction: DRO
Lab Smp Id: WG273574-12
Level: LOW Operator: AAB
Data Type: GC DATA SampleType: LCS
SpikeList File: ind.spk Quant Type: ESTD
Sublist File: IND.sub
Method File: \\TARGET_SERVER\GG\chem\gc12.i\GC12NC06B1.B\ALIB070A.m
Misc Info: WG273574,WG273574,WG273574-9,SN1975-1

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
3 C-9	100	89.4	89.36	75-125
4 C-10	100	84.7	84.67	75-125
5 C-12	100	87.4	87.37	75-125
7 C-14	100	87.2	87.21	75-125
8 C-16	100	89.0	88.98	75-125
9 C-18	100	92.5	92.50	75-125
10 C-19	100	90.2	90.19	75-125
11 C-20	100	91.5	91.53	75-125
13 C-22	100	91.2	91.17	75-125
14 C-24	100	88.5	88.55	75-125
15 C-26	100	87.2	87.25	75-125
16 C-28	100	90.2	90.24	75-125
18 C-30	100	91.9	91.87	75-125
19 C-36	100	90.7	90.70	75-125

Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2026.d
Report Date: 18-Mar-2020 20:27

Katahdin Analytical Services

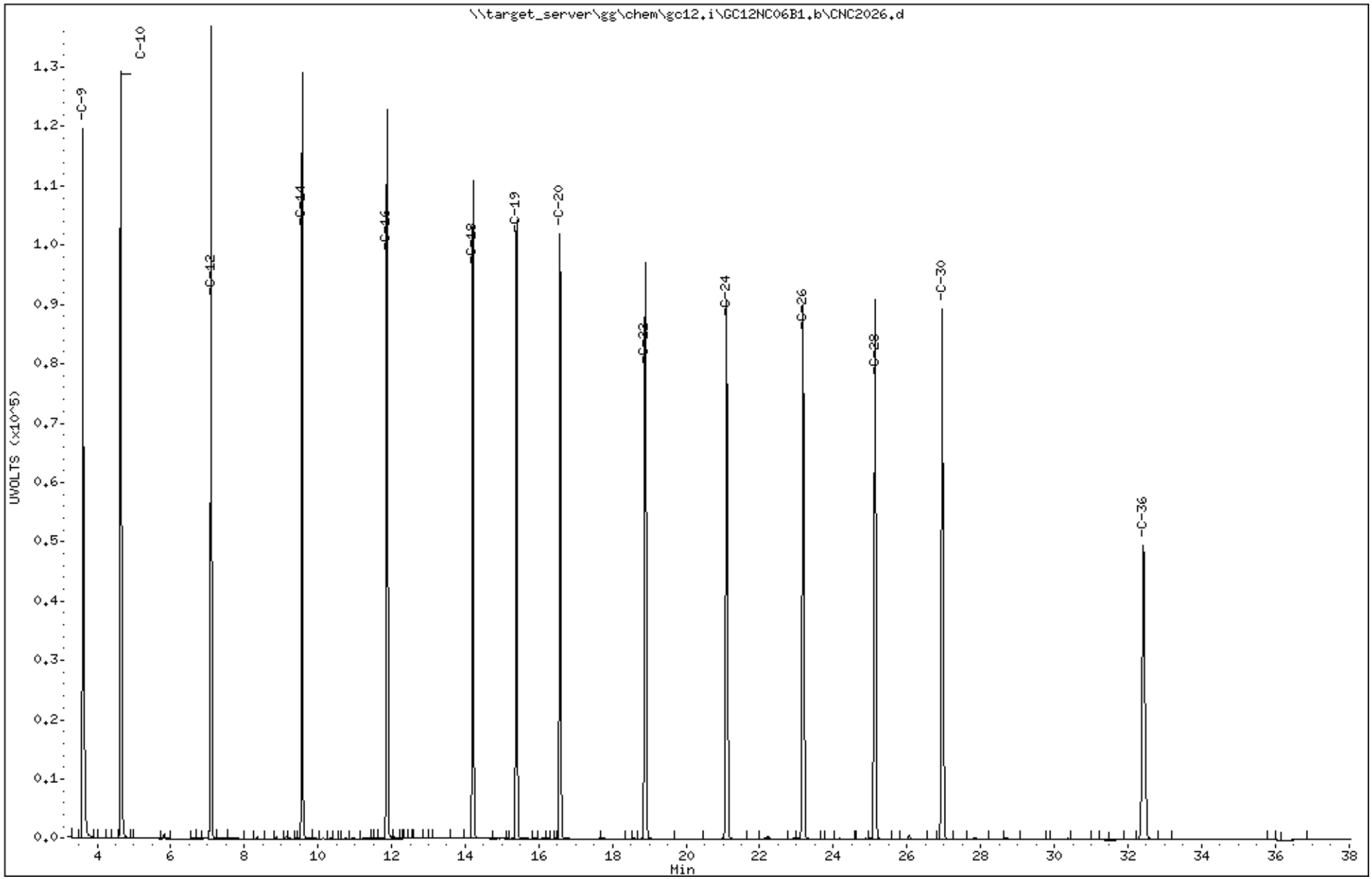
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Lab Smp Id: WG273574-12
Inj Date : 09-MAR-2020 06:23
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-12,SN1975
Misc Info : WG273574,WG273574,WG273574-9,SN1975-1
Comment   :
Method   : \\TARGET_SERVER\GG\chem\gc12.i\GC12NC06B1.B\ALIB070A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00   Cal File: CNC2023.d
Als bottle: 1   QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: IND.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

					CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	
Compounds	RT	EXP RT	DLT RT	RESPONSE			REVIEW CODE
3 C-9	3.616	3.631	-0.015	347961	44.6785	89.4	
4 C-10	4.640	4.653	-0.013	347543	42.3325	84.7	
5 C-12	7.092	7.105	-0.013	349630	43.6846	87.4	
7 C-14	9.570	9.584	-0.014	346576	43.6071	87.2	
8 C-16	11.877	11.896	-0.019	356395	44.4890	89.0	
9 C-18	14.210	14.235	-0.025	361873	46.2518	92.5	
10 C-19	15.394	15.422	-0.028	368655	45.0931	90.2	
11 C-20	16.576	16.602	-0.026	362206	45.7660	91.5	
13 C-22	18.892	18.918	-0.026	364528	45.5850	91.2	
14 C-24	21.101	21.125	-0.024	372512	44.2750	88.5	
15 C-26	23.182	23.202	-0.020	370146	43.6266	87.2	
16 C-28	25.132	25.154	-0.022	370280	45.1205	90.2	
18 C-30	26.962	26.984	-0.022	368390	45.9343	91.9	
19 C-36	32.429	32.461	-0.032	339160	45.3481	90.7	

Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2026.d
Date : 09-MAR-2020 06:23
Client ID:
Instrument: gc12.i
Sample Info: WG273574-12,SN1975
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-1
Column diameter: 0.53



Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2019.d
Report Date: 18-Mar-2020 20:26

Katahdin Analytical Services

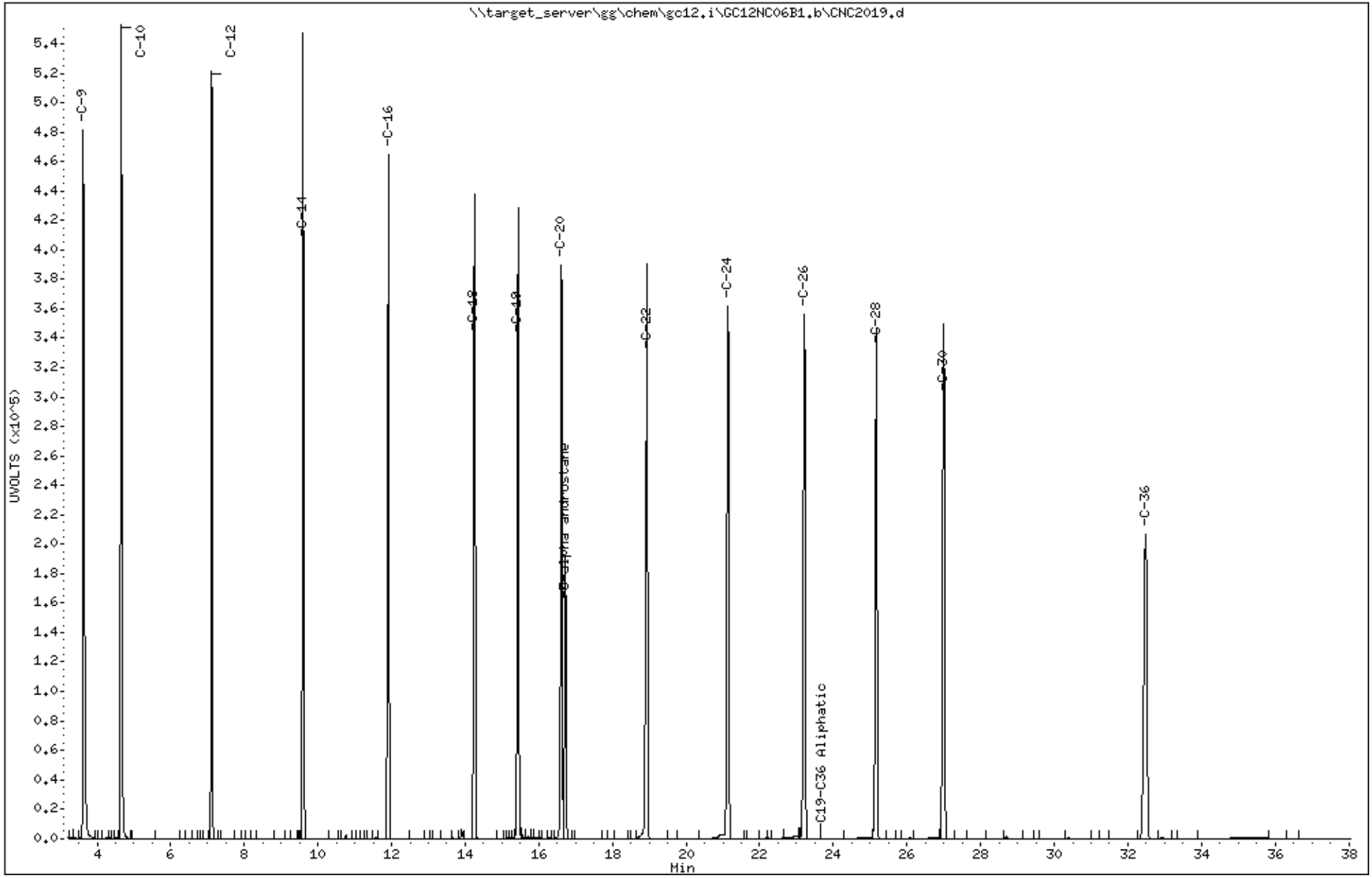
Data file : \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2019.d
Lab Smp Id: WG273574-11
Inj Date : 06-MAR-2020 11:58
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-11
Misc Info :
Comment   :
Method   : \\TARGET_SERVER\GG\chem\gc12.i\GC12NC06B1.B\ALIB070A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 11:58   Cal File: CNC2019.d
Als bottle: 1   Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: CV.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	3 C-9	3.630	3.631	-0.001	1500512	200.000	194	
	4 C-10	4.653	4.653	0.000	1496390	200.000	194	
	5 C-12	7.112	7.105	0.007	1501220	200.000	194	
	7 C-14	9.598	9.584	0.014	1478992	200.000	193	
	8 C-16	11.913	11.896	0.017	1489020	200.000	194	
	9 C-18	14.252	14.235	0.017	1468570	200.000	194	
$	44 5-alpha androstane	16.718	16.707	0.011	684232	80.0000	77.2(A)	
	10 C-19	15.439	15.422	0.017	1522160	200.000	194	
	11 C-20	16.618	16.602	0.016	1513642	200.000	194	
	13 C-22	18.931	18.918	0.013	1522596	200.000	194	
	14 C-24	21.136	21.125	0.011	1520531	200.000	193	
	15 C-26	23.214	23.202	0.012	1480376	200.000	191	
	16 C-28	25.168	25.154	0.014	1504585	200.000	192	
	18 C-30	26.999	26.984	0.015	1507245	200.000	192	
	19 C-36	32.485	32.461	0.024	1494382	200.000	194	
M	1 C9-C18 Aliphatic				8934704	1200.00	1160	
S	2 C19-C36 Aliphatic				12065517	1600.00	1540	

Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2019.d
Date : 06-MAR-2020 11:58
Client ID:
Instrument: gc12.i
Sample Info: WG273574-11
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-1
Column diameter: 0.53



06/07/2020
Katahdin Analytical Services 2000064

Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2020.d
Report Date: 18-Mar-2020 20:26

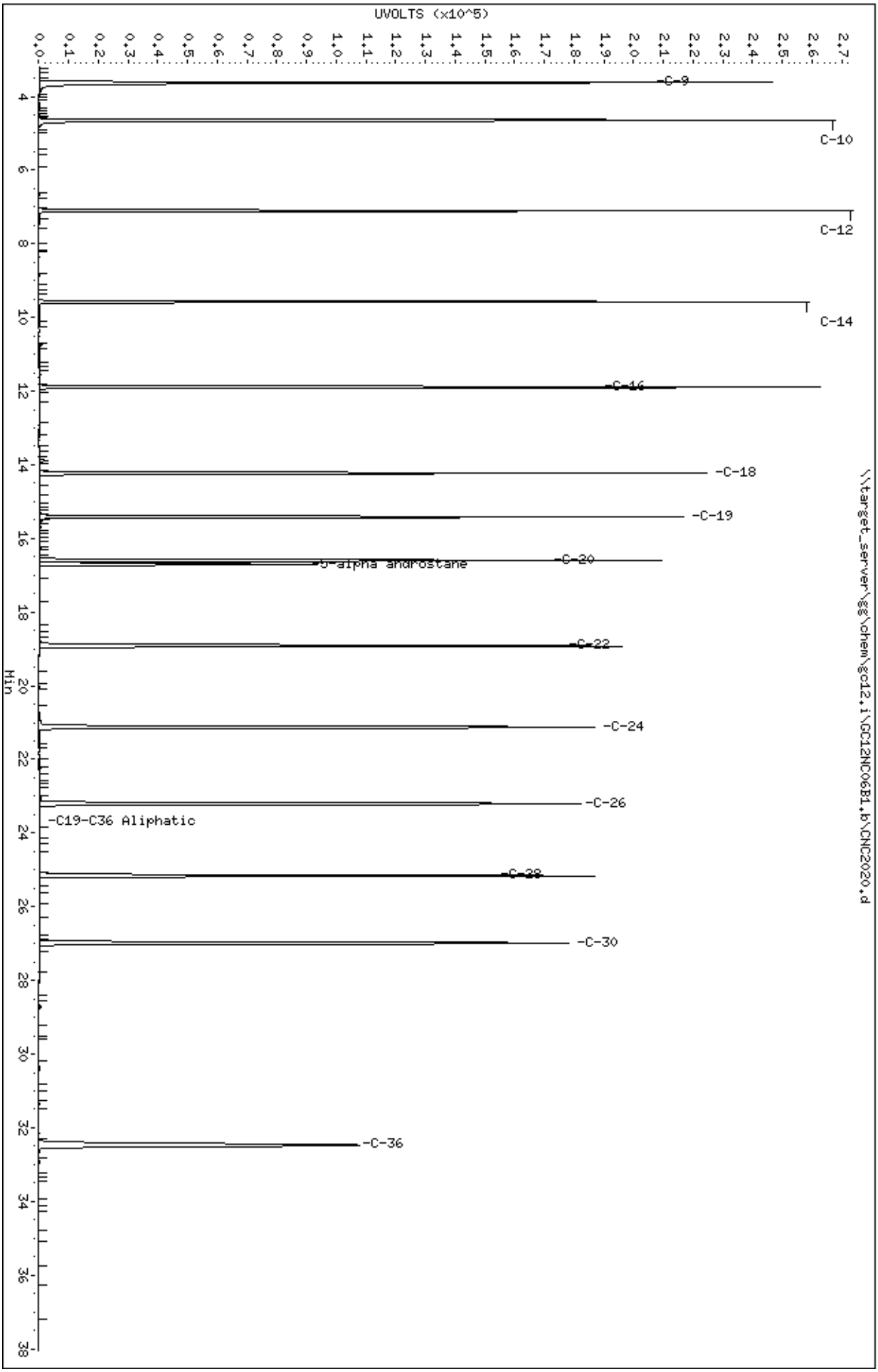
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2020.d
Lab Smp Id: WG273574-10
Inj Date : 06-MAR-2020 12:43
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-10
Misc Info :
Comment   :
Method   : \\TARGET_SERVER\GG\chem\gc12.i\GC12NC06B1.B\ALIB070A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 12:43   Cal File: CNC2020.d
Als bottle: 1   Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: CV.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/ml)	(ug/ml)	REVIEW CODE
	3 C-9	3.623	3.631	-0.008	759520	100.000	99.0	
	4 C-10	4.643	4.653	-0.010	760855	100.000	99.0	
	5 C-12	7.097	7.105	-0.008	759442	100.000	98.6	
	7 C-14	9.578	9.584	-0.006	745234	100.000	98.2	
	8 C-16	11.892	11.896	-0.004	748627	100.000	98.4	
	9 C-18	14.229	14.235	-0.006	735105	100.000	97.9	
$	44 5-alpha androstane	16.701	16.707	-0.006	344816	40.0000	39.3	
	10 C-19	15.416	15.422	-0.006	764939	100.000	98.4	
	11 C-20	16.598	16.602	-0.004	753429	100.000	97.8	
	13 C-22	18.916	18.918	-0.002	762179	100.000	98.2	
	14 C-24	21.125	21.125	0.000	760669	100.000	97.6	
	15 C-26	23.206	23.202	0.004	756095	100.000	98.5	
	16 C-28	25.159	25.154	0.005	758571	100.000	97.9	
	18 C-30	26.990	26.984	0.006	760783	100.000	97.8	
	19 C-36	32.474	32.461	0.013	744158	100.000	97.7	
M	1 C9-C18 Aliphatic				4508783	600.000	591	
S	2 C19-C36 Aliphatic				6060823	800.000	784	


Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2020.d
Date : 06-MAR-2020 12:43
Client ID:
Sample Info: WG273574-10
Purge Volume: 1.0
Column phase: RTX-1
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
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UVOLTS (x10^5)
Min
C-9
C-10
C-12
C-14
C-16
C-18
C-19
5-alpha androstane
C-20
C-22
C-24
C-26
C-19-C36 Aliphatic
C-28
C-30
C-36

Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2021.d
Report Date: 18-Mar-2020 20:26

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2021.d
Lab Smp Id: WG273574-9
Inj Date : 06-MAR-2020 13:29
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-9
Misc Info :
Comment   :
Method   : \\TARGET_SERVER\GG\chem\gc12.i\GC12NC06B1.B\ALIB070A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 13:29   Cal File: CNC2021.d
Als bottle: 1   Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: CV.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2018.d
Target Version: 4.12
Processing Host: V200T1

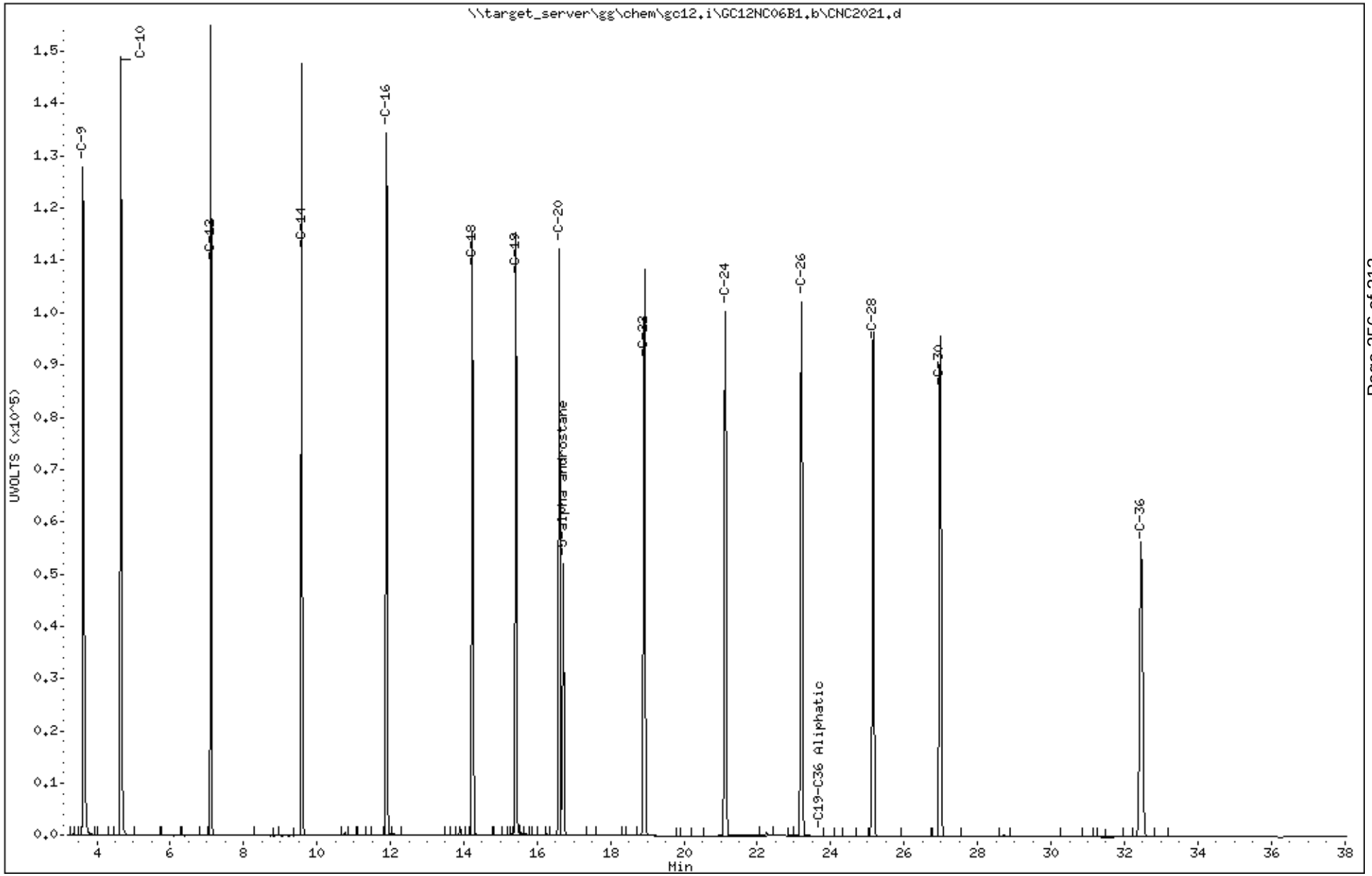
Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/ml)	(ug/ml)	REVIEW CODE
	3 C-9	3.631	3.631	0.000	396103	50.0000	50.0	
	4 C-10	4.653	4.653	0.000	398383	50.0000	50.0	
	5 C-12	7.105	7.105	0.000	400091	50.0000	50.0	
	7 C-14	9.584	9.584	0.000	395701	50.0000	50.0	
	8 C-16	11.896	11.896	0.000	394912	50.0000	50.0	
	9 C-18	14.235	14.235	0.000	391115	50.0000	50.0	
$	44 5-alpha androstane	16.707	16.707	0.000	183470	20.0000	20.0	
	10 C-19	15.422	15.422	0.000	402481	50.0000	50.0	
	11 C-20	16.602	16.602	0.000	400164	50.0000	50.0	
	13 C-22	18.918	18.918	0.000	402510	50.0000	50.0	
	14 C-24	21.125	21.125	0.000	408392	50.0000	50.0	
	15 C-26	23.202	23.202	0.000	403541	50.0000	50.0	
	16 C-28	25.154	25.154	0.000	406869	50.0000	50.0	
	18 C-30	26.984	26.984	0.000	409357	50.0000	50.0	
	19 C-36	32.461	32.461	0.000	397075	50.0000	50.0	
M	1 C9-C18 Aliphatic				2376305	300.000	300	
S	2 C19-C36 Aliphatic				3230389	400.000	400	

Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2021.d
Date : 06-MAR-2020 13:29
Client ID:
Sample Info: WG273574-9
Purge Volume: 1.0
Column phase: RTX-1

Instrument: gc12.i
Operator: AAB
Column diameter: 0.53



Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2022.d
Report Date: 18-Mar-2020 20:26

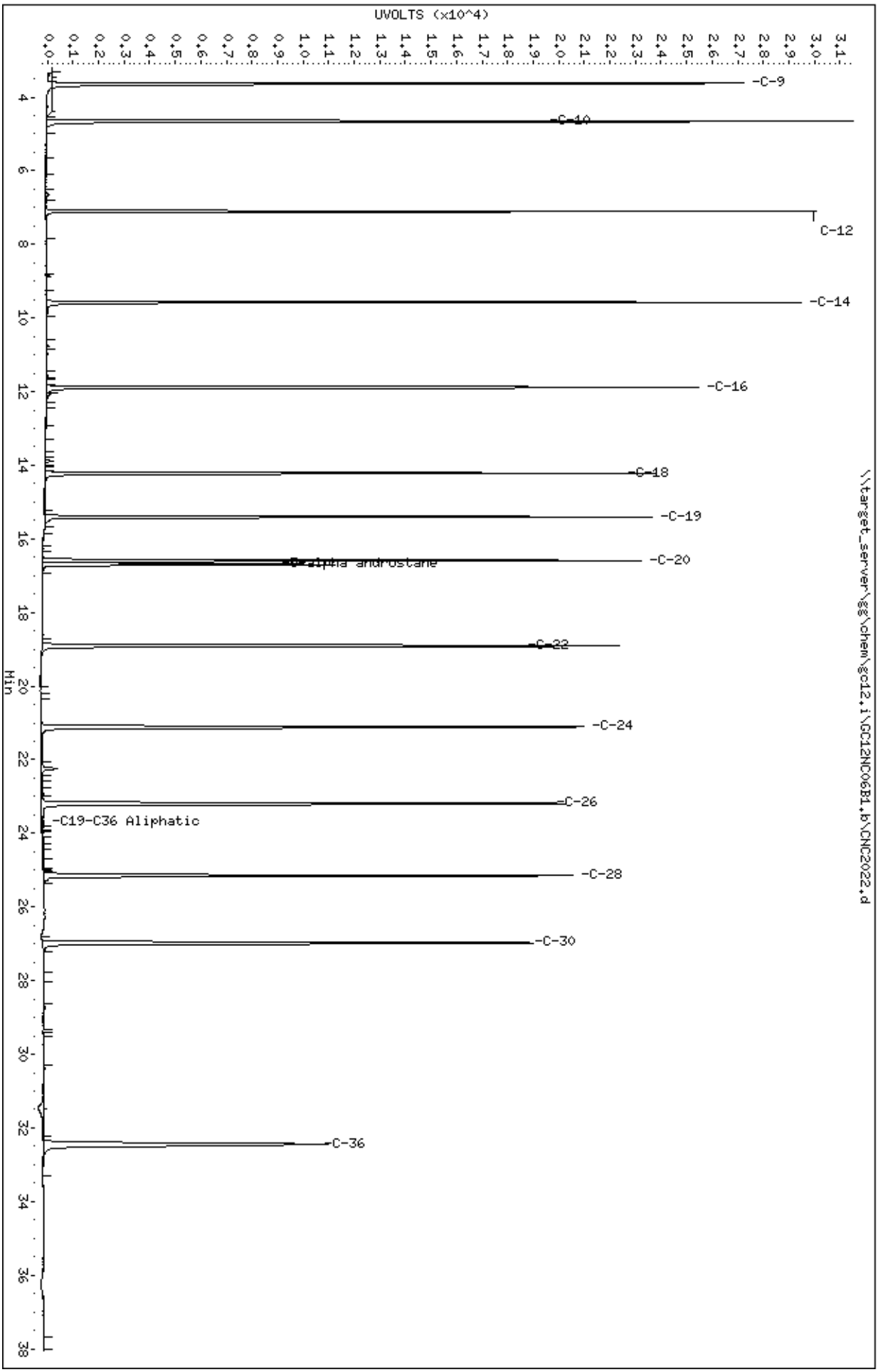
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2022.d
Lab Smp Id: WG273574-8
Inj Date : 06-MAR-2020 14:14
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-8
Misc Info :
Comment   :
Method   : \\TARGET_SERVER\GG\chem\gc12.i\GC12NC06B1.B\ALIB070A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 14:14   Cal File: CNC2022.d
Als bottle: 1   Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: CV.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/ml)	(ug/ml)	REVIEW CODE
	3 C-9	3.631	3.631	0.000	75507	10.0000	9.88	
	4 C-10	4.653	4.653	0.000	85760	10.0000	10.8	
	5 C-12	7.097	7.105	-0.008	84002	10.0000	10.7	
	7 C-14	9.574	9.584	-0.010	81772	10.0000	10.6	
	8 C-16	11.886	11.896	-0.010	82897	10.0000	10.6	
	9 C-18	14.221	14.235	-0.014	82007	10.0000	10.7	
$	44 5-alpha androstane	16.692	16.707	-0.015	40415	4.00000	4.44	
	10 C-19	15.405	15.422	-0.017	85773	10.0000	10.8	
	11 C-20	16.588	16.602	-0.014	84767	10.0000	10.7	
	13 C-22	18.905	18.918	-0.013	84854	10.0000	10.7	
	14 C-24	21.112	21.125	-0.013	93318	10.0000	11.4	
	15 C-26	23.194	23.202	-0.008	94994	10.0000	11.7	
	16 C-28	25.147	25.154	-0.007	87873	10.0000	11.0	
	18 C-30	26.980	26.984	-0.004	86805	10.0000	10.8	
	19 C-36	32.451	32.461	-0.010	78952	10.0000	10.3	
M	1 C9-C18 Aliphatic				491945	60.0000	63.3(a)	
S	2 C19-C36 Aliphatic				697336	80.0000	87.4(a)	


Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2022.d
Date : 06-MAR-2020 14:14
Client ID:
Sample Info: WG273574-8
Purge Volume: 1.0
Column phase: RTX-1
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2022.d
UVOLTS (x10^4)
Min
C-9
C-10
C-12
C-14
C-16
C-18
C-19
C-20
Alpha androstane
C-22
C-24
C-26
C-19-C36 Aliphatic
C-28
C-30
C-36

Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2023.d
Report Date: 18-Mar-2020 20:26

Katahdin Analytical Services

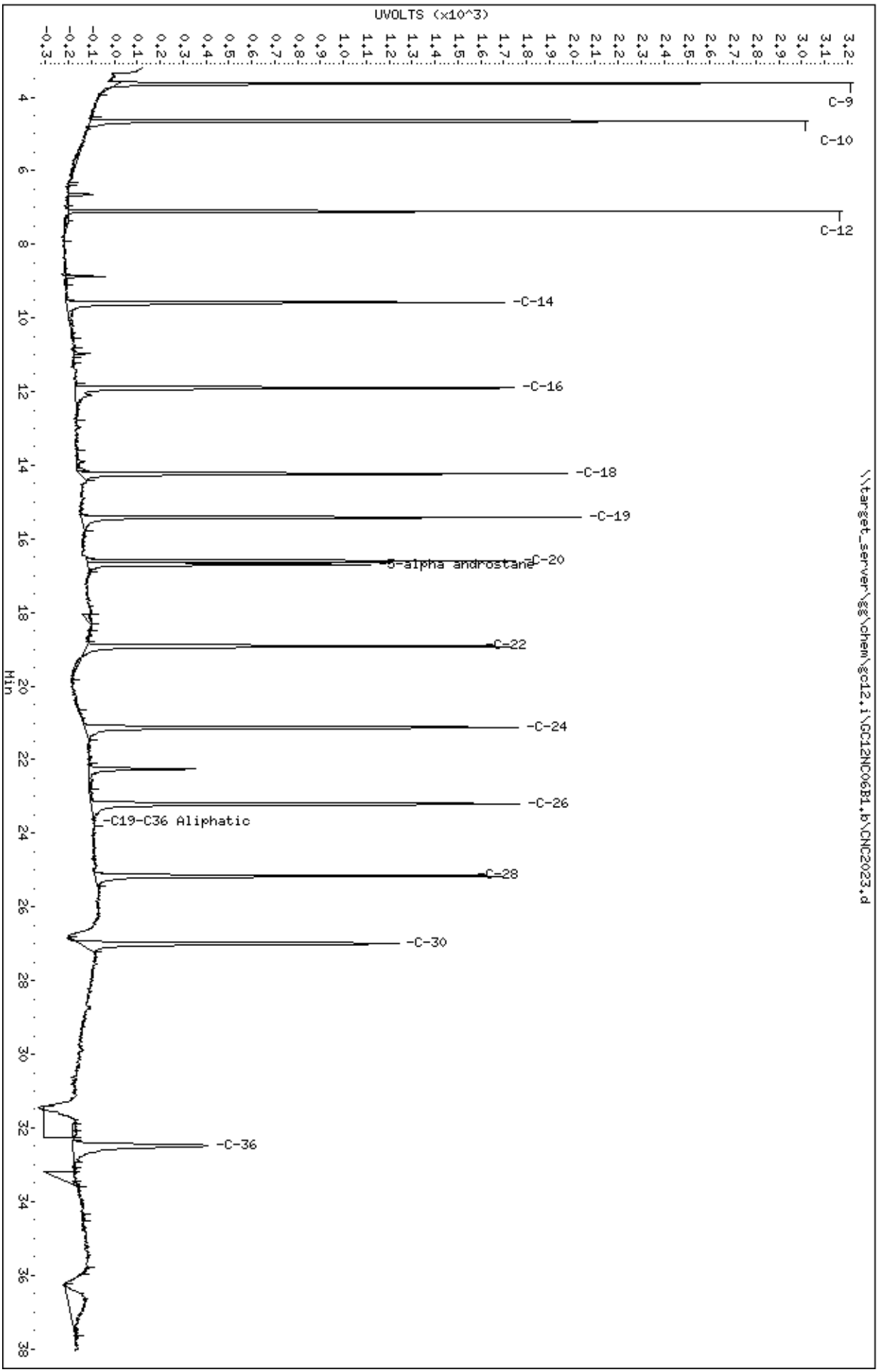
Data file : \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2023.d
Lab Smp Id: WG273574-7
Inj Date : 06-MAR-2020 15:00
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-7
Misc Info :
Comment   :
Method   : \\TARGET_SERVER\GG\chem\gc12.i\GC12NC06B1.B\ALIB070A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00   Cal File: CNC2023.d
Als bottle: 1   Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: CV.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	3 C-9	3.626	3.631	-0.005	8370	1.00000	1.07	
	4 C-10	4.646	4.653	-0.007	9415	1.00000	1.15	
	5 C-12	7.094	7.105	-0.011	8515	1.00000	1.06	
	7 C-14	9.578	9.584	-0.006	8800	1.00000	1.11	
	8 C-16	11.897	11.896	0.001	8935	1.00000	1.12	
	9 C-18	14.231	14.235	-0.004	8403	1.00000	1.07	
$	44 5-alpha androstane	16.693	16.707	-0.014	5360	0.40000	0.538(aM)	M2
	10 C-19	15.415	15.422	-0.007	8990	1.00000	1.10	
	11 C-20	16.600	16.602	-0.002	7989	1.00000	1.01(M)	M2
	13 C-22	18.916	18.918	-0.002	8213	1.00000	1.03	
	14 C-24	21.123	21.125	-0.002	9359	1.00000	1.11	
	15 C-26	23.202	23.202	0.000	9889	1.00000	1.16	
	16 C-28	25.157	25.154	0.003	8999	1.00000	1.10	
	18 C-30	26.993	26.984	0.009	8088	1.00000	1.01	
	19 C-36	32.480	32.461	0.019	6645	1.00000	0.888(M)	M2
M	1 C9-C18 Aliphatic				52438	6.00000	6.58(a)	
S	2 C19-C36 Aliphatic				68172	8.00000	8.41(a)	

AAB
8:27 pm, Mar 18, 2020


Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2023.d
Date : 06-MAR-2020 15:00
Client ID:
Sample Info: WG273574-7
Purge Volume: 1.0
Column phase: RTX-1
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2023.d
UVOLTS (x10^3)
Min
C-9
C-10
C-12
-C-14
-C-16
-C-18
-C-19
5-alpha androstane
C-20
C-22
-C-24
-C-26
-C19-C36 Aliphatic
C-28
-C-30
-C-36

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020 **SDG:** SN3820
Lab ID : WG278377-1 **Analytical Date:** 05/22/20 11:57
Lab File ID : CNE1106.d **Instrument ID:** GC12
Initial Calibration Date(s): 03/06/20 11:58 03/06/20 15:00 **Column ID:** A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
50	Naphthalene	9776	9420	0.010	-3.63848	25.00000	Averaged	
60	2-Methylnaphthalene	9640	9380	0.010	-2.69662	25.00000	Averaged	
70	Phenanthrene	9406	9368	0.010	-0.40850	25.00000	Averaged	
80	Acenaphthylene	9831	9267	0.010	-5.73255	25.00000	Averaged	
90	Acenaphthene	10039	9537	0.010	-5.00035	25.00000	Averaged	
100	Anthracene	10112	8649	0.010	-14.46942	25.00000	Averaged	
110	Benzo(a)Anthracene	9627	9418	0.010	-2.17575	25.00000	Averaged	
120	Benzo(a)Pyrene	10229	9174	0.010	-10.30990	25.00000	Averaged	
130	Benzo(b)Fluoranthene	10770	10498	0.010	-2.51908	25.00000	Averaged	
140	Benzo(g,h,i)Perylene	9842	8552	0.010	-13.11334	25.00000	Averaged	
150	Benzo(k)Fluoranthene	9854	8707	0.010	-11.64196	25.00000	Averaged	
160	Chrysene	10364	9498	0.010	-8.35763	25.00000	Averaged	
170	Dibenzo(a,h)Anthracene	9438	7018	0.010	-25.64100	25.00000	Averaged	<-
180	Fluoranthene	10055	9579	0.010	-4.72586	25.00000	Averaged	
190	Fluorene	9743	9369	0.010	-3.84222	25.00000	Averaged	
200	Indeno(1,2,3-cd)Pyrene	10280	9311	0.010	-9.43127	25.00000	Averaged	
210	Pyrene	10244	9687	0.010	-5.43500	25.00000	Averaged	
4	2-Fluorobiphenyl	8688	8556	0.010	-1.52605	25.00000	Averaged	
6	2-Bromonaphthalene	5977	5929	0.010	-0.80452	25.00000	Averaged	
11	O-Terphenyl	10346	9751	0.010	-5.75222	25.00000	Averaged	

*** = Compound out of QC criteria**

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1106.d
Report Date: 28-May-2020 20:06

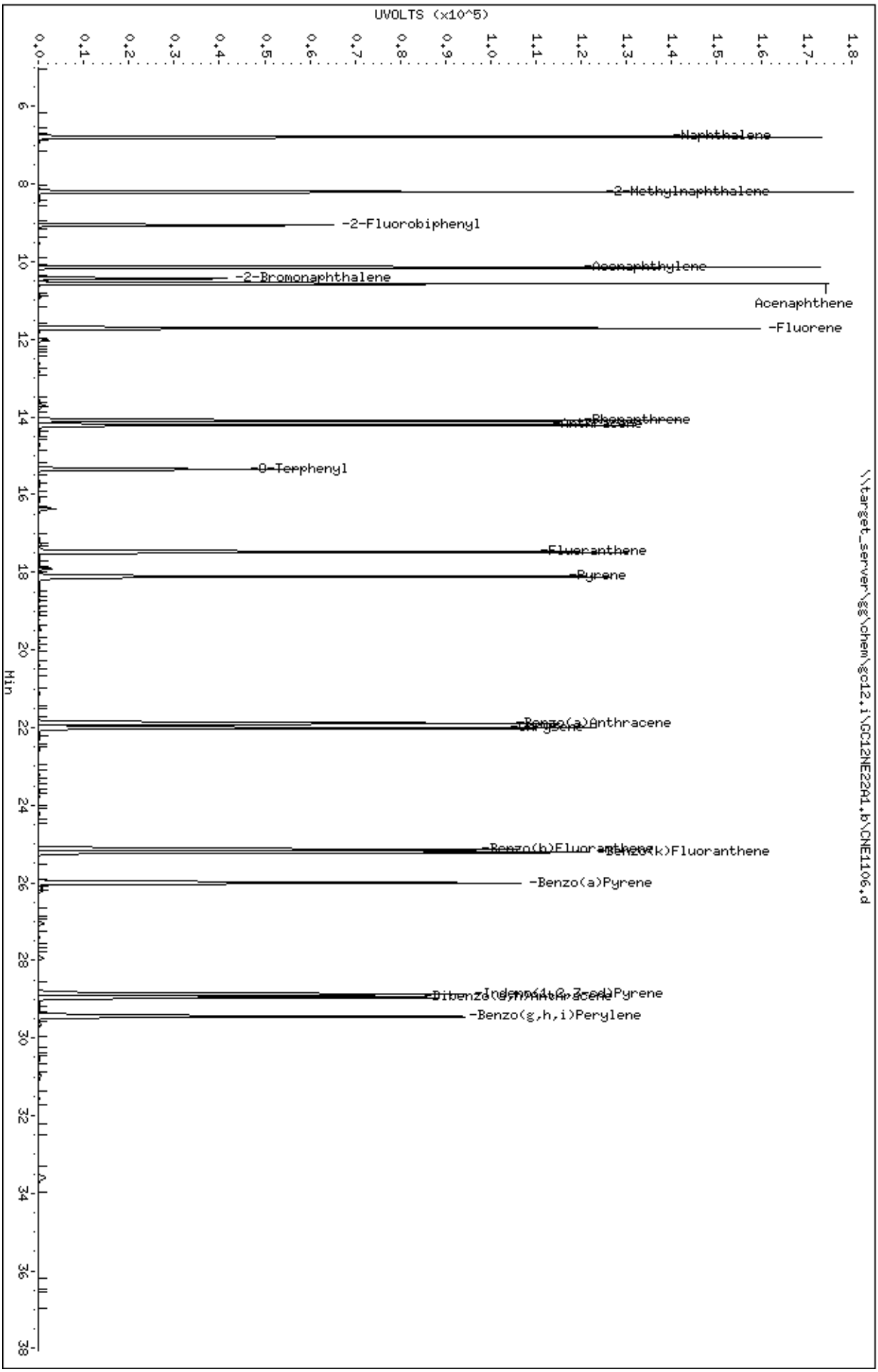
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1106.d
Lab Smp Id: WG278377-1
Inj Date : 22-MAY-2020 11:57
Operator : AAB   Inst ID: gc12.i
Smp Info : WG278377-1,SN3820
Misc Info : WG278377,WG278026,WG273574-3,SN3820-1
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00   Cal File: CNC1023.d
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: CV.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	2 Naphthalene	6.783	6.783	0.000	471023	50.0000	48.2	
	3 2-Methylnaphthalene	8.198	8.198	0.000	469010	50.0000	48.6	
$	4 2-Fluorobiphenyl	9.054	9.054	0.000	171111	20.0000	19.7	
	5 Acenaphthylene	10.145	10.145	0.000	463362	50.0000	47.1	
$	6 2-Bromonaphthalene	10.430	10.430	0.000	118588	20.0000	19.8	
	7 Acenaphthene	10.562	10.562	0.000	476864	50.0000	47.5	
	8 Fluorene	11.709	11.709	0.000	468447	50.0000	48.1	
	9 Phenanthrene	14.090	14.090	0.000	468389	50.0000	49.8	
	10 Anthracene	14.210	14.210	0.000	432444	50.0000	42.8	
$	11 O-Terphenyl	15.346	15.346	0.000	195021	20.0000	18.8	
	12 Fluoranthene	17.478	17.478	0.000	478968	50.0000	47.6	
	13 Pyrene	18.115	18.115	0.000	484356	50.0000	47.3	
	16 Benzo(a)Anthracene	21.890	21.890	0.000	470879	50.0000	48.9	
	17 Chrysene	22.012	22.012	0.000	474887	50.0000	45.8	
	18 Benzo(b)Fluoranthene	25.144	25.144	0.000	524921	50.0000	48.7	
	19 Benzo(k)Fluoranthene	25.214	25.214	0.000	435326	50.0000	44.2	
	20 Benzo(a)Pyrene	26.005	26.005	0.000	458701	50.0000	44.8	
	21 Indeno(1,2,3-cd)Pyrene	28.871	28.871	0.000	465528	50.0000	45.3	
	22 Dibenzo(a,h)Anthracene	28.955	28.955	0.000	350886	50.0000	37.2	
	23 Benzo(g,h,i)Perylene	29.446	29.446	0.000	427587	50.0000	43.4	


Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1106.d
Date : 22-MAY-2020 11:57
Client ID:
Sample Info: WG278377-1,SN3820
Purge Volume: 1.0
Column phase: RTX-5
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1106.d
UVOLTS (x10^5)
Min
-Naphthalene
-2-Methylnaphthalene
-2-Fluorobiphenyl
-Acenaphthylene
-2-Bromonaphthalene
Acenaphthene
-Fluorene
-Phenanthrene
-O-Terphenyl
-Fluoranthene
-Pyrene
-Benzo(a)Anthracene
-Benzo(b)Fluoranthene
-Benzo(k)Fluoranthene
-Benzo(a)Pyrene
-Benzo(g,h,i)Perylene

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020 **SDG:** SN3820
Lab ID : WG278377-2 **Analytical Date:** 05/23/20 08:11
Lab File ID : CNE1128.d **Instrument ID:** GC12
Initial Calibration Date(s): 03/06/20 11:58 03/06/20 15:00 **Column ID:** A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9776	10839	0.010	10.87294	25.00000	Averaged
60	2-Methylnaphthalene	9640	10874	0.010	12.79649	25.00000	Averaged
70	Phenanthrene	9406	10951	0.010	16.42656	25.00000	Averaged
80	Acenaphthylene	9831	10708	0.010	8.92161	25.00000	Averaged
90	Acenaphthene	10039	11031	0.010	9.87841	25.00000	Averaged
100	Anthracene	10112	10115	0.010	0.03034	25.00000	Averaged
110	Benzo(a)Anthracene	9627	11070	0.010	14.98903	25.00000	Averaged
120	Benzo(a)Pyrene	10229	11045	0.010	7.98453	25.00000	Averaged
130	Benzo(b)Fluoranthene	10770	12897	0.010	19.74910	25.00000	Averaged
140	Benzo(g,h,i)Perylene	9842	10632	0.010	8.02336	25.00000	Averaged
150	Benzo(k)Fluoranthene	9854	9981	0.010	1.29249	25.00000	Averaged
160	Chrysene	10364	11139	0.010	7.47654	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	9438	9600	0.010	1.71717	25.00000	Averaged
180	Fluoranthene	10055	11159	0.010	10.98329	25.00000	Averaged
190	Fluorene	9743	10882	0.010	11.68230	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	10280	11973	0.010	16.46633	25.00000	Averaged
210	Pyrene	10244	11334	0.010	10.64153	25.00000	Averaged
4	2-Fluorobiphenyl	8688	9976	0.010	14.82384	25.00000	Averaged
6	2-Bromonaphthalene	5977	6834	0.010	14.32558	25.00000	Averaged
11	O-Terphenyl	10346	11355	0.010	9.75060	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1128.d
Report Date: 28-May-2020 20:07

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1128.d
Lab Smp Id: WG278377-2
Inj Date : 23-MAY-2020 08:11
Operator : AAB   Inst ID: gc12.i
Smp Info : WG278377-2,SN3820
Misc Info : WG278377,WG278026,WG273574-3,SN3820-1
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00   Cal File: CNC1023.d
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: CV.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/ml)	AMOUNTS ON-COL (ug/ml)	REVIEW CODE
	2 Naphthalene	6.849	6.783	0.066	541956	50.0000	55.4	
	3 2-Methylnaphthalene	8.263	8.198	0.065	543688	50.0000	56.4(M)	M6
$	4 2-Fluorobiphenyl	9.117	9.054	0.063	199521	20.0000	23.0	
	5 Acenaphthylene	10.208	10.145	0.063	535393	50.0000	54.5	
$	6 2-Bromonaphthalene	10.492	10.430	0.062	136676	20.0000	22.9	
	7 Acenaphthene	10.624	10.562	0.062	551550	50.0000	54.9	
	8 Fluorene	11.772	11.709	0.063	544077	50.0000	55.8(M)	
	9 Phenanthrene	14.156	14.090	0.066	547566	50.0000	58.2(M)	
	10 Anthracene	14.276	14.210	0.066	505755	50.0000	50.0(M)	
$	11 O-Terphenyl	15.408	15.346	0.062	227100	20.0000	22.0	
	12 Fluoranthene	17.544	17.478	0.066	557942	50.0000	55.5	
	13 Pyrene	18.180	18.115	0.065	566699	50.0000	55.3	
	16 Benzo(a)Anthracene	21.949	21.890	0.059	553502	50.0000	57.5	
	17 Chrysene	22.073	22.012	0.061	556939	50.0000	53.7	
	18 Benzo(b)Fluoranthene	25.199	25.144	0.055	644832	50.0000	59.9(M)	
	19 Benzo(k)Fluoranthene	25.270	25.214	0.056	499052	50.0000	50.6(M)	
	20 Benzo(a)Pyrene	26.060	26.005	0.055	552264	50.0000	54.0	
	21 Indeno(1,2,3-cd)Pyrene	28.925	28.871	0.054	598643	50.0000	58.2(M)	
	22 Dibenzo(a,h)Anthracene	29.007	28.955	0.052	479984	50.0000	50.8(M)	
	23 Benzo(g,h,i)Perylene	29.501	29.446	0.055	531605	50.0000	54.0	

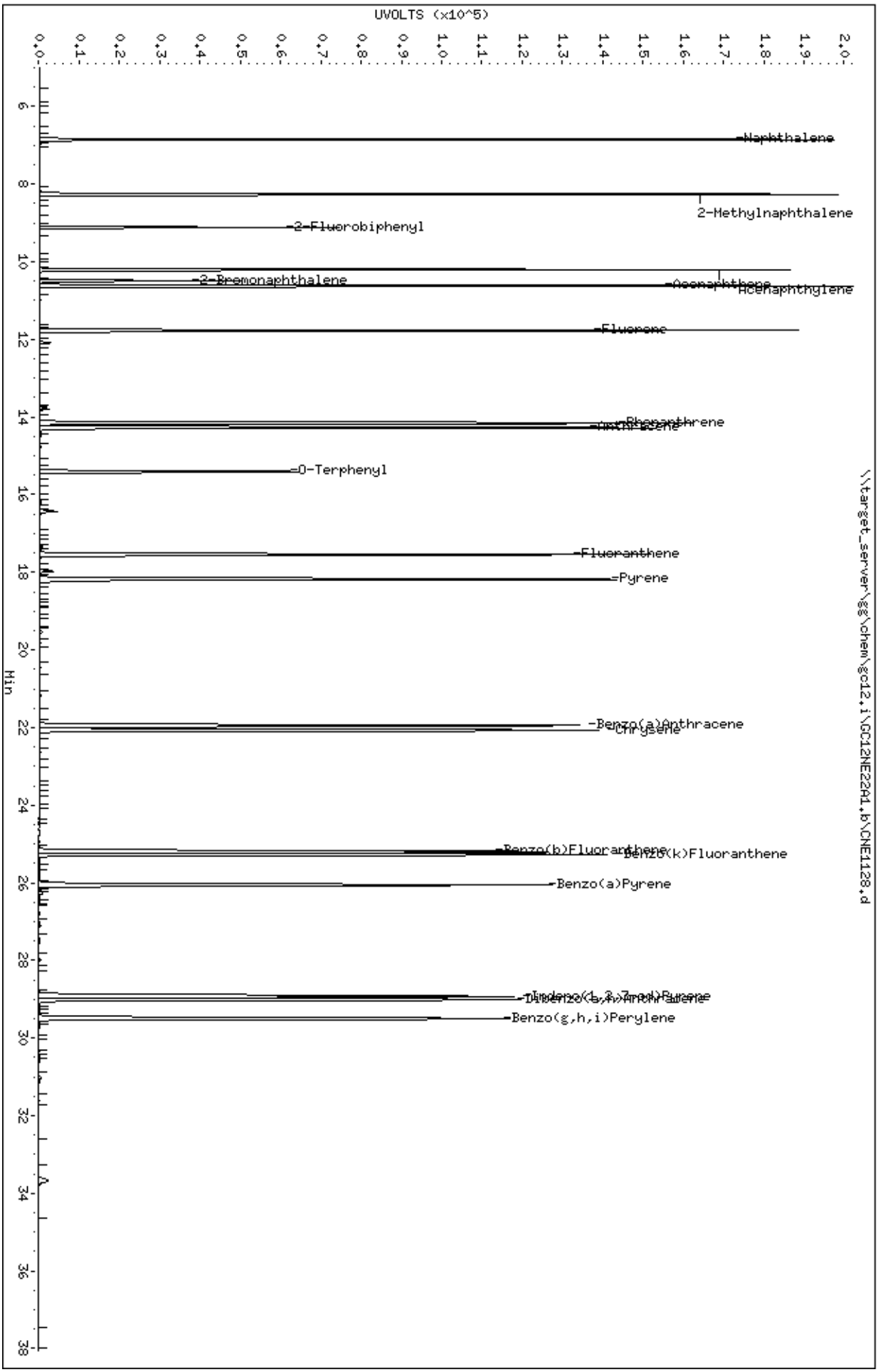


8:07 pm, May 28, 2020

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1128.d
Report Date: 28-May-2020 20:07

QC Flag Legend

M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1128.d
Date : 23-MAY-2020 08:11
Client ID:
Sample Info: WG278377-2,SN3820
Purge Volume: 1.0
Column phase: RTX-5
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1128.d
UVOLTS (x10^5)
Min
Naphthalene
2-Methylnaphthalene
2-Fluorobiphenyl
2-Bromonaphthalene
Acenaphthene
Acenaphthylene
Fluorene
Phenanthrene
Anthracene
O-Terphenyl
Fluoranthene
Pyrene
Benzo(a)Anthracene
Chrysene
Benzo(b)Fluoranthene
Benzo(k)Fluoranthene
Benzo(a)Pyrene
Indeno(1,2,3-cd)Pyrene
Dibenzo(a,h)Anthracene
Benzo(g,h,i)Perylene

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020 **SDG:** SN3820
Lab ID : WG278377-3 **Analytical Date:** 05/22/20 11:57
Lab File ID : CNE2106.d **Instrument ID:** GC12
Initial Calibration Date(s): 03/06/20 11:58 03/06/20 15:00 **Column ID:** A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7964	9067	0.010	13.85175	25.00000	Averaged
30	C19-C36 Aliphatic	8086	9248	0.010	14.36364	25.00000	Averaged
370	C-9	7788	9083	0.010	16.63147	30.00000	Averaged
380	C-10	8210	9058	0.010	10.32869	25.00000	Averaged
390	C-12	8004	9078	0.010	13.42651	25.00000	Averaged
400	C-14	7948	9047	0.010	13.82835	25.00000	Averaged
410	C-16	8011	9176	0.010	14.54073	25.00000	Averaged
420	C-18	7824	8961	0.010	14.53531	25.00000	Averaged
430	C-19	8175	9326	0.010	14.07142	25.00000	Averaged
440	C-20	7914	9263	0.010	17.04440	25.00000	Averaged
450	C-22	7997	9294	0.010	16.22332	25.00000	Averaged
460	C-24	8414	9350	0.010	11.12560	25.00000	Averaged
470	C-26	8484	9308	0.010	9.70733	25.00000	Averaged
480	C-28	8206	9414	0.010	14.71861	25.00000	Averaged
490	C-30	8020	9333	0.010	16.36971	25.00000	Averaged
500	C-36	7479	8694	0.010	16.24222	25.00000	Averaged
44	5-alpha androstane	9970	10651	0.010	6.82580	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2106.d
Report Date: 28-May-2020 20:09

Katahdin Analytical Services

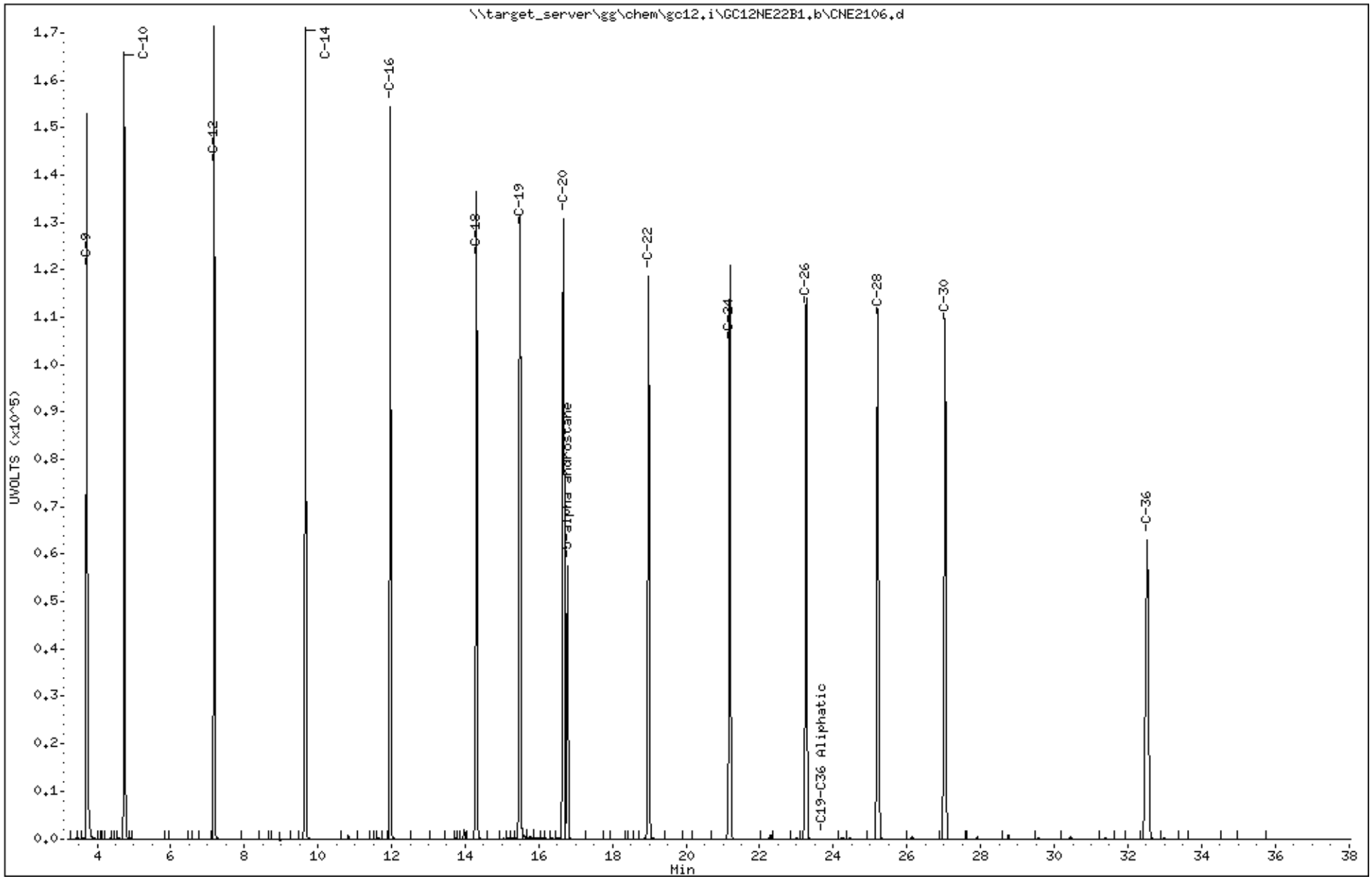
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Lab Smp Id: WG278377-3
Inj Date : 22-MAY-2020 11:57
Operator : AAB   Inst ID: gc12.i
Smp Info : WG278377-3,SN3820
Misc Info : WG278377,WG278026,WG273574-9,SN3820-1
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\ALIB070A.m
Meth Date : 26-May-2020 10:25 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00   Cal File: CNC2023.d
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: CV.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	3 C-9	3.717	3.717	0.000	454169	50.0000	58.3	
	4 C-10	4.736	4.736	0.000	452890	50.0000	55.2	
	5 C-12	7.183	7.183	0.000	453905	50.0000	56.7	
	7 C-14	9.653	9.653	0.000	452337	50.0000	56.9	
	8 C-16	11.963	11.963	0.000	458785	50.0000	57.3	
	9 C-18	14.302	14.302	0.000	448061	50.0000	57.3	
$	44 5-alpha androstane	16.778	16.778	0.000	213013	20.0000	21.4	
	10 C-19	15.487	15.487	0.000	466291	50.0000	57.0	
	11 C-20	16.667	16.667	0.000	463162	50.0000	58.5	
	13 C-22	18.980	18.980	0.000	464700	50.0000	58.1	
	14 C-24	21.184	21.184	0.000	467483	50.0000	55.6	
	15 C-26	23.260	23.260	0.000	465401	50.0000	54.8	
	16 C-28	25.207	25.207	0.000	470717	50.0000	57.4	
	18 C-30	27.034	27.034	0.000	466639	50.0000	58.2	
	19 C-36	32.524	32.524	0.000	434690	50.0000	58.1	
M	1 C9-C18 Aliphatic				2720147	300.000	342	
S	2 C19-C36 Aliphatic				3699083	400.000	458	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2106.d
Date : 22-MAY-2020 11:57
Client ID:
Instrument: gc12.i
Sample Info: WG278377-3,SN3820
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-1
Column diameter: 0.53



Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCL Spring 2020 **SDG:** SN3820
Lab ID : WG278377-4 **Analytical Date:** 05/23/20 08:11
Lab File ID : CNE2128.d **Instrument ID:** GC12
Initial Calibration Date(s): 03/06/20 11:58 03/06/20 15:00 **Column ID:** A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7964	9049	0.010	13.62918	25.00000	Averaged
30	C19-C36 Aliphatic	8086	9320	0.010	15.26168	25.00000	Averaged
370	C-9	7788	9133	0.010	17.26603	30.00000	Averaged
380	C-10	8210	8970	0.010	9.25632	25.00000	Averaged
390	C-12	8004	9049	0.010	13.06742	25.00000	Averaged
400	C-14	7948	9033	0.010	13.65773	25.00000	Averaged
410	C-16	8011	9130	0.010	13.97051	25.00000	Averaged
420	C-18	7824	8981	0.010	14.79426	25.00000	Averaged
430	C-19	8175	9331	0.010	14.13258	25.00000	Averaged
440	C-20	7914	9192	0.010	16.13819	25.00000	Averaged
450	C-22	7997	9357	0.010	17.01165	25.00000	Averaged
460	C-24	8414	9323	0.010	10.80659	25.00000	Averaged
470	C-26	8484	9334	0.010	10.01543	25.00000	Averaged
480	C-28	8206	9449	0.010	15.13681	25.00000	Averaged
490	C-30	8020	9405	0.010	17.27471	25.00000	Averaged
500	C-36	7479	9172	0.010	22.63903	25.00000	Averaged
44	5-alpha androstane	9970	10594	0.010	6.25560	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2128.d
Report Date: 28-May-2020 20:09

Katahdin Analytical Services

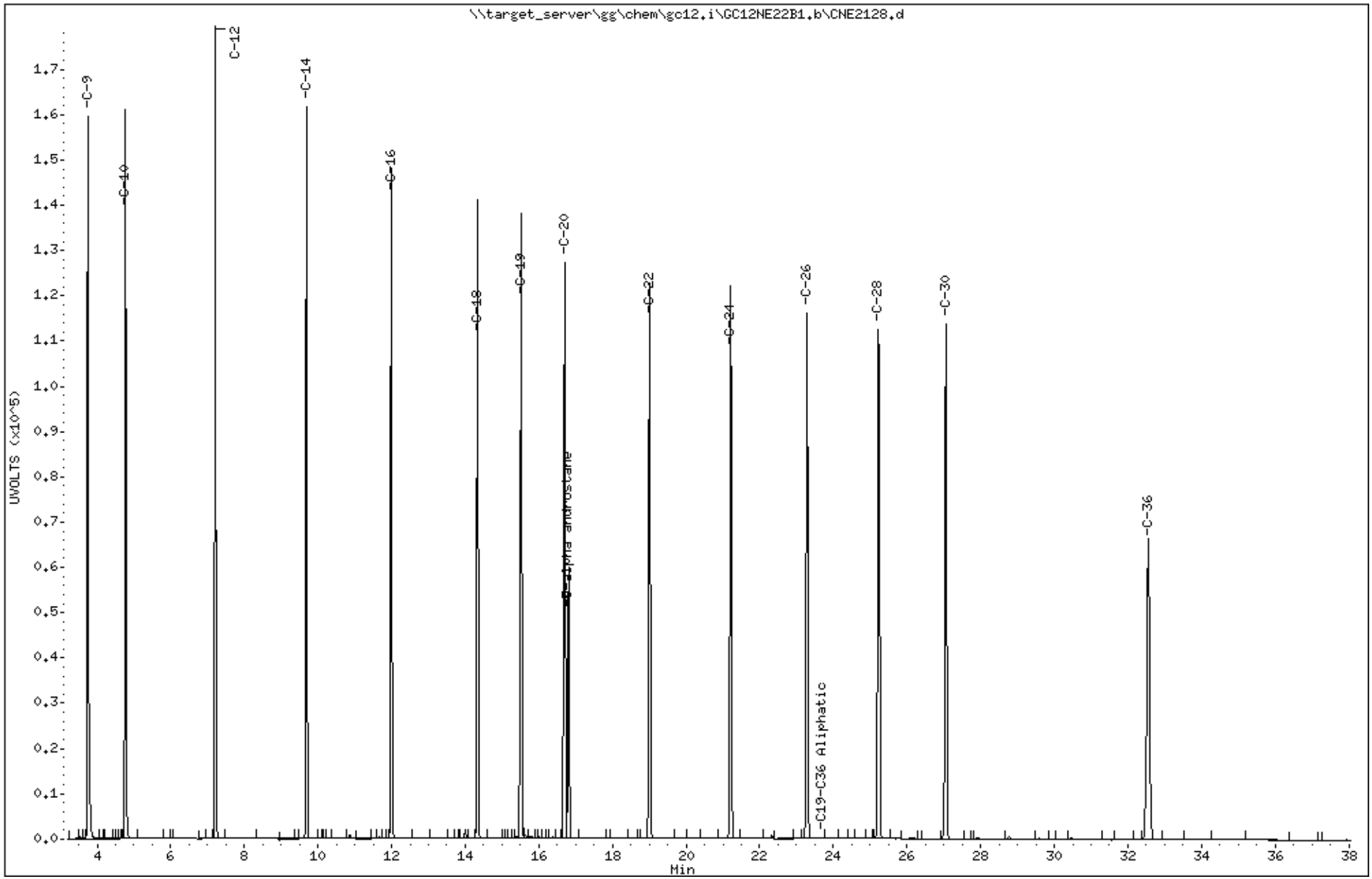
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Inj Date : 23-MAY-2020 08:11
Operator : AAB   Inst ID: gc12.i
Smp Info : WG278377-4,SN3820
Misc Info : WG278377,WG278026,WG273574-9,SN3820-1
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\ALIB070A.m
Meth Date : 26-May-2020 10:25 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00   Cal File: CNC2023.d
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: CV.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	3 C-9	3.747	3.717	0.030	456640	50.0000	58.6	
	4 C-10	4.769	4.736	0.033	448488	50.0000	54.6	
	5 C-12	7.213	7.183	0.030	452468	50.0000	56.5	
	7 C-14	9.684	9.653	0.031	451659	50.0000	56.8	
	8 C-16	11.994	11.963	0.031	456501	50.0000	57.0	
	9 C-18	14.332	14.302	0.030	449074	50.0000	57.4	
$	44 5-alpha androstane	16.811	16.778	0.033	211876	20.0000	21.2	
	10 C-19	15.517	15.487	0.030	466541	50.0000	57.1	
	11 C-20	16.698	16.667	0.031	459576	50.0000	58.1	
	13 C-22	19.008	18.980	0.028	467852	50.0000	58.5	
	14 C-24	21.210	21.184	0.026	466141	50.0000	55.4	
	15 C-26	23.284	23.260	0.024	466708	50.0000	55.0	
	16 C-28	25.230	25.207	0.023	472433	50.0000	57.6	
	18 C-30	27.056	27.034	0.022	470268	50.0000	58.6	
	19 C-36	32.555	32.524	0.031	458611	50.0000	61.3	
M	1 C9-C18 Aliphatic				2714830	300.000	341	
S	2 C19-C36 Aliphatic				3728130	400.000	462	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2128.d
Date : 23-MAY-2020 08:11
Client ID:
Instrument: gc12.i
Sample Info: WG278377-4,SN3820
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-1
Column diameter: 0.53



Raw QC Data Section

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG278026-1
Client ID: Method Blank Sample
Project:
SDG: SN3820
Lab File ID: CNE2113.D

Sample Date:
Received Date:
Extract Date: 20-MAY-20
Extracted By: MR
Extraction Method: SW846 3510C
Lab Prep Batch: WG278026

Analysis Date: 22-MAY-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 28-MAY-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		58.0	%					
o-Terphenyl		53.7	%					
2-Fluorobiphenyl		56.7	%					
2-Bromonaphthalene		56.4	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029
http://www.katahdinlab.com

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2113.d
Report Date: 28-May-2020 20:09

Katahdin Analytical Services

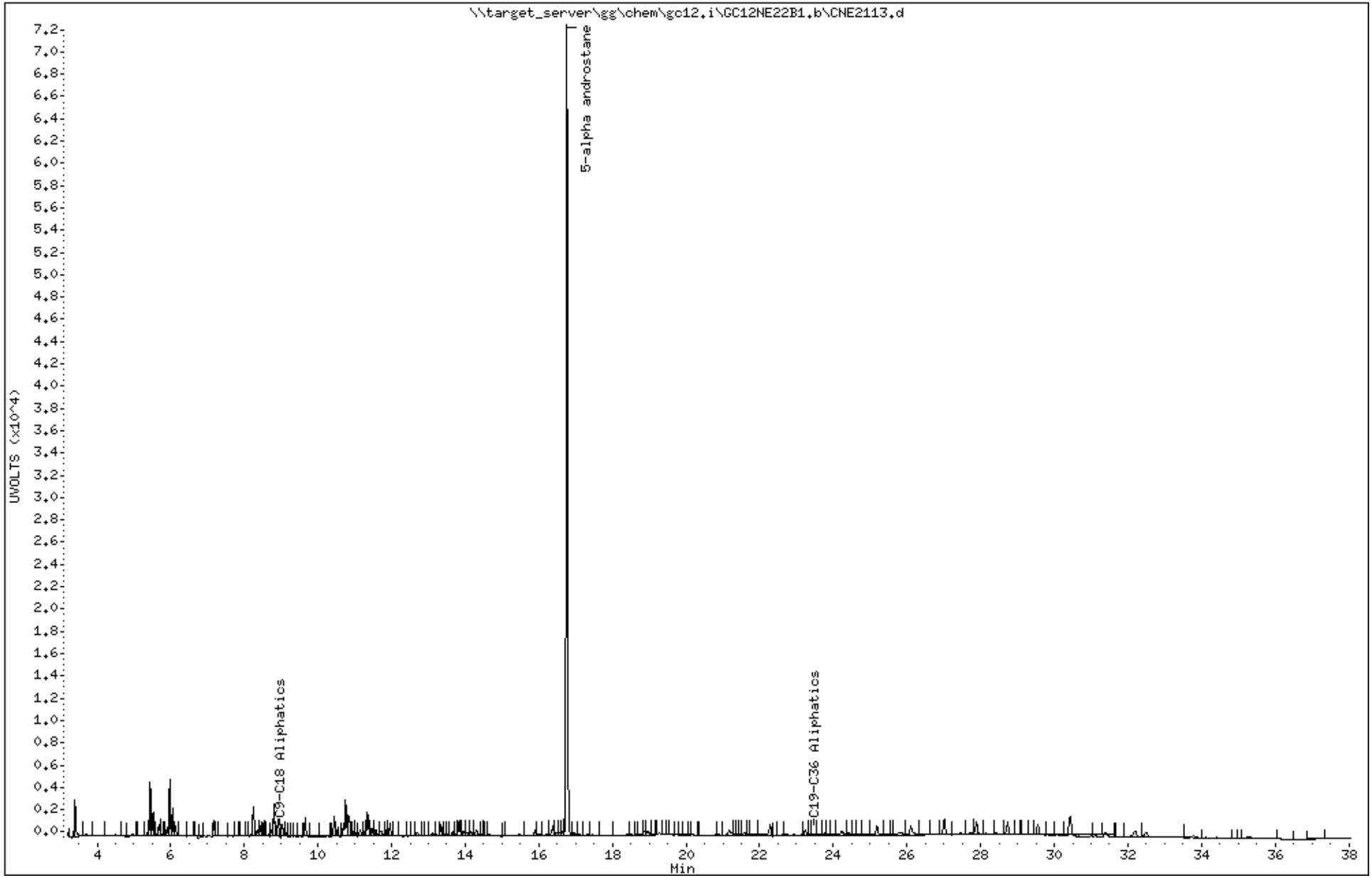
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Inj Date : 22-MAY-2020 17:16
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-1,SN3820
Misc Info : WG278377,WG278026,WG273574-9,SN3820-1
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\ALIB070A.m
Meth Date : 26-May-2020 10:25 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC2023.d
Als bottle: 1 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: ALIPHATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

					CONCENTRATIONS		
					ON-COLUMN	FINAL	
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/ml)	(ug/L)	REVIEW CODE
$ 44 5-alpha androstane	16.760	16.778	-0.018	260145	26.0925	52.2	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2113.d
Date : 22-MAY-2020 17:16
Client ID: WG278026-Blank
Instrument: gc12.i
Sample Info: WG278026-1,SN3820
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-1
Column diameter: 0.53



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Report Date: 28-May-2020 20:06

Katahdin Analytical Services

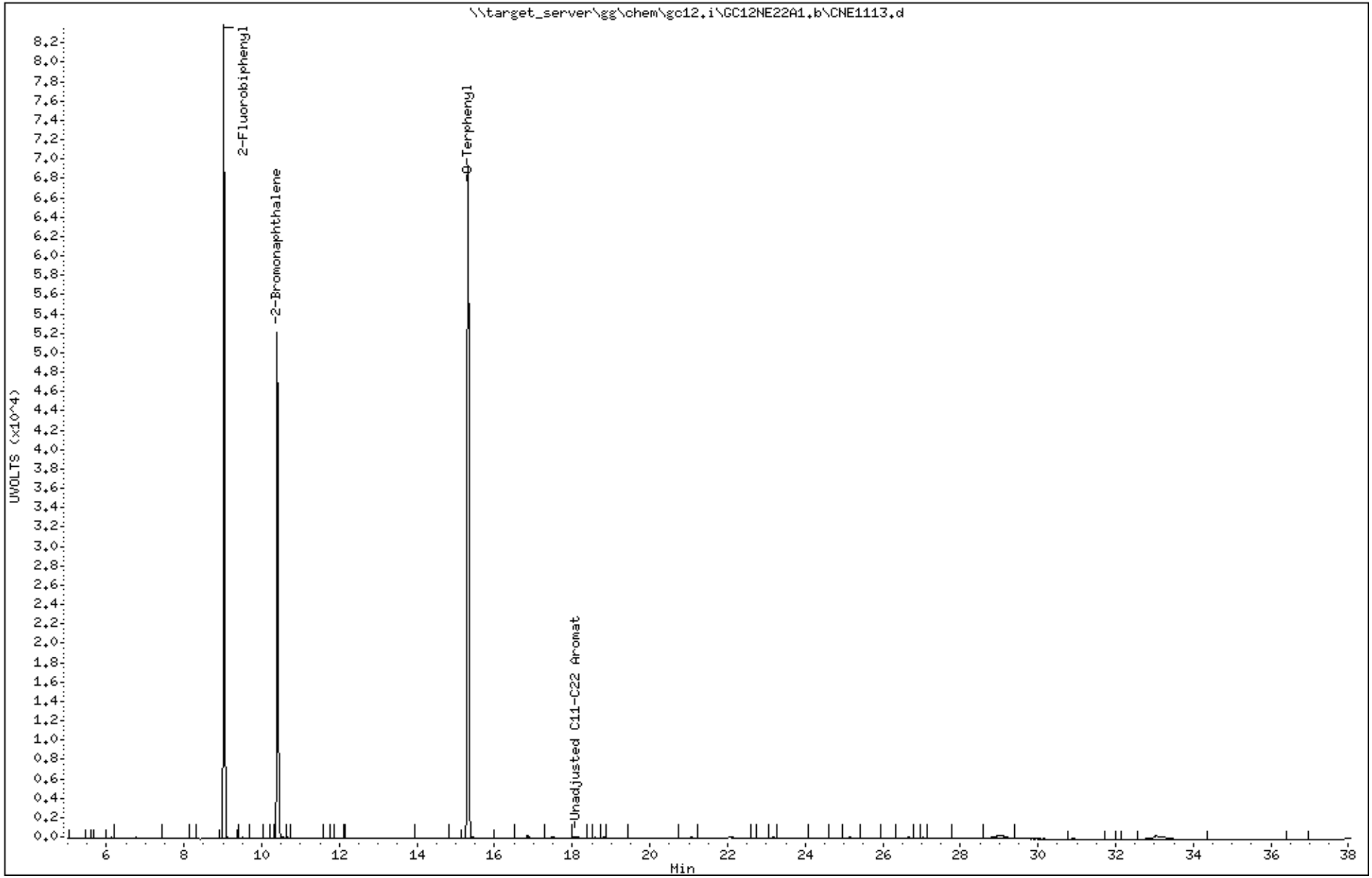
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Inj Date : 22-MAY-2020 17:16
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-1,SN3820
Misc Info : WG278377,WG278026,WG273574-3,SN3820-1
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: AROMATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 4 2-Fluorobiphenyl	9.026	9.054	-0.028	221782	25.5270	51.0	
$ 6 2-Bromonaphthalene	10.402	10.430	-0.028	151876	25.4080	50.8	
$ 11 O-Terphenyl	15.314	15.346	-0.032	249890	24.1529	48.3	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1113.d
Date : 22-MAY-2020 17:16
Client ID: WG278026-Blank
Instrument: gc12.i
Sample Info: WG278026-1,SN3820
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-5
Column diameter: 0.53



Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1113a.d
Report Date: 28-May-2020 20:06

Katahdin Analytical Services

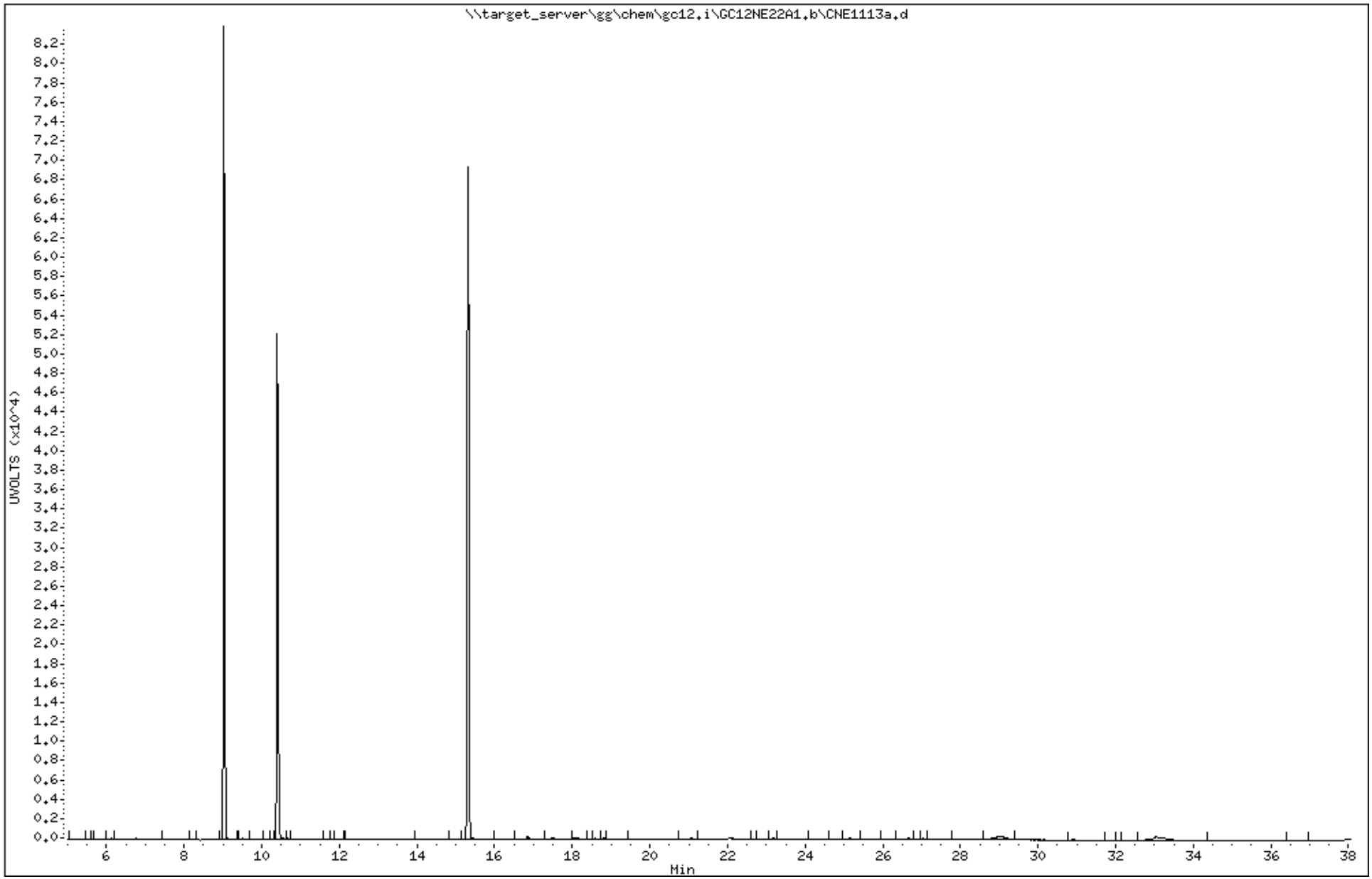
Data file : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1113a.d
Lab Smp Id: WG278026-1 Client Smp ID: WG278026-Blank
Inj Date : 22-MAY-2020 17:16
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-1,SN3820
Misc Info : WG278377,WG278026,WG273574-3,SN3820-1
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: PAH.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1113a.d
Date : 22-MAY-2020 17:16
Client ID: WG278026-Blank
Instrument: gc12.i
Sample Info: WG278026-1,SN3820
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-5
Column diameter: 0.53



Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG278026-2
LCSD ID: WG278026-3
Project:
SDG: SN3820
Report Date: 28-MAY-20
LCS File ID: CNE2114.D

Received Date:
Extract Date: 20-MAY-20
Extracted By: MR
Extraction Method: SW846 3510C
Lab Prep Batch: WG278026
LCSD File ID: CNE1115.d

Analysis Date: 22-MAY-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1530	1210	79.1	899.	58.8	ug/L	29*	25	40-140
C9-C18 Aliphatics	540.	350.	64.8	330.	61.1	ug/L	6	25	40-140
C19-C36 Aliphatics	720.	617.	85.7	567.	78.8	ug/L	8	25	40-140
Naphthalene	90.0	59.3	65.9	44.5	49.4	ug/L	28*	25	40-140
2-Methylnaphthalene	90.0	65.1	72.3	48.9	54.3	ug/L	28*	25	40-140
Phenanthrene	90.0	76.4	84.9	57.2	63.6	ug/L	29*	25	40-140
Acenaphthylene	90.0	63.2	70.2	47.9	53.2	ug/L	28*	25	40-140
Acenaphthene	90.0	65.6	72.9	50.5	56.1	ug/L	26*	25	40-140
Anthracene	90.0	70.4	78.2	52.2	58.0	ug/L	30*	25	40-140
Benzo(a)anthracene	90.0	75.8	84.2	55.5	61.7	ug/L	31*	25	40-140
Benzo(a)pyrene	90.0	70.4	78.2	51.1	56.8	ug/L	32*	25	40-140
Benzo(b)fluoranthene	90.0	73.1	81.2	57.2	63.6	ug/L	24	25	40-140
Benzo(g,h,i)perylene	90.0	73.6	81.8	53.2	59.1	ug/L	32*	25	40-140
Benzo(k)fluoranthene	90.0	74.6	82.9	49.9	55.4	ug/L	40*	25	40-140
Chrysene	90.0	72.6	80.7	53.4	59.3	ug/L	30*	25	40-140
Dibenzo(a,h)anthracene	90.0	67.0	74.4	49.0	54.4	ug/L	31*	25	40-140
Fluoranthene	90.0	75.4	83.8	55.8	62.0	ug/L	30*	25	40-140
Fluorene	90.0	69.9	77.7	53.5	59.4	ug/L	26*	25	40-140
Indeno(1,2,3-cd)pyrene	90.0	73.0	81.1	51.4	57.1	ug/L	35*	25	40-140
Pyrene	90.0	73.6	81.8	53.9	59.9	ug/L	31*	25	40-140
5-Alpha Androstane			62.2		46.0				40-140
o-Terphenyl			76.1		54.8				40-140
2-Fluorobiphenyl			78.9		61.7				40-140
2-Bromonaphthalene			79.1		62.1				40-140

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://www.katahdinlab.com

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2114.d
Report Date: 28-May-2020 20:09

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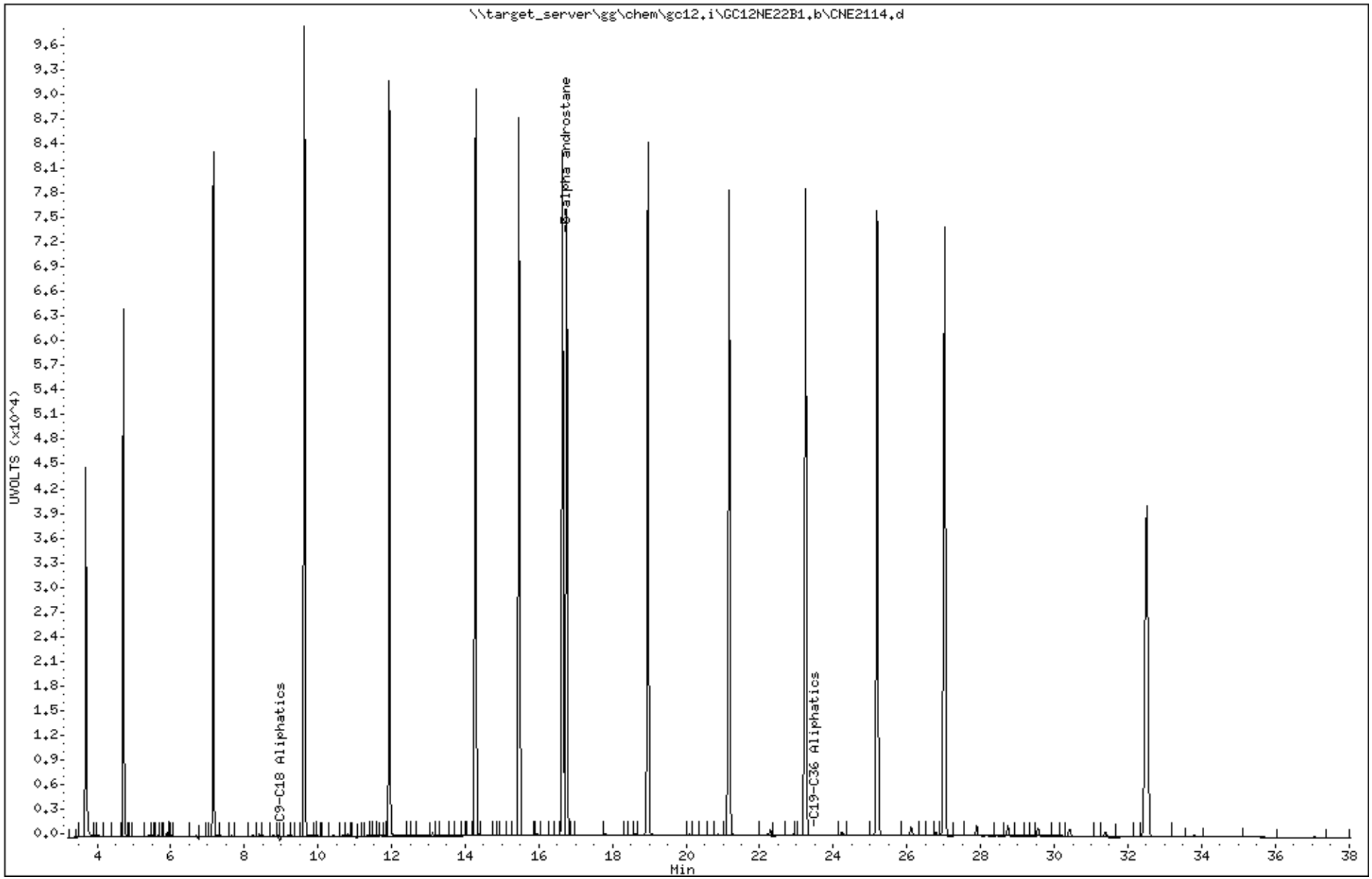
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Lab Smp Id: WG278026-2 Client Smp ID: WG278026-LCS
Inj Date : 22-MAY-2020 18:03
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-2,SN3820
Misc Info : WG278377,WG278026,WG273574-9,SN3820-1
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\ALIB070A.m
Meth Date : 26-May-2020 10:25 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC2023.d
Als bottle: 1 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: ALIPHATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	
Compounds		RT	EXP RT	DLT RT	RESPONSE			REVIEW CODE
$	44 5-alpha androstane	16.754	16.778	-0.024	278963	27.9799	56.0	
S	6 C9-C18 Aliphatics	3.594-14.380			1392994	174.911	350	
S	17 C19-C36 Aliphatics	14.380-32.609			2494098	308.437	617	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2114.d
Date : 22-MAY-2020 18:03
Client ID: WG278026-LCS
Instrument: gc12.i
Sample Info: WG278026-2,SN3820
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-1
Column diameter: 0.53



06/07/2020
Katahdin Analytical Services 2000096

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1114.d
Report Date: 28-May-2020 20:06

Katahdin Analytical Services

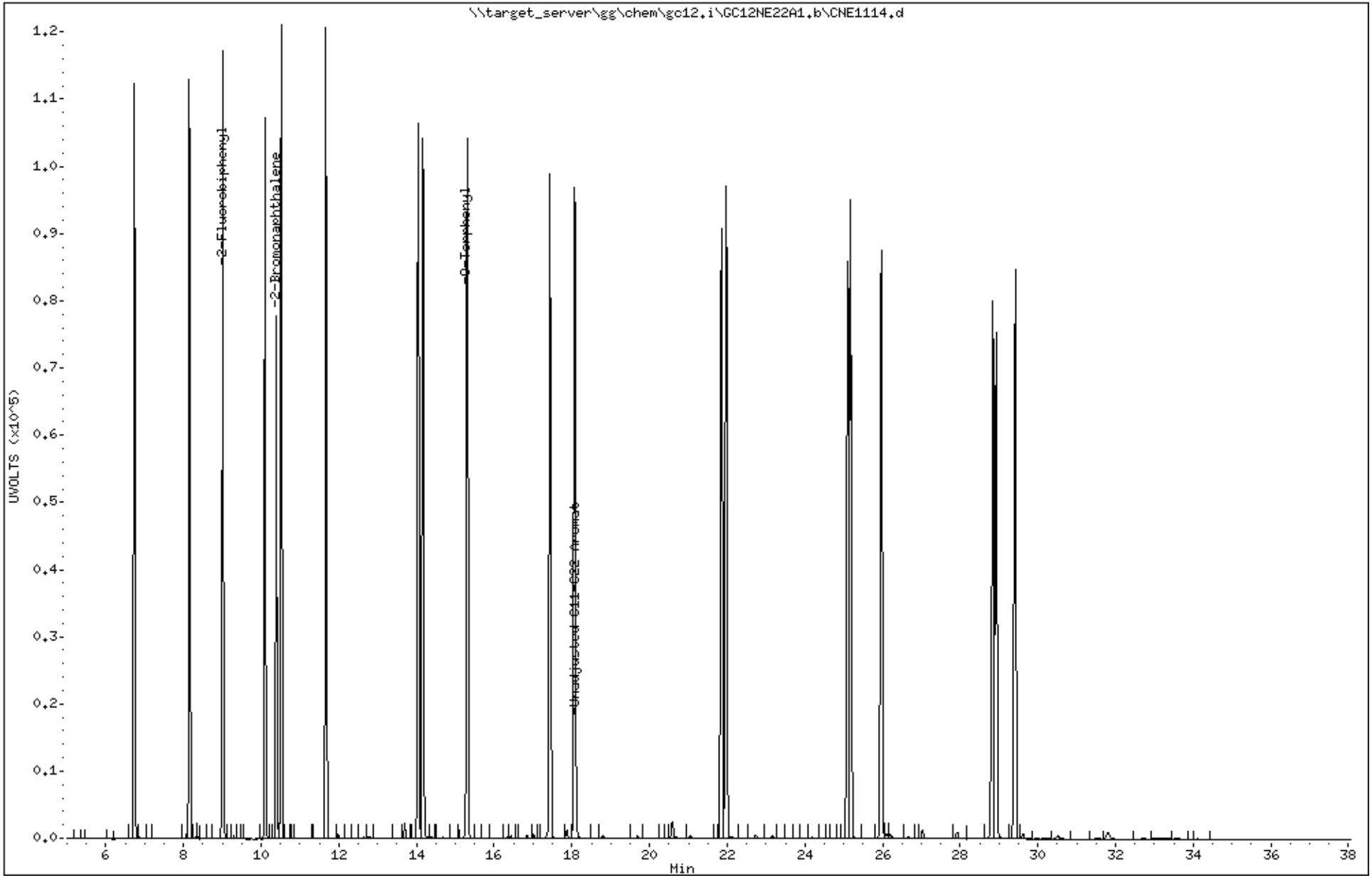
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Lab Smp Id: WG278026-2 Client Smp ID: WG278026-LCS
Inj Date : 22-MAY-2020 18:03
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-2,SN3820
Misc Info : WG278377,WG278026,WG273574-3,SN3820-1
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: AROMATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$	4 2-Fluorobiphenyl	9.011	9.054	-0.043	308263	35.4809	71.0	
$	6 2-Bromonaphthalene	10.387	10.430	-0.043	212674	35.5791	71.2	
$	11 O-Terphenyl	15.306	15.346	-0.040	354364	34.2507	68.5	
S	15 Unadjusted C11-C22 Aromatics	6.677-29.555			6045766	607.251	1210	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1114.d
Date : 22-MAY-2020 18:03
Client ID: WG278026-LCS
Instrument: gc12.i
Sample Info: WG278026-2,SN3820
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-5
Column diameter: 0.53



Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1114a.d
Report Date: 28-May-2020 20:06

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1114a.d
Lab Smp Id: WG278026-2 Client Smp ID: WG278026-LCS
Inj Date : 22-MAY-2020 18:03
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-2,SN3820
Misc Info : WG278377,WG278026,WG273574-3,SN3820-1
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: PAH.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

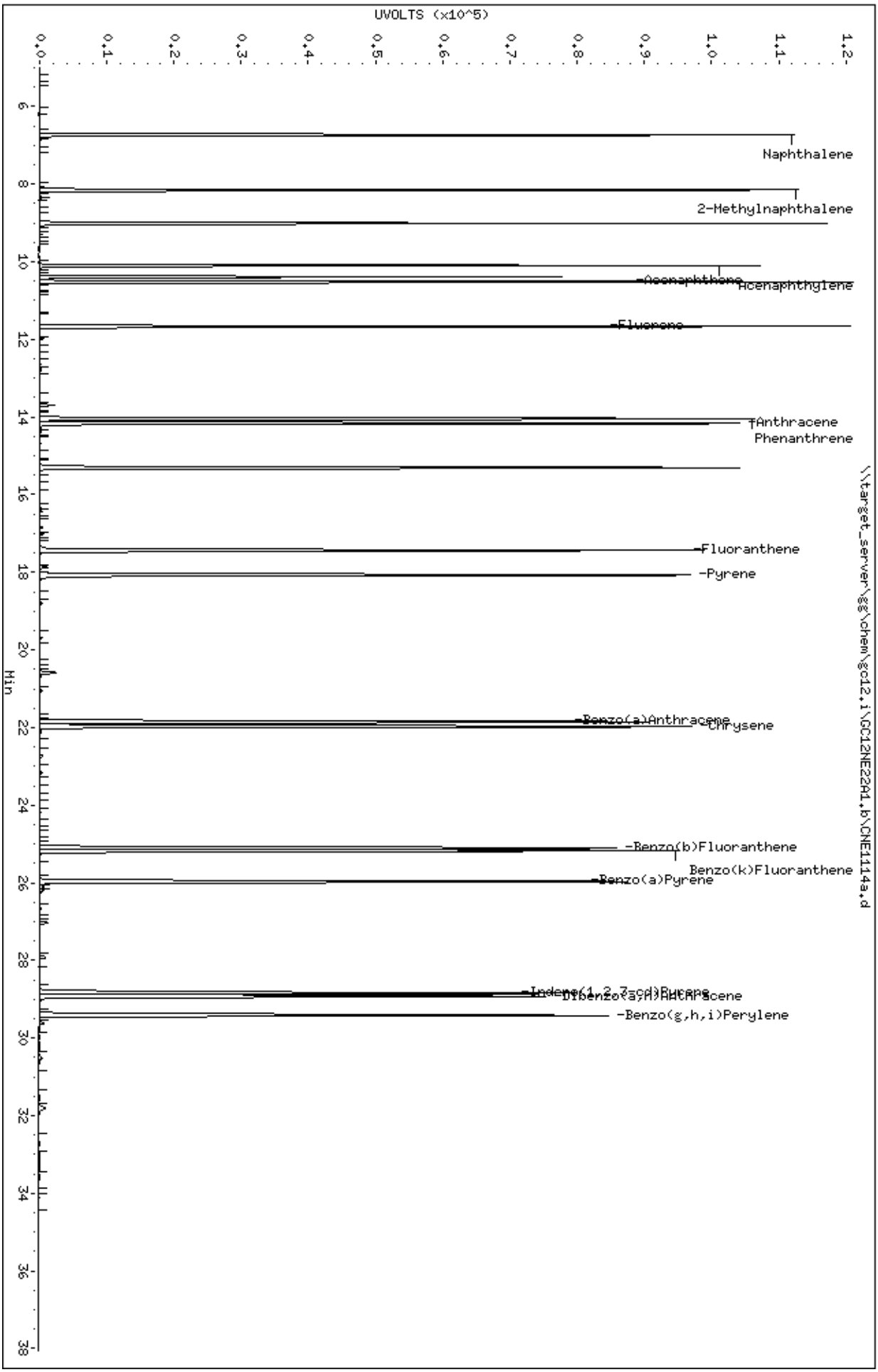
Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
2 Naphthalene	6.733	6.783	-0.050	289743	29.6377	59.3	
3 2-Methylnaphthalene	8.150	8.198	-0.048	313953	32.5672	65.1	
5 Acenaphthylene	10.101	10.145	-0.044	310461	31.5805	63.2	
7 Acenaphthene	10.518	10.562	-0.044	329374	32.8085	65.6	
8 Fluorene	11.666	11.709	-0.043	340382	34.9350	69.9	
9 Phenanthrene	14.044	14.090	-0.046	359120	38.1791	76.4	
10 Anthracene	14.164	14.210	-0.046	355912	35.1969	70.4	
12 Fluoranthene	17.434	17.478	-0.044	378868	37.6813	75.4	
13 Pyrene	18.071	18.115	-0.044	376975	36.8000	73.6	
16 Benzo(a)Anthracene	21.851	21.890	-0.039	365075	37.9218	75.8	
17 Chrysene	21.973	22.012	-0.039	376460	36.3241	72.6	
18 Benzo(b)Fluoranthene	25.108	25.144	-0.036	393539	36.5413	73.1(M)	M6
19 Benzo(k)Fluoranthene	25.178	25.214	-0.036	367605	37.3064	74.6(M)	
20 Benzo(a)Pyrene	25.969	26.005	-0.036	359835	35.1794	70.4	
21 Indeno(1,2,3-cd)Pyrene	28.839	28.871	-0.032	375007	36.4789	73.0	
22 Dibenzo(a,h)Anthracene	28.925	28.955	-0.030	316020	33.4851	67.0	
23 Benzo(g,h,i)Perylene	29.414	29.446	-0.032	362207	36.8006	73.6	

AAB
8:41 pm, May 28, 2020

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1114a.d
Report Date: 28-May-2020 20:06

QC Flag Legend

M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1114a.d
Date : 22-MAY-2020 18:03
Client ID: WG278026-LCS
Sample Info: WG278026-2,SN3820
Purge Volume: 1.0
Column phase: RTX-5
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
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UVOLTS (x10^5)
Min
Naphthalene
2-Methylnaphthalene
Acenaphthene
Acenaphthylene
Fluorene
Anthracene
Phenanthrene
Fluoranthene
Pyrene
Benzo(a)Anthracene
Chrysene
Benzo(b)Fluoranthene
Benzo(k)Fluoranthene
Benzo(a)Pyrene
Indeno(1,2,3-cd)Pyrene
Dibenzo(a,h)Anthracene
Benzo(g,h,i)Perylene

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1115.d
Report Date: 28-May-2020 20:06

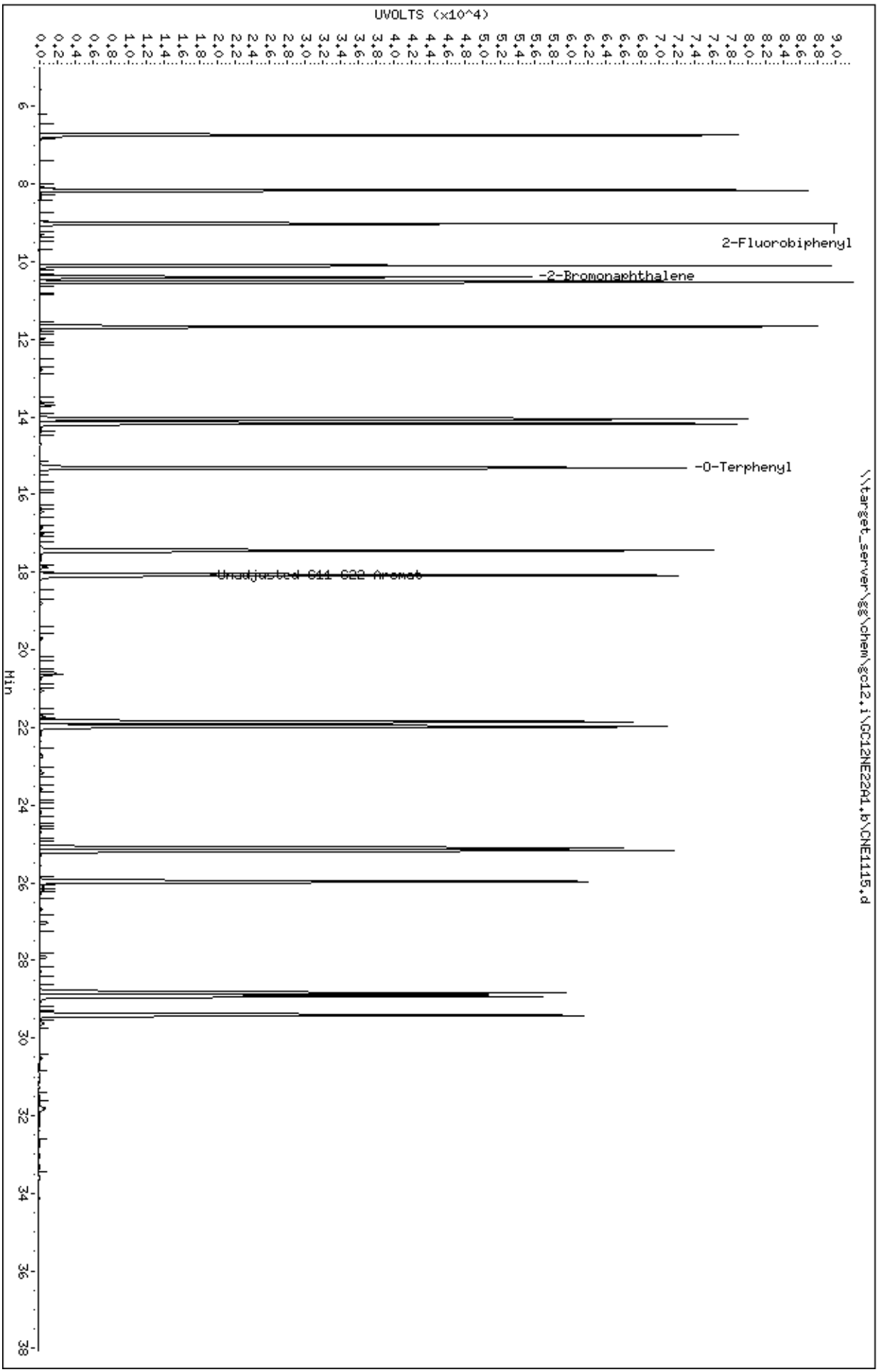
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1115.d
Lab Smp Id: WG278026-3 Client Smp ID: WG278026-LCSD
Inj Date : 22-MAY-2020 18:49
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-3,SN3820
Misc Info : WG278377,WG278026,WG273574-3,SN3820-1
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: AROMATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$	4 2-Fluorobiphenyl	9.015	9.054	-0.039	241294	27.7728	55.5	
$	6 2-Bromonaphthalene	10.393	10.430	-0.037	167175	27.9674	55.9	
$	11 O-Terphenyl	15.310	15.346	-0.036	255017	24.6484	49.3	
S	15 Unadjusted C11-C22 Aromatics	6.677-29.555			4477254	449.706	899	


Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1115.d
Date : 22-MAY-2020 18:49
Client ID: WG278026-LCSD
Sample Info: WG278026-3,SN3820
Purge Volume: 1.0
Column phase: RTX-5
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1115.d
UVOLTS (x10^4)
2-Fluorobiphenyl
-2-Bromonaphthalene
-O-Terphenyl
Unadjusted C11-C22 Aromat
Min

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1115a.d
Report Date: 28-May-2020 20:06

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1115a.d
Lab Smp Id: WG278026-3 Client Smp ID: WG278026-LCSD
Inj Date : 22-MAY-2020 18:49
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-3,SN3820
Misc Info : WG278377,WG278026,WG273574-3,SN3820-1
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: PAH.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
2 Naphthalene	6.738	6.783	-0.045	217422	22.2400	44.5	
3 2-Methylnaphthalene	8.156	8.198	-0.042	235656	24.4452	48.9	
5 Acenaphthylene	10.105	10.145	-0.040	235658	23.9714	47.9	
7 Acenaphthene	10.522	10.562	-0.040	253465	25.2473	50.5	
8 Fluorene	11.670	11.709	-0.039	260445	26.7307	53.5	
9 Phenanthrene	14.049	14.090	-0.041	268961	28.5940	57.2	
10 Anthracene	14.169	14.210	-0.041	263771	26.0849	52.2	
12 Fluoranthene	17.438	17.478	-0.040	280677	27.9155	55.8	
13 Pyrene	18.075	18.115	-0.040	276030	26.9459	53.9	
16 Benzo(a)Anthracene	21.852	21.890	-0.038	267355	27.7713	55.5	
17 Chrysene	21.974	22.012	-0.038	276501	26.6792	53.4	
18 Benzo(b)Fluoranthene	25.106	25.144	-0.038	308169	28.6144	57.2(M)	M6
19 Benzo(k)Fluoranthene	25.174	25.214	-0.040	246026	24.9679	49.9(M)	
20 Benzo(a)Pyrene	25.968	26.005	-0.037	261324	25.5484	51.1	
21 Indeno(1,2,3-cd)Pyrene	28.836	28.871	-0.035	264212	25.7013	51.4	
22 Dibenzo(a,h)Anthracene	28.921	28.955	-0.034	231052	24.4820	49.0	
23 Benzo(g,h,i)Perylene	29.409	29.446	-0.037	261962	26.6156	53.2	

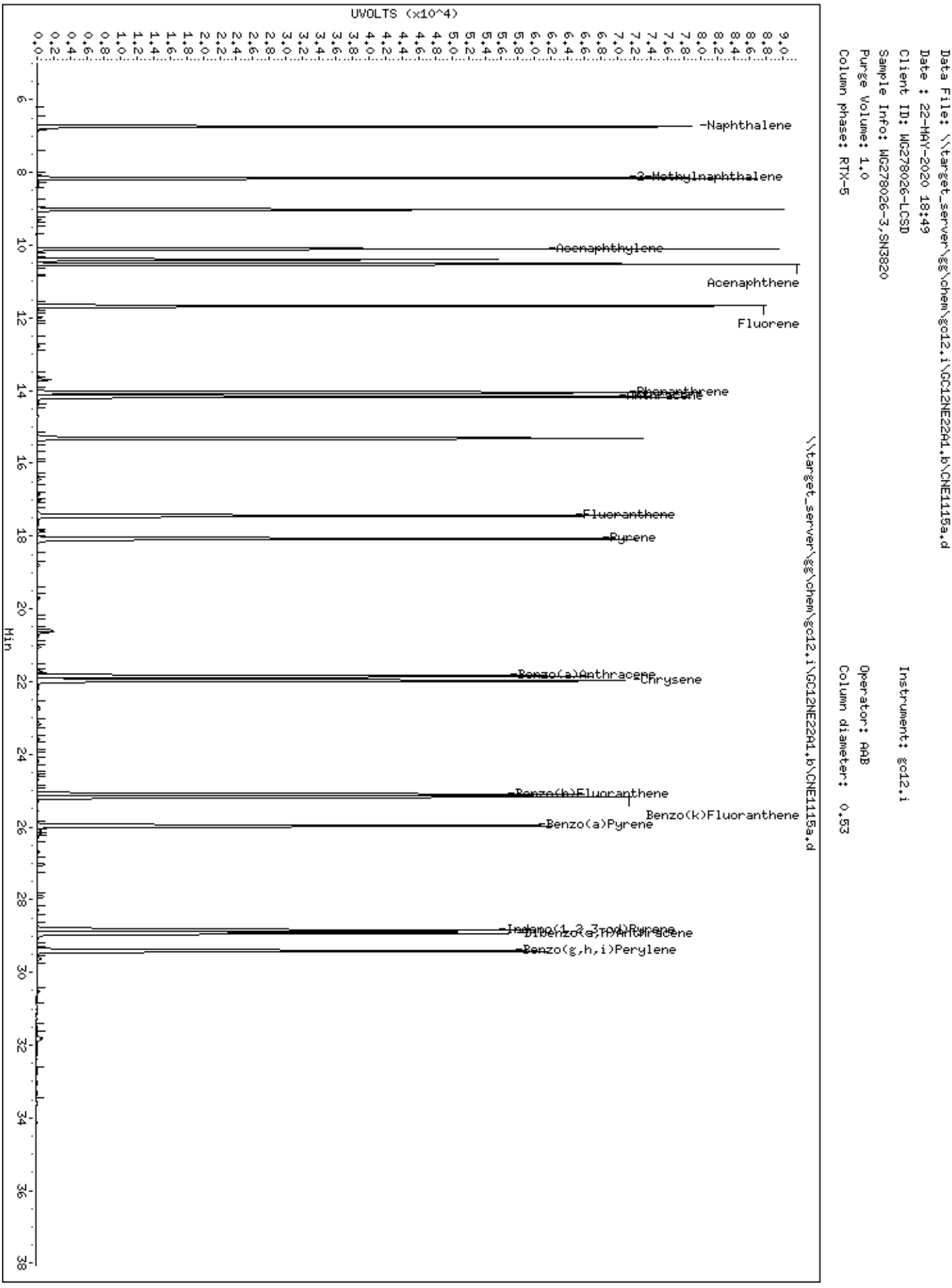


8:41 pm, May 28, 2020

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1115a.d
Report Date: 28-May-2020 20:06

QC Flag Legend

M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1115a.d
Date : 22-MAY-2020 18:49
Client ID: WG278026-LCSD
Sample Info: WG278026-3,SN3820
Purge Volume: 1.0
Column phase: RTX-5
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1115a.d
UVOLTS (x10^4)
Min
-Naphthalene
2-Methylnaphthalene
-Acenaphthylene
Acenaphthene
Fluorene
Phenanthrene
Fluoranthene
Pyrene
Benzo(a)Anthracene
Chrysene
Benzo(b)Fluoranthene
Benzo(k)Fluoranthene
Benzo(a)Pyrene
Indeno(1,2,3-cd)Pyrene
Dibenzo(a,h)Anthracene
Benzo(g,h,i)Perylene

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2115.d
Report Date: 28-May-2020 20:09

Katahdin Analytical Services

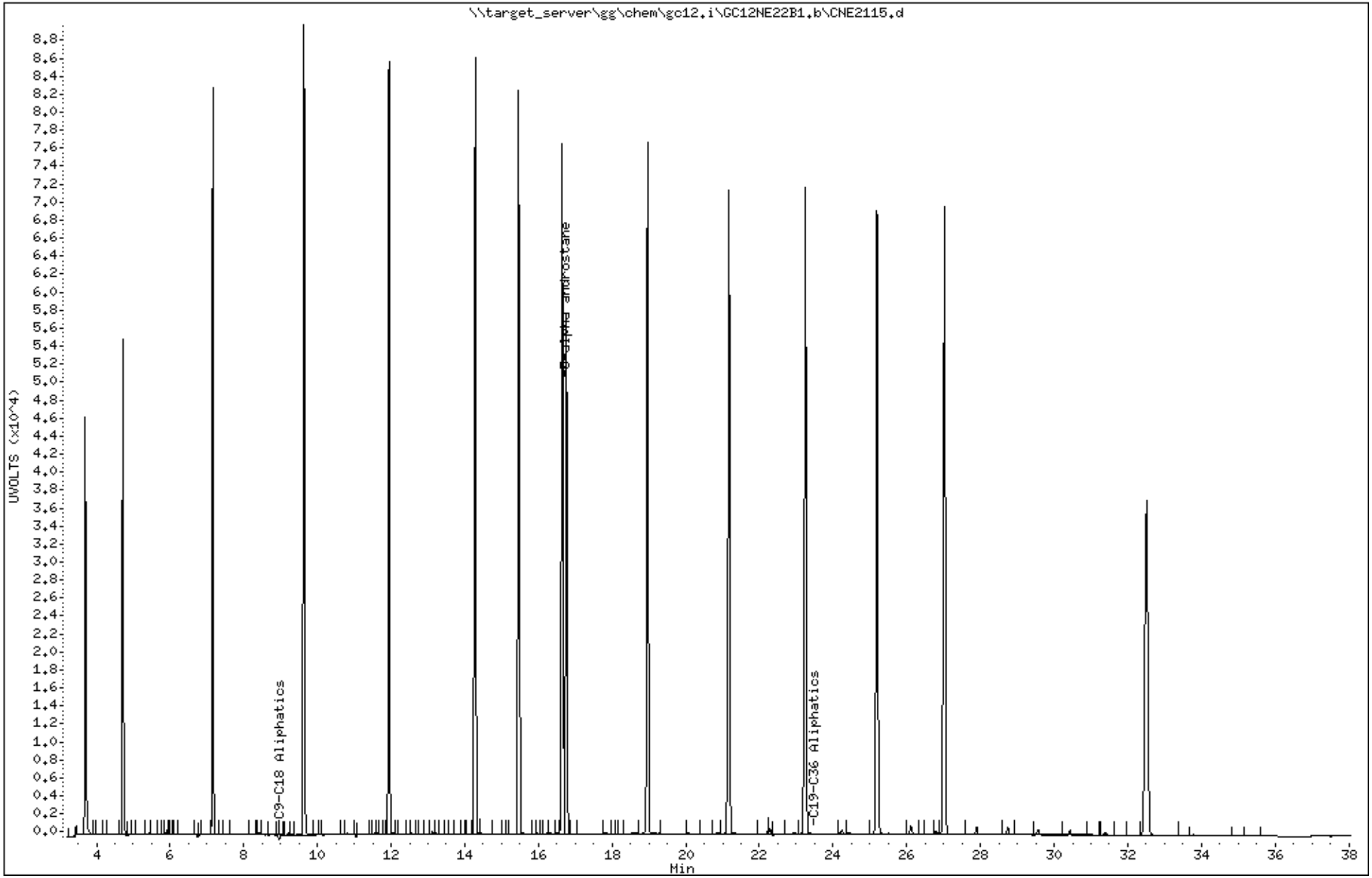
Data file : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2115.d
Lab Smp Id: WG278026-3 Client Smp ID: WG278026-LCSD
Inj Date : 22-MAY-2020 18:49
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-3,SN3820
Misc Info : WG278377,WG278026,WG273574-9,SN3820-1
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\ALIB070A.m
Meth Date : 26-May-2020 10:25 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC2023.d
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: ALIPHATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 44 5-alpha androstane	16.757	16.778	-0.021	206413	20.7032	41.4	
S 6 C9-C18 Aliphatics	3.594-14.380			1313980	164.990	330	
S 17 C19-C36 Aliphatics	14.380-32.609			2292817	283.546	567	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2115.d
Date : 22-MAY-2020 18:49
Client ID: WG278026-LCSD
Instrument: gc12.i
Sample Info: WG278026-3,SN3820
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-1
Column diameter: 0.53



Logbooks and Supporting Documents

Katahdin Analytical Services
HPLC03 Logbook

Analytical Method:	MA-EPH: X	Other: —	Flow: 5.0 mL/min
MeCl2 Lot #: DY187-US | DY726-US		Hexane Lot #: 199011 / 197051	

Tray Pos. No.	Sample Identification	Date	Initials	Injection Volume	Dilution	Comments
5	WG1277644-3	5/14/20	JPS	1mL	1	
6	SW3612-1	↓	↓	↓	↓	
7	↓ -2					
8	RINSE					
9	RINSE	↓	↓	↓	↓	
1	Rinse	5/19/20	JPS	1mL	1	
2	Frack check	↓	↓	↓	↓	
3	Rinse					
4	Blank					
5	LCS1					
6	LCS2					
7	LCS3					
8	Rinse					
9	Rinse	↓	↓	↓	↓	
1	RINSE	5-20-20	MR	1mL		
2	WG278026-1	↓	↓	↓		
3	↓ -2					
4	-3					
5	SN3819-1					
6	SN3820-1	↓	↓	↓		
7	-2					
8	-3					
9	-4	↓	↓	↓	↓	
10	SN3830-1	↓	↓	↓	↓	
11	-2					

Reviewed by: Review Date:

EX-011 – Revision 2 – 03/16/2010

EPH Sep

KATAHDIN ANALYTICAL SERVICES, LLC.
ORGANIC EXTRACTIONS LOG - AQUEOUS FUEL OILS

Extraction Method: (check one)	SW846 3510 (SEP) ✓		SW846 3520 (CLLE)			Nitrogen Water Bath Temperature: 36 °C	
Analytical Method: (√one)	SW8015M (DRO)	SW8100M (TPH)	MADEP EPH – Meniscus must be used to determine IV. ✓	ME DEP 4.1.25	FLO PRO	CT ETPH	TX 1005	Other:
Spike ID: GC2101	Surrogate ID: GC2086/GC2114		Frac. Surrogate ID: GC2111		Other:			
MeCl2 Lot #: D/594-US	Acetone Lot #: —		n-Pentane Lot #: —		Hexane Lot #:: 197051			
NaSO4 Lot # Z7969001	Baked NaSO4 ID: —		Filter Paper Lot # (KD) 16957336		Vial Lot #: 123225			
Sample pH checked prior to extraction?	Yes ✓	No	Note unpreserved samples in comments section.		Boiling Chip Date: 042120			
Blank and LCSs adjusted to pH < 2?	Yes ✓	No	pH Paper Lot #: 6908003		HCl Lot # RE0484			
Prep Start Time: 9:00	Prep End Time: 9:55		CLLE Start Time: —		CLLE End Date & Time: —			

Date Extracted	Ext. Init.	Sample ID	Init. Vol. (mL)	Surr Vol. (mL)	Spike Vol. (mL)	Final Vol Pre-Frac. (mL)	Date Conc. Pre-Frac.	Conc. Init. Pre-Frac.	Tray Location PF511	Frac. Init.	Frac. Surr Vol. (mL)	Final Vol. Post-Frac. (mL)	Date Conc Post-Frac.	Tray Location EPH5715	Conc. Init Post-Frac.	Comments R540085
5-20-20	MR	W627802G-1	1000	1.00	NR	1mL	5/20/20	JR	E8	MR	1.00	2mL	5/21/20	E2	JR	
↓	↓	-2	↓	↓	1.00	↓	↓	↓	9	↓	↓	↓	↓	3	↓	LCS
		-3			↓				10					4		LCSD
																MP 5/21/20

EX-015 – Revision 7 – 05/17/2019

OAEX405 - 000067

0000136

Date Extracted	Ext. Init.	Sample ID	Init. Vol. (mL)	Surr Vol. (mL)	Spike Vol. (mL)	Final Vol Pre-Frac. (mL)	Date Conc. Pre-Frac.	Conc. Init. Pre-Frac.	Tray Location PF512	Frac. Init.	Frac. Surr Vol. (mL)	Final Vol. Post-Frac. (mL)	Date Conc Post-Frac.	Tray Location EPH5715	Conc. Init Post-Frac.	Comments
5-20-20	MR	SN3819-1D	1070	1.00	NR	1mL	5/20/20	JR	A1	MR	1.00	2mL	5/21/20	E5	JR	
		SN3820-1D	1040						2					6		
		-2	1070						3					7		
		-3	930						4					8		
		-4	1070						5					9		
		SN3830-1	1010						6					10		
		-2	980						7					EPH5716 A1		
		-3	1010						8					2		
		-4	1010						9					3		
		-5	1010						10					4		
		-6	948						B1					5		
																MP 5/21/20

Katahdin Analytical Services, Inc.

GC Laboratory Instrument Runlog

Method (circle): (MADEP EPH) / FL PRO / TNRCC 1005 / DRO/TPH - 8015 Mod. / MEDEP 4.1.25

Instrument: GC12 (FID)

Amount Injected: 1 uL

Column ID: 448

Standard	Standard ID
ARO 200	HZ749
↓	HZ763

Date	Init.	Result File	Sample ID	Y/N	Analytical Workgroup	Method	Comments
030320	MAB	CNC1008	ARO 200	N		AROA08 1A	
		009	100				
		010	50				
		011	10				
030420	↓	012	1	↓		↓	
030520	MAB	CNC1013	MeCl2	N		AROA08 1A	
		014	TB	Y			
		015	IND	N			↓
↓	↓	016	↓	N		↓	↓
030620	MAB	CNC1017	MeCl2	N		AROA08 1A	
		018	TB	Y			
		019	ARO 200 -5	Y	WG273574		HZ763
		020	100 -4				100 → 200
		021	50 -3				50 → 200
		022	10 -2				100 → 200 20 → 200
↓		023	1 -1	↓	↓		10 20 → 200
030920		024	MeCl2	N			
		025	TB	Y			
↓	↓	026	IND -6	Y	WG273574	↓	HZ761
030920	MAB	CNC1027	ARO 50	Y		AROA08 1A	
		028	WG272588-1	Y	WG273287		
		029	-2				
		030 MAB ~~030~~ 030420	-3	↓			
		031	FC	Y			
		032	SN1586-1	Y			CON
		033	-2				
		034	-4	↓			
		035	WG272665-1	Y			
		036	-2				
↓	↓	037	-3	↓	↓	↓	

Katahdin Analytical Services, Inc.

GC Laboratory Instrument Runlog

Method (circle): (MADEP EPH) / FL PRO / TNRCC 1005 / DRO/TPH - 8015 Mod. / MEDEP 4.1.25

Instrument: GC12 (FID)

Amount Injected: 1 uL

Column ID: RTX

Standard	Standard ID
ALI 200	H2750
"	H2764

Date	Init.	Result File	Sample ID	Y/N	Analytical Workgroup	Method	Comments
030320	MB	CNC2008	ALI 200	N		ALI8070A	
		009	100				
		010	50				
		011	16				
030420		012	1				
030520	MB	CNC2013	HEXANE	N		ALI8070A	
		014	TB	Y			
		015	IND	N			"
		016	"	"			"
030620	MB	CNC2017	HEXANE	N		ALI8070A	
		018	TB	Y			
		019	ALI 200 -11	Y	WG273574		H2764
		020	100 -10				100→200
		021	50 -9				50→200
		022	10 -8				100→200 20→200
		023	1 -7				16 20→200
030920		024	HEXANE	N			
		025	TB	Y			
		026	IND	Y	WG273574		H2762
030420	MB	CNC2027	ALI 50 -12	Y		ALI8070A	
		028	WG272588-1	Y	WG273287		
		029	-2				
		030	-3				
		031	FC	Y			
		032	SN1586-1	Y			
		033	-2				
		034	-4				
		035	WG272665-1	Y			
		036	-2				
		037	-3				

Katahdin Analytical Services

GC Laboratory Instrument Runlog

Method (circle): MADEP EPH / FL PRO / TNRCC 1005 / DRO/TPH - 8015 Mod. / MEDEP 4.1.25

Instrument: GC12 (FID)

Amount Injected: 1 uL

Column ID: 498

Standard	Standard ID
AZO 50	H2773

Date	Init.	Result File	Sample ID	Y/N	Analytical Workgroup	Method	Comments
052220	MB	CNE1106	AZO 50 -1	Y	WL278377	AZOAOB1A	DIBENZO
		107	MeCl2	N			
		108	3546 TEST B				
		109	L1				
		110	L2				
		111	L3				
		112	FC 051920	Y			
		113	WL278026-1	Y	WL278377		
		114	-2				
		115	-3				
		116	SN3819-1	Y			CON
		117	SN3820-1	Y			CON
		118	-2				
		119	-3				
		120	-4				
		121	SN3880-1	Y			
052320		122	-2				
		123	-3				
		124	-4				66 (10)
		125	-5	Y			
		126	-6				
		127	MeCl2	N			
		128	AZO 50 -2	Y	WL278377		

Katahdin Analytical Services

GC Laboratory Instrument Runlog

Method (circle): MADEP EPH / FL PRO / TNRCC 1005 / DRO/TPH - 8015 Mod. / MEDEP 4.1.25

Instrument: GC12 (FID)

Amount Injected: 1 uL

Column ID: 499

Standard	Standard ID
ALI 50	H2774

Date	Init.	Result File	Sample ID	Y/N	Analytical Workgroup	Method	Comments
052220	AAB	CNE2106	ALI 50 -3	Y	WG278377	ALI2070A	
		107	HEXANE	N			
		108	3546 TEST B				
		109	L1				
		110	L2				
		111	L3				
		112	FC051920	Y			
		113	WG278026-1	Y	WG278377		
		114	-2				
		115	-3				
		116	SN3819-1	Y			
		117	SN3820-1	Y			
		118	-2				
		119	-3				
		120	-4				
		121	SN3830-1				∝ 1
052320		122	-2				∝ 1
		123	-3	Y			
		124	-4				∝ 1
		125	-5				∝ 1
		126	-6	Y			
		127	HEXANE	N			
		128	ALI 50 -4	Y	WG278377		

Data File: \\target_server\gg\chem\gcms-n.i\N052620.b\N8195.D
Report Date: 28-May-2020 19:30

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gcms-n.i\N052620.b\N8195.D
Lab Smp Id: SN3820-1
Inj Date : 27-MAY-2020 02:42
Operator : JCG Inst ID: gcms-n.i
Smp Info : SN3820-1
Misc Info : EPH
Comment :
Method : \\target_server\gg\chem\gcms-n.i\N052620.b\NSPSIM77.m
Meth Date : 27-May-2020 11:47 cgomez Quant Type: ISTD
Cal Date : 19-MAY-2020 18:10 Cal File: N8082.D
Als bottle: 27
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: eph_confirm.sub
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * Uf*(Vt/Vo*Vi)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	Correction Factor
Vt	0.00200	Final Volume (L)
Vo	1.040	Sample Volume (L)
Vi	1.000	Volume injected (uL)
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	FINAL (ug/L)	REVIEW CODE
*	10 1,4-Dichlorobenzene-D4	152	7.535	7.525	(1.000)	48633	0.80000	(aQ)	
*	26 Naphthalene-D8	136	9.165	9.165	(1.000)	131466	0.80000	(a)	
	27 Naphthalene	128	9.196	9.185	(1.003)	14652	0.09143	0.176 (a)	
*	47 Acenaphthene-D10	164	11.495	11.495	(1.000)	59245	0.80000	(a)	
*	65 Phenanthrene-D10	188	13.483	13.483	(1.000)	81678	0.80000	(a)	
$	71 Pyrene-D10	212	15.416	15.394	(0.889)	690	0.01350	0.0260 (aR)	
*	76 Chrysene-D12	240	17.337	17.315	(1.000)	25077	0.80000	(a)	
	77 Chrysene	228	17.381	17.370	(1.003)	6095	0.12569	0.242 (aQ)	
*	84 Perylene-D12	264	20.369	20.346	(1.000)	17939	0.80000	(a)	

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
Q - Qualifier signal failed the ratio test.
R - Spike/Surrogate failed recovery limits.

Data File: \\target_server\gg\chem\gcms-n.i\N052620.b\N8196.D
Report Date: 28-May-2020 19:31

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gcms-n.i\N052620.b\N8196.D
Lab Smp Id: SN3820-2
Inj Date : 27-MAY-2020 03:17
Operator : JCG Inst ID: gcms-n.i
Smp Info : SN3820-2
Misc Info : EPH
Comment :
Method : \\target_server\gg\chem\gcms-n.i\N052620.b\NSPSIM77.m
Meth Date : 27-May-2020 11:47 cgomez Quant Type: ISTD
Cal Date : 19-MAY-2020 18:10 Cal File: N8082.D
Als bottle: 28
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: eph_confirm.sub
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * Uf*(Vt/Vo*Vi)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	Correction Factor
Vt	0.00200	Final Volume (L)
Vo	1.070	Sample Volume (L)
Vi	1.000	Volume injected (uL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	FINAL (ug/L)	REVIEW CODE
* 10 1,4-Dichlorobenzene-D4	152	7.535	7.525	(1.000)	45978	0.80000	(aQ)	
* 26 Naphthalene-D8	136	9.165	9.165	(1.000)	152657	0.80000	(a)	
* 47 Acenaphthene-D10	164	11.495	11.495	(1.000)	66073	0.80000	(a)	
* 65 Phenanthrene-D10	188	13.494	13.483	(1.000)	95595	0.80000	(a)	
$ 71 Pyrene-D10	212	15.405	15.394	(0.889)	546	0.01048	0.0196 (aR)	
* 76 Chrysene-D12	240	17.337	17.315	(1.000)	25563	0.80000	(a)	
77 Chrysene	228	17.381	17.370	(1.003)	6172	0.12486	0.233 (aQ)	
* 84 Perylene-D12	264	20.369	20.346	(1.000)	17887	0.80000	(a)	

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
Q - Qualifier signal failed the ratio test.
R - Spike/Surrogate failed recovery limits.

Data File: \\target_server\gg\chem\gcms-n.i\N052620.b\N8197.D
Report Date: 28-May-2020 19:31

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gcms-n.i\N052620.b\N8197.D
Lab Smp Id: SN3820-3
Inj Date : 27-MAY-2020 03:53
Operator : JCG Inst ID: gcms-n.i
Smp Info : SN3820-3
Misc Info : EPH
Comment :
Method : \\target_server\gg\chem\gcms-n.i\N052620.b\NSPSIM77.m
Meth Date : 27-May-2020 11:47 cgomez Quant Type: ISTD
Cal Date : 19-MAY-2020 18:10 Cal File: N8082.D
Als bottle: 29
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: eph_confirm.sub
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * Uf*(Vt/Vo*Vi)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	Correction Factor
Vt	0.00200	Final Volume (L)
Vo	0.93000	Sample Volume (L)
Vi	1.000	Volume injected (uL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
* 10 1,4-Dichlorobenzene-D4	152	7.535	7.525	(1.000)	38520	0.80000	(a)	
* 26 Naphthalene-D8	136	9.165	9.165	(1.000)	140133	0.80000	(a)	
27 Naphthalene	128	9.195	9.185	(1.003)	12287	0.07193	0.155 (a)	
* 47 Acenaphthene-D10	164	11.495	11.495	(1.000)	62114	0.80000	(a)	
* 65 Phenanthrene-D10	188	13.483	13.483	(1.000)	84539	0.80000	(a)	
* 76 Chrysene-D12	240	17.337	17.315	(1.000)	22900	0.80000	(a)	
77 Chrysene	228	17.381	17.370	(1.003)	1950	0.04403	0.0947 (aQ)	
* 84 Perylene-D12	264	20.369	20.346	(1.000)	16426	0.80000	(a)	

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
Q - Qualifier signal failed the ratio test.

Data File: \\target_server\gg\chem\gcms-n.i\N052620.b\N8198.D
Report Date: 28-May-2020 19:32

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gcms-n.i\N052620.b\N8198.D
Lab Smp Id: SN3820-4
Inj Date : 27-MAY-2020 04:28
Operator : JCG Inst ID: gcms-n.i
Smp Info : SN3820-4
Misc Info : EPH
Comment :
Method : \\target_server\gg\chem\gcms-n.i\N052620.b\NSPSIM77.m
Meth Date : 27-May-2020 11:47 cgomez Quant Type: ISTD
Cal Date : 19-MAY-2020 18:10 Cal File: N8082.D
Als bottle: 30
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: eph_confirm.sub
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * Uf*(Vt/Vo*Vi)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	Correction Factor
Vt	0.00200	Final Volume (L)
Vo	1.070	Sample Volume (L)
Vi	1.000	Volume injected (uL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	FINAL (ug/L)	REVIEW CODE
* 10 1,4-Dichlorobenzene-D4	152	7.515	7.525	(1.000)	52615	0.80000	(aQ)	
* 26 Naphthalene-D8	136	9.155	9.165	(1.000)	175489	0.80000	(a)	
* 47 Acenaphthene-D10	164	11.495	11.495	(1.000)	72007	0.80000	(a)	
* 65 Phenanthrene-D10	188	13.483	13.483	(1.000)	105729	0.80000	(a)	
* 76 Chrysene-D12	240	17.337	17.315	(1.000)	25513	0.80000	(a)	
77 Chrysene	228	17.381	17.370	(1.003)	4953	0.10039	0.188 (aQ)	
* 84 Perylene-D12	264	20.380	20.346	(1.000)	16036	0.80000	(a)	

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
Q - Qualifier signal failed the ratio test.

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1112.d
Report Date: 25-May-2020 12:27

Katahdin Analytical Services

RECOVERY REPORT

Client Name:
Sample Matrix: LIQUID
Lab Smp Id: FC
Level: LOW
Data Type: GC DATA
SpikeList File: ARO-PAH.spk
Sublist File: ind.sub
Method File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Misc Info: WG277937,WG277644,WG273574-3

Client SDG: SDGa02536
Fraction: DRO

Operator: AAB
SampleType: FRACCHECK
Quant Type: ESTD

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
2 Naphthalene	90.0	65.6	72.91	40-140
3 2-Methylnaphthalen	90.0	68.3	75.89	40-140
5 Acenaphthylene	90.0	62.9	69.92	40-140
7 Acenaphthene	90.0	64.9	72.14	40-140
8 Fluorene	90.0	66.4	73.80	40-140
9 Phenanthrene	90.0	70.2	77.96	40-140
10 Anthracene	90.0	64.8	72.06	40-140
12 Fluoranthene	90.0	68.6	76.21	40-140
13 Pyrene	90.0	67.1	74.56	40-140
16 Benzo(a)Anthracene	90.0	70.1	77.87	40-140
17 Chrysene	90.0	66.5	73.93	40-140
18 Benzo(b)Fluoranthe	90.0	67.4	74.85	40-140
19 Benzo(k)Fluoranthe	90.0	66.1	73.49	40-140
20 Benzo(a)Pyrene	90.0	66.4	73.82	40-140
21 Indeno(1,2,3-cd)Py	90.0	66.3	73.70	40-140
22 Dibenzo(a,h)Anthra	90.0	59.7	66.32	40-140
23 Benzo(g,h,i)Peryle	90.0	66.2	73.51	40-140

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2112.d
Report Date: 25-May-2020 12:26

Katahdin Analytical Services

RECOVERY REPORT

Client Name:
Client SDG: SDGa02536
Sample Matrix: LIQUID
Fraction: DRO
Lab Smp Id: FC
Level: LOW
Operator: AAB
Data Type: GC DATA
SampleType: FRACCHECK
SpikeList File: FRACCHECK.spk
Quant Type: ESTD
Sublist File: IND.sub
Method File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\ALIB070A.m
Misc Info: WG277937,WG277644,WG273574-9

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
3 C-9	90.0	61.2	68.05	30-140
4 C-10	90.0	61.8	68.72	40-140
5 C-12	90.0	65.9	73.26	40-140
7 C-14	90.0	66.4	73.73	40-140
8 C-16	90.0	68.8	76.44	40-140
9 C-18	90.0	74.2	82.40	40-140
10 C-19	90.0	72.9	80.99	40-140
11 C-20	90.0	74.6	82.93	40-140
13 C-22	90.0	75.1	83.49	40-140
14 C-24	90.0	71.9	79.92	40-140
15 C-26	90.0	70.8	78.69	40-140
16 C-28	90.0	73.7	81.90	40-140
18 C-30	90.0	75.2	83.54	40-140
19 C-36	90.0	43.4	48.17	40-140

KATAHDIN ANALYTICAL SERVICES

% Breakthrough

Lab ID: WG278026-2
Data Files: CNE1114A and CNE2114A

	Naphthalene	2-Methylnaphthalene
Aromatic Conc.	59.3	65.1
Aliphatic Conc.	0.00	0.05
Total	59.3	65.2
% Breakthrough	0	0
% Limits	5	5

Lab ID: WG278026-3
Data Files: CNE1115A and CNE2115A

	Naphthalene	2-Methylnaphthalene
Aromatic Conc.	44.5	48.9
Aliphatic Conc.	0.00	0.00
Total	44.5	48.9
% Breakthrough	0	0
% Limits	5	5

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2114a.d
Report Date: 28-May-2020 19:37

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2114a.d
Lab Smp Id: WG278026-2 Client Smp ID: WG278026-LCS
Inj Date : 22-MAY-2020 18:03
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-2
Misc Info : WG278377,WG278026,WG273574-9
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\AROB044A.m
Meth Date : 15-Apr-2020 07:46 Quant Type: ESTD
Cal Date : 18-JUL-2019 04:45 Cal File: CMG2151.d
Als bottle: 1 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: breakthrough.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2115a.d
Report Date: 28-May-2020 19:37

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2115a.d
Lab Smp Id: WG278026-3 Client Smp ID: WG278026-LCSD
Inj Date : 22-MAY-2020 18:49
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-3
Misc Info : WG278377,WG278026,WG273574-9
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\AROB044A.m
Meth Date : 15-Apr-2020 07:46 Quant Type: ESTD
Cal Date : 18-JUL-2019 04:45 Cal File: CMG2151.d
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: breakthrough.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE

Shipping and Receiving Documents

ANALYTICAL REPORT

Job Number: 680-183925-2

Job Description: JV,LTM, DCl Spring 2020

For:
Seres Engineering & Services LLC
669 Marina Drive
Suite B7
Charleston, SC 29492

Attention: Nathan R Mullens



Approved for release.
Kathryn E Smith
Client Service Manager
6/5/2020 5:34 PM

Kathryn E Smith, Client Service Manager
5102 LaRoche Avenue, Savannah, GA, 31404
(912)250-0275
kathy.smith@testamericainc.com
06/05/2020

The test results in this report meet NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted. Results pertain only to samples listed in this report. This report may not be reproduced, except in full, without the written approval of the laboratory. Questions should be directed to the person who signed this report.

Savannah Certifications and ID #s: A2LA: 0399.01; AL: 41450; ARDEQ: 88-0692; ARDOH; AZ: AZ0741; CA: 03217CA; CO; CT: PH0161; DE; FL: E87052; GA: 803; Guam; HI; IL: 200022; IN: C-GA-02; IA: 353; KS: E-10322; KY EPPC: 90084; KY UST; LA DEQ: 30690; LA DHH: LA080008; ME: 2008022; MD: 250; MA: M-GA006; MI: 9925; MS; NFESC: 249; NV: GA00006; NJ: GA769; NM; NY: 10842; NC DWQ: 269; NC DHHS: 13701; PA: 68-00474; PR: GA00006; RI: LAO00244; SC: 98001001; TN: TN0296; TX: T104704185; USEPA: GA00006; VT: VT-87052; VA: 00302; WA; WV DEP: 094; WV DHHR: 9950 C; WI DNR: 999819810; WY/EPAR8: 8TMS-Q

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue, Savannah, GA 31404
Tel (912) 354-7858 Fax (912) 352-0165 www.testamericainc.com

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Method Summary

Client: Seres Engineering & Services LLC
Project/Site: JV,LTM, DCI Spring 2020

Job ID: 680-183925-2

Method	Method Description	Protocol	Laboratory
MA-EPH	MADEP EPH (Extractable Petroleum Hydroca	MA DEP	
MA-VPH	MADEP VPH Volatile Petroleum Hydrocarbon	MA DEP	

Protocol References:

MA DEP = Massachusetts Department Of Environmental Protection

Laboratory References:

= Katahdin Analytical Services Inc, 600 Technology Way, Scarborough, ME 04074

Sample Summary

Client: Seres Engineering & Services LLC
Project/Site: JV,LTM, DCI Spring 2020

Job ID: 680-183925-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-183925-1	LFM-99-O2B-SPR20	Water	05/15/20 11:10	05/16/20 09:00	

Subcontract Data

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
SN3819-1

Matrices: x Groundwater/Surface Water Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A x	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B x	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (No[1])
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1]*All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 06/02/2020 ~~06/05/2020~~

TEST AMERICA SAVANNAH
JV, LTM, DCI SPRING 2020
SN3819

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
JV, LTM, DCI SPRING 2020
SN3819

Sample Receipt

The following samples were received on May 19, 2020 and were logged in under Katahdin Analytical Services work order number SN3819 for a hardcopy due date of June 05, 2020.

KATAHDIN	TEST AMERICA SAVANNAH
Sample No.	Sample Identification
SN3819-1	LFM-99-O2B-SPR20

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

We certify that the test results provided in this report meet all the requirements of the NELAP standards unless otherwise noted in this narrative or in the Report of Analysis.

We certify that the test results provided in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation L2223.

Analytes which are reported but not listed on our ANAB scope of accreditation will be "^" flagged and the following language will be included in the case narrative for all DoD compliant work: "^" Indicates this analyte is not included on Katahdin Analytical Services DoD-ELAP Scope of Accreditation.

Sample analyses have been performed by the methods as noted herein.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact your Katahdin Analytical Services Project Manager, **Ms. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Laboratory:

The sample of Work Order # SN3819 was analyzed in accordance with Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MADEP, May 2004, Revision 1.1, and/or for the Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis

MA-VPH Analysis

The closing calibration standard (CV) (file 2NE10139) had low responses for the surrogate 2,5-DBT on the PID and FID. The CV also had low responses for six aliphatic hydrocarbons and both

the C5-C8 aliphatic and C9-C12 aliphatic ranges. These responses resulted in %D's that were outside the method acceptance limits of ± 25%.

MA-EPH Analysis

The opening calibration standard (CV) (file CNE1106) had a low response for the target analyte dibenzo(a,h)anthracene that was outside the method acceptance limits of ± 25%. Sample SN3819-1 was confirmed by GC/MS 8270 SIM and this analyte was not detected above the MDL. Therefore, no further action was taken.

There were no other protocol deviations or observations noted by the organics laboratory staff.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond 06.03.20

Leslie Dimond
Quality Assurance Officer

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: T.A. Savannah	KAS PM: HMM	Sampled By: Client	
Project:	KIMS Entry By: JCB	Delivered By:	
KAS Work Order#: 320-38818-3520	KIMS Review By: HMM	Received By: JCB	
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 5.19.20 1020	

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 4.1 Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles: **Aqueous:** No bubble larger than a pea?	✓				
Soil/Sediment: Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?				✓	
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	
11. Bottleware Prepped on: n/a					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

SN3819

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lawhon, Jon K	Carrier Tracking No(s):	COC No: 680-611416.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jon.lawhon@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Katahdin Analytical Services		Accreditations Required (See note): Dept. of Defense ELAP - A2LA; DoD - ANAB		Job #: 680-183925-2
Address: 600 Technology Way, ,	Due Date Requested: 6/1/2020			
City: Scarborough	TAT Requested (days):			
State, Zip: ME, 04074				
Phone:	PO #:			
Email:	WO #:			
Project Name: JV,LTM, DCI Spring 2020	Project #: 68023801			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (MA VPH + BTEX)/ MA VPH	SUB (MA EPH + PAHs)/ MA EPH	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
LFM-99-O2B-SPR20 (680-183925-1)	5/15/20	11:10 Eastern		Water			X	X	5	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		5/18/2020 1709			5.19.20 1020	KAS
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

May. 21, 2020
10:13 AM

Quote/Incoming:

Login Number: SN3819

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Primary Report Address:
Jon Lawhon
TestAmerica Savannah
5102 LaRoche Avenue

Savannah,GA 31404
jon.lawhon@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 5.1 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Include LOD on form. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative.
CHECK NO.	:	
CLIENT PO#	:	
CLIENT PROJECT MANAGE	:	Jon Lawhon
CONTRACT	:	680-183925, Project 68023901
COOLER TEMPERATURE	:	4.1
DELIVERY SERVICES	:	FedEx
EDD FORMAT	:	ECC-091317-TXT
LOGIN INITIALS	:	JCB
PM	:	HHM
PROJECT NAME	:	JV, LTM, DCI Spring 2020
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	SDS needs all forms. Include Level 4 narrative and MCP forms (from Leslie). Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS. Upload EDD to Ft. Devens Database. Email PDF, EDD, and invoice to Beth.Daughtry@testamericainc.com & Jon.Lawhon@testamericainc.com. No HC.
SDG ID	:	
SDG STATUS	:	
VERBAL TAT	:	

10:17 am, May 21, 2020

Login Number: SN3819

Quote/Incoming:

Account: TASAV001 NoWeb

Test America Savannah

Project: TASAV-DEVENS

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SN3819-1	LFM-99-O2B-SPR20	15-MAY-20 11:10	19-MAY-20			05-JUN-20	

Matrix		*Product*	*Hold Date (shortest)*	*Bottle Type*	*Bottle Count*	*Comments*
Aqueous	S	MA-EPH	29-MAY-20	1L N-Amber Glass		
Aqueous	S	MA-VPH	29-MAY-20	40mL Vial+HCl		

Total Samples: 1 ***Total Analyses: 2***

10:17 am, May 21, 2020

SAMPLE DATA SUMMARY PACKAGE

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N Presumptive evidence of a compound based on a mass spectral library search.

A Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3819-1
Client ID: LFM-99-O2B-SPR20
Project: JV, LTM, DCI Spring 2020
SDG: SN3819
Lab File ID: 2NE10128.D

Sample Date: 15-MAY-20
Received Date: 19-MAY-20
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		80.6	%				
2,5-Dibromotoluene (PID)		76.8	%				

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ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG278133-1
Client ID: Method Blank Sample
Project:
SDG: SN3819
Lab File ID: 2NE10120.D

Sample Date:
Received Date:
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		71.4	%				
2,5-Dibromotoluene (PID)		72.0	%				

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** JV, LTM, DCI Spring 2020 **Matrix:** AQ
Lab Code: KAS **SDG:** SN3819

Client Sample ID	Lab Sample ID	Col. ID	DBT-FID	#	DBT-PID	#
LFM-99-O2B-SPR20	SN3819-1	B	80.6		76.8	
Method Blank Sample	WG278133-1	B	71.4		72.0	
Laboratory Control S	WG278133-2	B	87.1		89.4	
Laboratory Control S	WG278133-3	B	91.9		96.1	

		QC Limits
DBT-FID	2,5-DIBROMOTOLUENE (FID)	70-130
DBT-PID	2,5-DIBROMOTOLUENE (PID)	70-130

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG278133-2
LCSD ID: WG278133-3
Project:
SDG: SN3819
Report Date: 01-JUN-20
LCS File ID: 2NE10121.D

Received Date:
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133
LCSD File ID: 2NE10122.D

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	269.	89.7	275.	91.7	ug/L	2	25	70-130
C9-C12 Aliphatics	200.	190.	95.0	187.	93.5	ug/L	2	25	70-130
C9-C10 Aromatics	100.	94.3	94.3	95.4	95.4	ug/L	1	25	70-130
Benzene	100.	87.9	87.9	91.1	91.1	ug/L	4	25	70-130
Ethylbenzene	100.	92.2	92.2	94.8	94.8	ug/L	3	25	70-130
Methyl tert-butylether	100.	90.4	90.4	90.4	90.4	ug/L	0	25	70-130
Naphthalene	100.	91.0	91.0	94.0	94.0	ug/L	3	25	70-130
Toluene	100.	89.2	89.2	92.6	92.6	ug/L	4	25	70-130
m+p-Xylenes	200.	183.	91.5	187.	93.5	ug/L	2	25	70-130
o-Xylene	100.	91.6	91.6	93.1	93.1	ug/L	2	25	70-130
2,5-Dibromotoluene (FID)			87.1		91.9				70-130
2,5-Dibromotoluene (PID)			89.4		96.1				70-130

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020
Lab File ID : 2NE10120.D
Instrument ID : GC02

SDG : SN3819
Lab Sample ID : WG278133-1
Date Analyzed : 21-MAY-20
Time Analyzed : 10:59
Date Extracted : 21-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278133-2	2NE10121.	05/21/20	11:39
Laboratory Control S	WG278133-3	2NE10122.	05/21/20	12:20
LFM-99-O2B-SPR20	SN3819-1	2NE10128.	05/21/20	17:42

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN3819
Project : JV, LTM, DCI Spring 2020 **Instrument ID:** GC02
Lab File IDs : 2NE10031.D 2NE10032.D 2NE10037.D 2NE10036.D 2NE10034.D 2NE10035.D **Calibration Date(s):** 07-MAY-20 09:25 07-MAY-20 14:39

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C10 Aromatic	2653	2703	2836	3021	3138	2603	AVG		2826		7.59424	25.00000	M C
Methyl tert-butylether	1484	1674	1686	1569	1771	1669	AVG		1642		6.12724	25.00000	O
Benzene	3397	3518	3561	3387	3616	3470	AVG		3492		2.60540	25.00000	O
Toluene	2922	3194	3266	3149	3325	2968	AVG		3137		5.14062	25.00000	O
Ethylbenzene	2501	2621	2740	2770	2917	2587	AVG		2689		5.55429	25.00000	O
m+p-Xylene	3076	3247	3376	3362	3350	2410	AVG		3137		11.9094	25.00000	O
o-Xylene	2559	2771	2889	2911	2964	2591	AVG		2781		6.18361	25.00000	O
1,2,4-trimethylbenzene	2653	2703	2836	3021	3138	2603	AVG		2826		7.59424	25.00000	O
Naphthalene	2949	2410	2270	3103	3272	2611	AVG		2769		14.4410	25.00000	O
2,5-Dibromotoluene (PID)	2274	1715	+++++	2433	2566	1786	AVG		2155		17.8318	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN3819
Project : JV, LTM, DCI Spring 2020 **Instrument ID:** GC02
Lab File IDs : 2NE10031.D 2NE10032.D 2NE10037.D 2NE10036.D 2NE10034.D 2NE10035.D **Calibration Date(s):** 07-MAY-20 08:43 07-MAY-20 14:39

	Level 1 1.0000	Level 2 5.0000	Level 3 10.0000	Level 4 50.0000	Level 5 100.0000	Level 6 300.0000	Crv New	b	m1	m2	%RSD	Max %RSD	
C5-C8 Aliphatic	5517	5727	5486	5639	5562	4787	AVG		5453		6.18987	25.00000	M C
C9-C12 Aliphatic	5393	5202	5196	5540	5789	6344	AVG		5577		7.83095	25.00000	M C
n-Pentane	4893	5095	4918	5071	5225	4097	AVG		4883		8.27021	25.00000	O
2-Methylpentane	5817	5819	5507	5664	5478	4763	AVG		5508		7.13290	25.00000	O
Methyl tert-butylether	4827	4506	4586	4238	4472	4253	AVG		4480		4.91417	25.00000	O
2,2,4-Trimethylpentane	5842	6268	6033	6181	5982	5502	AVG		5968		4.57751	25.00000	O
Benzene	7981	7809	8006	7554	7827	7749	AVG		7821		2.10939	25.00000	O
Toluene	7488	7650	7896	7530	7796	7762	AVG		7687		2.06964	25.00000	O
n-Nonane	5316	5073	5175	5605	5634	6100	AVG		5484		6.86907	25.00000	O
n-Decane	5241	4292	4329	5009	5679	6382	AVG		5155		15.60283	25.00000	O
Ethylbenzene	6766	6908	7348	7291	7575	7574	AVG		7244		4.67308	25.00000	O
m+p-Xylene	7128	7378	7979	7582	7801	7701	AVG		7595		4.02538	25.00000	O
o-Xylene	7109	7430	8156	7657	7929	7777	AVG		7677		4.82948	25.00000	O
1,2,4-trimethylbenzene	6680	6801	7123	7405	7774	7638	AVG		7237		6.15087	25.00000	O
n-Butylcyclohexane	5544	6112	6062	6070	5900	6305	AVG		5999		4.29738	25.00000	O
Naphthalene	5671	4589	4268	5559	5921	5635	AVG		5274		12.77292	25.00000	O
2,5-Dibromotoluene (FID)	2187	1573	+++++	2080	2220	1934	AVG		1999		13.15424	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020
SDG: SN3819
Lab ID : WG278133-4
Analytical Date: 05/21/20 09:36
Lab File ID : 2NE10119.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	2826	2887	0.100	2.19056	25.00000	Averaged
20	Benzene	3492	3242	0.100	-7.14169	25.00000	Averaged
30	Ethylbenzene	2689	2636	0.100	-1.97132	25.00000	Averaged
40	Methyl tert-butylether	1642	1625	0.100	-1.05975	25.00000	Averaged
50	Naphthalene	2769	2756	0.100	-0.48620	25.00000	Averaged
60	Toluene	3137	2986	0.100	-4.82557	25.00000	Averaged
70	m+p-Xylene	3137	3121	0.100	-0.49227	25.00000	Averaged
80	o-Xylene	2781	2730	0.100	-1.83890	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	2155	1902	0.100	-11.72196	25.00000	Averaged
180	1,2,4-trimethylbenzene	2826	2887	0.100	2.19004	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020 **SDG:** SN3819
Lab ID : WG278133-4 **Analytical Date:** 05/21/20 09:36
Lab File ID : 2NE10119.D **Instrument ID:** GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39 **Column ID:** B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
30	C5-C8 Aliphatic	5453	4905	0.100	-10.05248	25.00000	Averaged
40	C9-C12 Aliphatic	5577	4908	0.100	-11.99198	25.00000	Averaged
60	Benzene	7821	7227	0.100	-7.59466	25.00000	Averaged
70	Ethylbenzene	7244	7025	0.100	-3.01402	25.00000	Averaged
80	Methyl tert-butylether	4480	4293	0.100	-4.18959	25.00000	Averaged
90	Naphthalene	5274	5156	0.100	-2.23869	25.00000	Averaged
100	Toluene	7687	7193	0.100	-6.43213	25.00000	Averaged
110	m+p-Xylene	7595	7346	0.100	-3.27982	25.00000	Averaged
120	o-Xylene	7677	7474	0.100	-2.64310	25.00000	Averaged
200	n-Pentane	4883	4030	0.100	-17.46315	25.00000	Averaged
210	2-Methylpentane	5508	5054	0.100	-8.24928	25.00000	Averaged
220	2,2,4-Trimethylpentane	5968	5631	0.100	-5.65263	25.00000	Averaged
230	n-Nonane	5484	4949	0.100	-9.75406	30.00000	Averaged
240	n-Decane	5155	4325	0.100	-16.10969	25.00000	Averaged
250	n-Butylcyclohexane	5999	5492	0.100	-8.45268	25.00000	Averaged
260	1,2,4-trimethylbenzene	7237	7300	0.100	0.87477	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	1999	1687	0.100	-15.59610	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020 **SDG:** SN3819
Lab ID : WG278133-5 **Analytical Date:** 05/22/20 01:36
Lab File ID : 2NE10139.D **Instrument ID:** GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39 **Column ID:** A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
10	C9-C10 Aromatic	2826	2849	0.100	0.84239	25.00000	Averaged	
20	Benzene	3492	3367	0.100	-3.57134	25.00000	Averaged	
30	Ethylbenzene	2689	2688	0.100	-0.05853	25.00000	Averaged	
40	Methyl tert-butylether	1642	1536	0.100	-6.48308	25.00000	Averaged	
50	Naphthalene	2769	2736	0.100	-1.21277	25.00000	Averaged	
60	Toluene	3137	3123	0.100	-0.43823	25.00000	Averaged	
70	m+p-Xylene	3137	3229	0.100	2.92852	25.00000	Averaged	
80	o-Xylene	2781	2807	0.100	0.95667	25.00000	Averaged	
90	2,5-Dibromotoluene (PID)	2155	1425	0.100	-33.86224	25.00000	Averaged	<-
180	1,2,4-trimethylbenzene	2826	2849	0.100	0.84236	25.00000	Averaged	

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020 **SDG:** SN3819
Lab ID : WG278133-5 **Analytical Date:** 05/22/20 01:36
Lab File ID : 2NE10139.D **Instrument ID:** GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39 **Column ID:** B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
30	C5-C8 Aliphatic	5453	3455	0.100	-36.63294	25.00000	Averaged	<-
40	C9-C12 Aliphatic	5577	3216	0.100	-42.34226	25.00000	Averaged	<-
60	Benzene	7821	7861	0.100	0.51579	25.00000	Averaged	
70	Ethylbenzene	7244	7454	0.100	2.90583	25.00000	Averaged	
80	Methyl tert-butylether	4480	4312	0.100	-3.75302	25.00000	Averaged	
90	Naphthalene	5274	5262	0.100	-0.23332	25.00000	Averaged	
100	Toluene	7687	7845	0.100	2.05387	25.00000	Averaged	
110	m+p-Xylene	7595	7811	0.100	2.84219	25.00000	Averaged	
120	o-Xylene	7677	7877	0.100	2.61472	25.00000	Averaged	
200	n-Pentane	4883	3078	0.100	-36.97545	25.00000	Averaged	<-
210	2-Methylpentane	5508	3477	0.100	-36.88080	25.00000	Averaged	<-
220	2,2,4-Trimethylpentane	5968	3812	0.100	-36.12453	25.00000	Averaged	<-
230	n-Nonane	5484	3100	0.100	-43.47694	30.00000	Averaged	<-
240	n-Decane	5155	2639	0.100	-48.80963	25.00000	Averaged	<-
250	n-Butylcyclohexane	5999	3792	0.100	-36.78404	25.00000	Averaged	<-
260	1,2,4-trimethylbenzene	7237	7440	0.100	2.80489	25.00000	Averaged	
21	2,5-Dibromotoluene (FID)	1999	1269	0.100	-36.49971	25.00000	Averaged	<-

*** = Compound out of QC criteria**

Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services
SDG : SN3819
Project : JV, LTM, DCI Spring 2020
Instrument ID : GC02

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG277230-1	05/07/20	09:25		31.31
Initial Calibration	WG277230-1	05/07/20	09:25	31.299	
Initial Calibration	WG277230-2	05/07/20	10:07		31.308
Initial Calibration	WG277230-2	05/07/20	10:07	31.298	
Initial Calibration	WG277230-5	05/07/20	11:31		31.309
Initial Calibration	WG277230-5	05/07/20	11:31	31.299	
Initial Calibration	WG277230-6	05/07/20	12:12		31.313
Initial Calibration	WG277230-6	05/07/20	12:12	31.303	
Initial Calibration	WG277230-4	05/07/20	13:58		31.31
Initial Calibration	WG277230-4	05/07/20	13:58	31.3	
Initial Calibration	WG277230-3	05/07/20	14:39		31.308
Initial Calibration	WG277230-3	05/07/20	14:39	31.298	
Independent Source	WG277230-7	05/07/20	16:32	31.3	31.31
Continuing Calibrati	WG278133-4	05/21/20	09:36	31.27	31.28
Method Blank Sample	WG278133-1	05/21/20	10:59	31.269	31.279
Laboratory Control S	WG278133-2	05/21/20	11:39	31.273	31.283
Laboratory Control S	WG278133-3	05/21/20	12:20	31.269	31.279
LFM-99-O2B-SPR20	SN3819-1	05/21/20	17:42	31.286	31.297
Continuing Calibrati	WG278133-5	05/22/20	01:36	31.288	31.299

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3819-1
Client ID: LFM-99-O2B-SPR20
Project: JV, LTM, DCI Spring 2020
SDG: SN3819
Lab File ID: CNE2116.D

Sample Date: 15-MAY-20
Received Date: 19-MAY-20
Extract Date: 20-MAY-20
Extracted By: MR
Extraction Method: SW846 3510C
Lab Prep Batch: WG278026

Analysis Date: 22-MAY-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 28-MAY-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	93	ug/L	1	100	93.	47.	70.
C19-C36 Aliphatics	U	93	ug/L	1	100	93.	47.	70.
C11-C22 Aromatics	U	93	ug/L	1	100	93.	47.	70.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.84	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.93	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		52.4	%					
o-Terphenyl		57.1	%					
2-Fluorobiphenyl		68.0	%					
2-Bromonaphthalene		67.5	%					

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Report of Analytical Results

Client:
Lab ID: WG278026-1
Client ID: Method Blank Sample
Project:
SDG: SN3819
Lab File ID: CNE2113.D

Sample Date:
Received Date:
Extract Date: 20-MAY-20
Extracted By: MR
Extraction Method: SW846 3510C
Lab Prep Batch: WG278026

Analysis Date: 22-MAY-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 28-MAY-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		58.0	%					
o-Terphenyl		53.7	%					
2-Fluorobiphenyl		56.7	%					
2-Bromonaphthalene		56.4	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** JV, LTM, DCI Spring 2020 **Matrix:** AQ
Lab Code: KAS **SDG:** SN3819

Client Sample ID	Lab Sample ID	Col. ID	2BN	#	2FBP	#	5AA	#	OTP	#
LFM-99-O2B-SPR20	SN3819-1	B	67.5		68.0		52.4		57.1	
Method Blank Sample	WG278026-1	B	56.4		56.7		58.0		53.7	
Laboratory Control S	WG278026-2	B	79.1		78.9		62.2		76.1	
Laboratory Control S	WG278026-3	B	62.1		61.7		46.0		54.8	

		QC Limits
5AA	5-ALPHA ANDROSTANE	40-140
OTP	O-TERPHENYL	40-140
2FBP	2-FLUOROBIPHENYL	40-140
2BN	2-BROMONAPHTHALENE	40-140

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG278026-2
LCSD ID: WG278026-3
Project:
SDG: SN3819
Report Date: 28-MAY-20
LCS File ID: CNE2114.D

Received Date:
Extract Date: 20-MAY-20
Extracted By: MR
Extraction Method: SW846 3510C
Lab Prep Batch: WG278026
LCSD File ID: CNE1115.d

Analysis Date: 22-MAY-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1530	1210	79.1	899.	58.8	ug/L	29*	25	40-140
C9-C18 Aliphatics	540.	350.	64.8	330.	61.1	ug/L	6	25	40-140
C19-C36 Aliphatics	720.	617.	85.7	567.	78.8	ug/L	8	25	40-140
Naphthalene	90.0	59.3	65.9	44.5	49.4	ug/L	28*	25	40-140
2-Methylnaphthalene	90.0	65.1	72.3	48.9	54.3	ug/L	28*	25	40-140
Phenanthrene	90.0	76.4	84.9	57.2	63.6	ug/L	29*	25	40-140
Acenaphthylene	90.0	63.2	70.2	47.9	53.2	ug/L	28*	25	40-140
Acenaphthene	90.0	65.6	72.9	50.5	56.1	ug/L	26*	25	40-140
Anthracene	90.0	70.4	78.2	52.2	58.0	ug/L	30*	25	40-140
Benzo(a)anthracene	90.0	75.8	84.2	55.5	61.7	ug/L	31*	25	40-140
Benzo(a)pyrene	90.0	70.4	78.2	51.1	56.8	ug/L	32*	25	40-140
Benzo(b)fluoranthene	90.0	73.1	81.2	57.2	63.6	ug/L	24	25	40-140
Benzo(g,h,i)perylene	90.0	73.6	81.8	53.2	59.1	ug/L	32*	25	40-140
Benzo(k)fluoranthene	90.0	74.6	82.9	49.9	55.4	ug/L	40*	25	40-140
Chrysene	90.0	72.6	80.7	53.4	59.3	ug/L	30*	25	40-140
Dibenzo(a,h)anthracene	90.0	67.0	74.4	49.0	54.4	ug/L	31*	25	40-140
Fluoranthene	90.0	75.4	83.8	55.8	62.0	ug/L	30*	25	40-140
Fluorene	90.0	69.9	77.7	53.5	59.4	ug/L	26*	25	40-140
Indeno(1,2,3-cd)pyrene	90.0	73.0	81.1	51.4	57.1	ug/L	35*	25	40-140
Pyrene	90.0	73.6	81.8	53.9	59.9	ug/L	31*	25	40-140
5-Alpha Androstane			62.2		46.0				40-140
o-Terphenyl			76.1		54.8				40-140
2-Fluorobiphenyl			78.9		61.7				40-140
2-Bromonaphthalene			79.1		62.1				40-140

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020
Lab File ID : CNE1113.D
Instrument ID : GC12

SDG : SN3819
Lab Sample ID : WG278026-1
Date Analyzed : 22-MAY-20
Time Analyzed : 17:16
Date Extracted : 20-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278026-2	CNE1114.I	05/22/20	18:03
Laboratory Control S	WG278026-3	CNE1115.I	05/22/20	18:49
LFM-99-O2B-SPR20	SN3819-1	CNE1116.I	05/22/20	19:35

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020
Lab File ID : CNE1113A.D
Instrument ID : GC12

SDG : SN3819
Lab Sample ID : WG278026-1
Date Analyzed : 22-MAY-20
Time Analyzed : 17:16
Date Extracted : 20-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278026-2	CNE1114A	05/22/20	18:03
Laboratory Control S	WG278026-3	CNE1115A	05/22/20	18:49
LFM-99-O2B-SPR20	SN3819-1	CNE1116A	05/22/20	19:35

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020
Lab File ID : CNE2113.D
Instrument ID : GC12

SDG : SN3819
Lab Sample ID : WG278026-1
Date Analyzed : 22-MAY-20
Time Analyzed : 17:16
Date Extracted : 20-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278026-2	CNE2114.I	05/22/20	18:03
Laboratory Control S	WG278026-3	CNE2115.I	05/22/20	18:49
LFM-99-O2B-SPR20	SN3819-1	CNE2116.I	05/22/20	19:35

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN3819
Project : JV, LTM, DCI Spring 2020 **Instrument ID:** GC12
Lab File IDs : CNC1023.d CNC1022.d CNC1021.d CNC1020.d CNC1019.d **Calibration Date(s):** 06-MAR-20 11:58 06-MAR-20 15:00

	Level 1 1.0000	Level 2 10.0000	Level 3 50.0000	Level 4 100.0000	Level 5 200.0000		Crv New	b	m1	m2	%RSD	Max %RSD	
Unadjusted C11-C22 Aromatic	11371	10074	9250	9133	9951		AVG		9956		8.97242	25.00000	M (
Naphthalene	10735	9813	9200	9191	9943		AVG		9776		6.51655	25.00000	O
2-Methylnaphthalene	10255	9764	9180	9120	9882		AVG		9640		5.01227	25.00000	O
Acenaphthylene	11004	9891	9211	9119	9929		AVG		9831		7.68065	25.00000	O
Acenaphthene	11490	10086	9327	9240	10053		AVG		10039		8.98320	25.00000	O
Fluorene	10794	9842	9123	9086	9872		AVG		9743		7.16230	25.00000	O
Phenanthrene	9628	9614	9037	8959	9792		AVG		9406		4.03949	25.00000	O
Anthracene	12544	10063	9093	9009	9851		AVG		10112		14.19291	25.00000	O
Fluoranthene	11860	10138	9231	9100	9944		AVG		10055		10.97242	25.00000	O
Pyrene	11940	10456	9427	9272	10125		AVG		10244		10.40901	25.00000	O
Benzo(a)Anthracene	9587	10127	9251	9178	9993		AVG		9627		4.43352	25.00000	O
Chrysene	12869	10556	9337	9132	9925		AVG		10364		14.53464	25.00000	O
Benzo(b)Fluoranthene	11494	10613	10180	10298	11263		AVG		10770		5.41892	25.00000	O
Benzo(k)Fluoranthene	13075	10075	8763	8314	9042		AVG		9854		19.41921	25.00000	O
Benzo(a)Pyrene	12804	10095	9245	9087	9912		AVG		10229		14.68255	25.00000	O
Indeno(1,2,3-cd)Pyrene	9476	10307	10177	10130	11311		AVG		10280		6.42112	25.00000	O
Dibenzo(a,h)Anthracene	11876	9910	8476	8208	8717		AVG		9438		16.00254	25.00000	O
Benzo(g,h,i)Perylene	11871	9907	8998	8819	9618		AVG		9842		12.37185	25.00000	O
2-Fluorobiphenyl	8755	8953	8389	8295	9049		AVG		8688		3.85622	25.00000	
2-Bromonaphthalene	6115	6013	5760	5733	6267		AVG		5977		3.84577	25.00000	
O-Terphenyl	12500	10279	9412	9370	10169		AVG		10346		12.32082	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN3819
Project : JV, LTM, DCI Spring 2020 **Instrument ID:** GC12
Lab File IDs : CNC2023.d CNC2022.d CNC2021.d CNC2020.d CNC2019.d **Calibration Date(s):** 06-MAR-20 11:58 06-MAR-20 15:00

	1.0000 Level 1	10.0000 Level 2	50.0000 Level 3	100.0000 Level 4	200.0000 Level 5		New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C18 Aliphatic	8740	8199	7921	7515	7446		AVG		7964		6.67229	25.00000	M C
C19-C36 Aliphatic	8522	8717	8076	7576	7541		AVG		8086		6.61570	25.00000	S O
C-9	8370	7551	7922	7595	7503		AVG		7788		4.68116	30.00000	O
C-10	9415	8576	7968	7609	7482		AVG		8210		9.69960	25.00000	O
C-12	8515	8400	8002	7594	7506		AVG		8004		5.70440	25.00000	O
C-14	8800	8177	7914	7452	7395		AVG		7948		7.25834	25.00000	O
C-16	8935	8290	7898	7486	7445		AVG		8011		7.74490	25.00000	O
C-18	8403	8201	7822	7351	7343		AVG		7824		6.17061	25.00000	O
C-19	8990	8577	8050	7649	7611		AVG		8175		7.32983	25.00000	O
C-20	7989	8477	8003	7534	7568		AVG		7914		4.86903	25.00000	O
C-22	8213	8485	8050	7622	7613		AVG		7997		4.74652	25.00000	O
C-24	9359	9332	8168	7607	7603		AVG		8414		10.4734	25.00000	O
C-26	9889	9499	8071	7561	7402		AVG		8484		13.4369	25.00000	O
C-28	8999	8787	8137	7586	7523		AVG		8206		8.22594	25.00000	O
C-30	8088	8681	8187	7608	7536		AVG		8020		5.82428	25.00000	O
C-36	6645	7895	7942	7442	7472		AVG		7479		6.96091	25.00000	O
5-alpha androstane	13400	10104	9174	8620	8553		AVG		9970		20.2140	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020 **SDG:** SN3819
Lab ID : WG278377-1 **Analytical Date:** 05/22/20 11:57
Lab File ID : CNE1106.d **Instrument ID:** GC12
Initial Calibration Date(s): 03/06/20 11:58 03/06/20 15:00 **Column ID:** A

	Compound	$\overline{\text{RRF}}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
50	Naphthalene	9776	9420	0.010	-3.63848	25.00000	Averaged	
60	2-Methylnaphthalene	9640	9380	0.010	-2.69662	25.00000	Averaged	
70	Phenanthrene	9406	9368	0.010	-0.40850	25.00000	Averaged	
80	Acenaphthylene	9831	9267	0.010	-5.73255	25.00000	Averaged	
90	Acenaphthene	10039	9537	0.010	-5.00035	25.00000	Averaged	
100	Anthracene	10112	8649	0.010	-14.46942	25.00000	Averaged	
110	Benzo(a)Anthracene	9627	9418	0.010	-2.17575	25.00000	Averaged	
120	Benzo(a)Pyrene	10229	9174	0.010	-10.30990	25.00000	Averaged	
130	Benzo(b)Fluoranthene	10770	10498	0.010	-2.51908	25.00000	Averaged	
140	Benzo(g,h,i)Perylene	9842	8552	0.010	-13.11334	25.00000	Averaged	
150	Benzo(k)Fluoranthene	9854	8707	0.010	-11.64196	25.00000	Averaged	
160	Chrysene	10364	9498	0.010	-8.35763	25.00000	Averaged	
170	Dibenzo(a,h)Anthracene	9438	7018	0.010	-25.64100	25.00000	Averaged	<-
180	Fluoranthene	10055	9579	0.010	-4.72586	25.00000	Averaged	
190	Fluorene	9743	9369	0.010	-3.84222	25.00000	Averaged	
200	Indeno(1,2,3-cd)Pyrene	10280	9311	0.010	-9.43127	25.00000	Averaged	
210	Pyrene	10244	9687	0.010	-5.43500	25.00000	Averaged	
4	2-Fluorobiphenyl	8688	8556	0.010	-1.52605	25.00000	Averaged	
6	2-Bromonaphthalene	5977	5929	0.010	-0.80452	25.00000	Averaged	
11	O-Terphenyl	10346	9751	0.010	-5.75222	25.00000	Averaged	

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020 **SDG:** SN3819
Lab ID : WG278377-2 **Analytical Date:** 05/23/20 08:11
Lab File ID : CNE1128.d **Instrument ID:** GC12
Initial Calibration Date(s): 03/06/20 11:58 03/06/20 15:00 **Column ID:** A

	Compound	$\overline{\text{RRF}}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9776	10839	0.010	10.87294	25.00000	Averaged
60	2-Methylnaphthalene	9640	10874	0.010	12.79649	25.00000	Averaged
70	Phenanthrene	9406	10951	0.010	16.42656	25.00000	Averaged
80	Acenaphthylene	9831	10708	0.010	8.92161	25.00000	Averaged
90	Acenaphthene	10039	11031	0.010	9.87841	25.00000	Averaged
100	Anthracene	10112	10115	0.010	0.03034	25.00000	Averaged
110	Benzo(a)Anthracene	9627	11070	0.010	14.98903	25.00000	Averaged
120	Benzo(a)Pyrene	10229	11045	0.010	7.98453	25.00000	Averaged
130	Benzo(b)Fluoranthene	10770	12897	0.010	19.74910	25.00000	Averaged
140	Benzo(g,h,i)Perylene	9842	10632	0.010	8.02336	25.00000	Averaged
150	Benzo(k)Fluoranthene	9854	9981	0.010	1.29249	25.00000	Averaged
160	Chrysene	10364	11139	0.010	7.47654	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	9438	9600	0.010	1.71717	25.00000	Averaged
180	Fluoranthene	10055	11159	0.010	10.98329	25.00000	Averaged
190	Fluorene	9743	10882	0.010	11.68230	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	10280	11973	0.010	16.46633	25.00000	Averaged
210	Pyrene	10244	11334	0.010	10.64153	25.00000	Averaged
4	2-Fluorobiphenyl	8688	9976	0.010	14.82384	25.00000	Averaged
6	2-Bromonaphthalene	5977	6834	0.010	14.32558	25.00000	Averaged
11	O-Terphenyl	10346	11355	0.010	9.75060	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020 **SDG:** SN3819
Lab ID : WG278377-3 **Analytical Date:** 05/22/20 11:57
Lab File ID : CNE2106.d **Instrument ID:** GC12
Initial Calibration Date(s): 03/06/20 11:58 03/06/20 15:00 **Column ID:** A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7964	9067	0.010	13.85175	25.00000	Averaged
30	C19-C36 Aliphatic	8086	9248	0.010	14.36364	25.00000	Averaged
370	C-9	7788	9083	0.010	16.63147	30.00000	Averaged
380	C-10	8210	9058	0.010	10.32869	25.00000	Averaged
390	C-12	8004	9078	0.010	13.42651	25.00000	Averaged
400	C-14	7948	9047	0.010	13.82835	25.00000	Averaged
410	C-16	8011	9176	0.010	14.54073	25.00000	Averaged
420	C-18	7824	8961	0.010	14.53531	25.00000	Averaged
430	C-19	8175	9326	0.010	14.07142	25.00000	Averaged
440	C-20	7914	9263	0.010	17.04440	25.00000	Averaged
450	C-22	7997	9294	0.010	16.22332	25.00000	Averaged
460	C-24	8414	9350	0.010	11.12560	25.00000	Averaged
470	C-26	8484	9308	0.010	9.70733	25.00000	Averaged
480	C-28	8206	9414	0.010	14.71861	25.00000	Averaged
490	C-30	8020	9333	0.010	16.36971	25.00000	Averaged
500	C-36	7479	8694	0.010	16.24222	25.00000	Averaged
44	5-alpha androstane	9970	10651	0.010	6.82580	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020 **SDG:** SN3819
Lab ID : WG278377-4 **Analytical Date:** 05/23/20 08:11
Lab File ID : CNE2128.d **Instrument ID:** GC12
Initial Calibration Date(s): 03/06/20 11:58 03/06/20 15:00 **Column ID:** A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7964	9049	0.010	13.62918	25.00000	Averaged
30	C19-C36 Aliphatic	8086	9320	0.010	15.26168	25.00000	Averaged
370	C-9	7788	9133	0.010	17.26603	30.00000	Averaged
380	C-10	8210	8970	0.010	9.25632	25.00000	Averaged
390	C-12	8004	9049	0.010	13.06742	25.00000	Averaged
400	C-14	7948	9033	0.010	13.65773	25.00000	Averaged
410	C-16	8011	9130	0.010	13.97051	25.00000	Averaged
420	C-18	7824	8981	0.010	14.79426	25.00000	Averaged
430	C-19	8175	9331	0.010	14.13258	25.00000	Averaged
440	C-20	7914	9192	0.010	16.13819	25.00000	Averaged
450	C-22	7997	9357	0.010	17.01165	25.00000	Averaged
460	C-24	8414	9323	0.010	10.80659	25.00000	Averaged
470	C-26	8484	9334	0.010	10.01543	25.00000	Averaged
480	C-28	8206	9449	0.010	15.13681	25.00000	Averaged
490	C-30	8020	9405	0.010	17.27471	25.00000	Averaged
500	C-36	7479	9172	0.010	22.63903	25.00000	Averaged
44	5-alpha androstane	9970	10594	0.010	6.25560	25.00000	Averaged

*** = Compound out of QC criteria**

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: GC12 ICAL SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 9.06 S2 : 10.44

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	S2 RT #
01		WG273574-5	03/06/20	1158	9.07	10.45
02		WG273574-4	03/06/20	1243	9.06	10.44
03		WG273574-3	03/06/20	1329	9.06	10.44
04		WG273574-2	03/06/20	1414	9.05	10.43
05		WG273574-1	03/06/20	1500	9.06	10.44
06		WG273574-6	03/09/20	0623		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: GC12 ICAL SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION S3 : 15.36					
	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG273574-5	03/06/20	1158	15.37	
02		WG273574-4	03/06/20	1243	15.35	
03		WG273574-3	03/06/20	1329	15.36	
04		WG273574-2	03/06/20	1414	15.35	
05		WG273574-1	03/06/20	1500	15.35	
06		WG273574-6	03/09/20	0623		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SN3819

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 9.05 S2 : 10.43

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	S2 RT #
01		WG278377-1	05/22/20	1157	9.05	10.43
02	WG278026-BLA	WG278026-1	05/22/20	1716	9.03	10.40
03	WG278026-LCS	WG278026-2	05/22/20	1803	9.01	10.39
04	WG278026-LCS	WG278026-3	05/22/20	1849	9.02	10.39
05	LFM-99-O2B-S	SN3819-1	05/22/20	1935	9.02	10.39
06		WG278377-2	05/23/20	0811	9.12	10.49
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS

S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SN3819

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.35

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG278377-1	05/22/20	1157	15.35	
02	WG278026-BLA	WG278026-1	05/22/20	1716	15.31	
03	WG278026-LCS	WG278026-2	05/22/20	1803	15.31	
04	WG278026-LCS	WG278026-3	05/22/20	1849	15.31	
05	LFM-99-O2B-S	SN3819-1	05/22/20	1935	15.31	
06		WG278377-2	05/23/20	0811	15.41	
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: GC12 ICAL SDG No.: SDGA02536

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.71

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01		WG273574-11	03/06/20	1158	16.72	
02		WG273574-10	03/06/20	1243	16.70	
03		WG273574-9	03/06/20	1329	16.71	
04		WG273574-8	03/06/20	1414	16.69	
05		WG273574-7	03/06/20	1500	16.69	
06		WG273574-12	03/09/20	0623		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.33 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII DRO

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SN3819

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.78

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01		WG278377-3	05/22/20	1157	16.78	
02	WG278026-BLA	WG278026-1	05/22/20	1716	16.76	
03	WG278026-LCS	WG278026-2	05/22/20	1803	16.75	
04	WG278026-LCS	WG278026-3	05/22/20	1849	16.76	
05	LFM-99-O2B-S	SN3819-1	05/22/20	1935	16.76	
06		WG278377-4	05/23/20	0811	16.81	
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.34 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII DRO

VOLATILE PETROLEUM HYDROCARBON DATA

QC Summary Section

Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** JV, LTM, DCI Spring 2020 **Matrix:** AQ
Lab Code: KAS **SDG:** SN3819

Client Sample ID	Lab Sample ID	Col. ID	DBT-FID	#	DBT-PID	#
LFM-99-O2B-SPR20	SN3819-1	B	80.6		76.8	
Method Blank Sample	WG278133-1	B	71.4		72.0	
Laboratory Control S	WG278133-2	B	87.1		89.4	
Laboratory Control S	WG278133-3	B	91.9		96.1	

		QC Limits
DBT-FID	2,5-DIBROMOTOLUENE (FID)	70-130
DBT-PID	2,5-DIBROMOTOLUENE (PID)	70-130

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://katahdinlab.com
sales@katahdinlab.com

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020
Lab File ID : 2NE10120.D
Instrument ID : GC02

SDG : SN3819
Lab Sample ID : WG278133-1
Date Analyzed : 21-MAY-20
Time Analyzed : 10:59
Date Extracted : 21-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278133-2	2NE10121.	05/21/20	11:39
Laboratory Control S	WG278133-3	2NE10122.	05/21/20	12:20
LFM-99-O2B-SPR20	SN3819-1	2NE10128.	05/21/20	17:42

Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services
SDG : SN3819
Project : JV, LTM, DCI Spring 2020
Instrument ID : GC02

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG277230-1	05/07/20	09:25		31.31
Initial Calibration	WG277230-1	05/07/20	09:25	31.299	
Initial Calibration	WG277230-2	05/07/20	10:07		31.308
Initial Calibration	WG277230-2	05/07/20	10:07	31.298	
Initial Calibration	WG277230-5	05/07/20	11:31		31.309
Initial Calibration	WG277230-5	05/07/20	11:31	31.299	
Initial Calibration	WG277230-6	05/07/20	12:12		31.313
Initial Calibration	WG277230-6	05/07/20	12:12	31.303	
Initial Calibration	WG277230-4	05/07/20	13:58		31.31
Initial Calibration	WG277230-4	05/07/20	13:58	31.3	
Initial Calibration	WG277230-3	05/07/20	14:39		31.308
Initial Calibration	WG277230-3	05/07/20	14:39	31.298	
Independent Source	WG277230-7	05/07/20	16:32	31.3	31.31
Continuing Calibrati	WG278133-4	05/21/20	09:36	31.27	31.28
Method Blank Sample	WG278133-1	05/21/20	10:59	31.269	31.279
Laboratory Control S	WG278133-2	05/21/20	11:39	31.273	31.283
Laboratory Control S	WG278133-3	05/21/20	12:20	31.269	31.279
LFM-99-O2B-SPR20	SN3819-1	05/21/20	17:42	31.286	31.297
Continuing Calibrati	WG278133-5	05/22/20	01:36	31.288	31.299

Sample Data Section

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N Presumptive evidence of a compound based on a mass spectral library search.

A Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3819-1
Client ID: LFM-99-O2B-SPR20
Project: JV, LTM, DCI Spring 2020
SDG: SN3819
Lab File ID: 2NE10128.D

Sample Date: 15-MAY-20
Received Date: 19-MAY-20
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		80.6	%				
2,5-Dibromotoluene (PID)		76.8	%				

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Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10128.D
Report Date: 01-Jun-2020 09:27

Katahdin Analytical Services

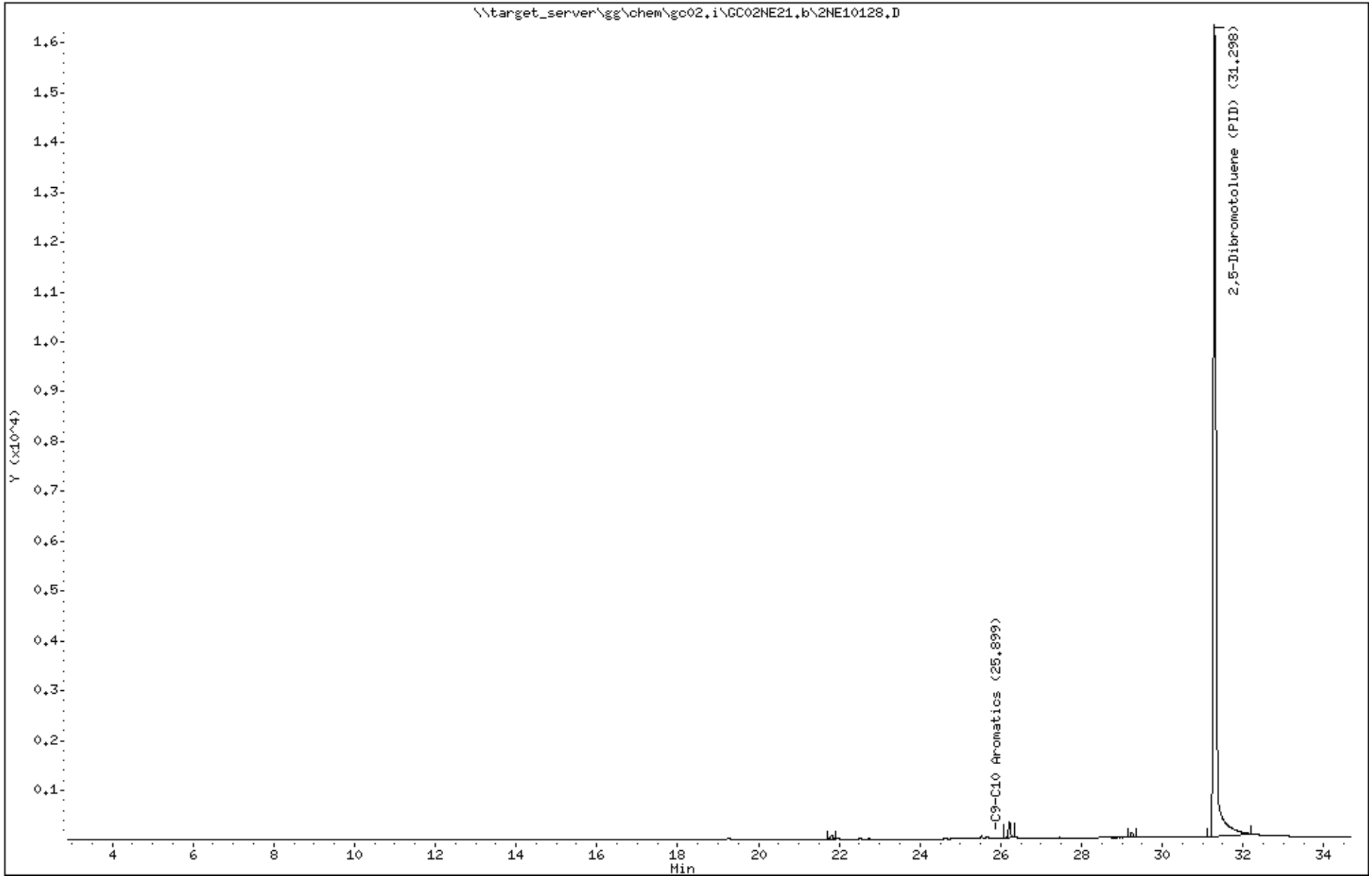
Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10128.D
Lab Smp Id: SN3819-1 Client Smp ID: LFM-99-O2B-SPR20
Inj Date : 21-MAY-2020 17:42
Operator : DL Inst ID: gc02.i
Smp Info : SN3819-1
Misc Info : WG278133,WG277230-4
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 11 2,5-Dibromotoluene (PID)	31.297	31.309	-0.012	165553	76.8297	76.8	

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10128.D
Date : 21-MAY-2020 17:42
Client ID: LFM-99-02B-SPR20 Instrument: gc02.i
Sample Info: SN3819-1
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



Data File: 2NE10128.D
Report Date: 01-Jun-2020 09:29

Katahdin Analytical Services

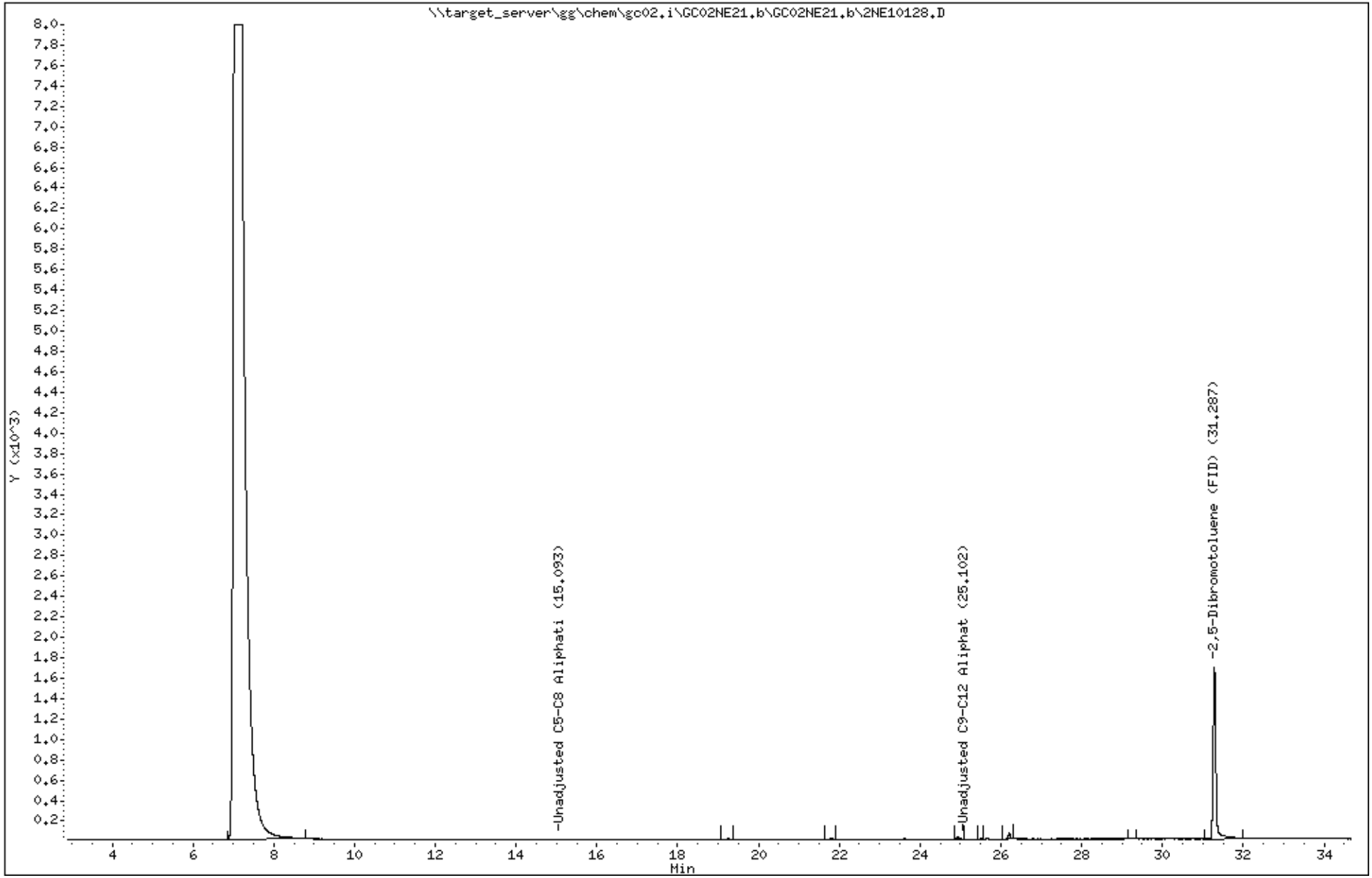
Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10128.D
Lab Smp Id: SN3819-1 Client Smp ID: LFM-99-O2B-SPR20
Inj Date : 21-MAY-2020 17:42
Operator : DL Inst ID: gc02.i
Smp Info : SN3819-1
Misc Info : WG278133,WG277230-4
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 21 2,5-Dibromotoluene (FID)	31.286	31.304	-0.018	161124	80.6106	80.6	

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10128.D
Date : 21-MAY-2020 17:42
Client ID: LFM-99-02B-SPR20 Instrument: gc02.i
Sample Info: SN3819-1
Purge Volume: 0.0 Operator: DL
Column phase: RTX-502.2 Column diameter: 0.53



Standards Data Section

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN3819
Project : JV, LTM, DCI Spring 2020 **Instrument ID:** GC02
Lab File IDs : 2NE10031.D 2NE10032.D 2NE10037.D 2NE10036.D 2NE10034.D 2NE10035.D **Calibration Date(s):** 07-MAY-20 09:25 07-MAY-20 14:39

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C10 Aromatic	2653	2703	2836	3021	3138	2603	AVG		2826		7.59424	25.00000	M C
Methyl tert-butylether	1484	1674	1686	1569	1771	1669	AVG		1642		6.12724	25.00000	O
Benzene	3397	3518	3561	3387	3616	3470	AVG		3492		2.60540	25.00000	O
Toluene	2922	3194	3266	3149	3325	2968	AVG		3137		5.14062	25.00000	O
Ethylbenzene	2501	2621	2740	2770	2917	2587	AVG		2689		5.55429	25.00000	O
m+p-Xylene	3076	3247	3376	3362	3350	2410	AVG		3137		11.9094	25.00000	O
o-Xylene	2559	2771	2889	2911	2964	2591	AVG		2781		6.18361	25.00000	O
1,2,4-trimethylbenzene	2653	2703	2836	3021	3138	2603	AVG		2826		7.59424	25.00000	O
Naphthalene	2949	2410	2270	3103	3272	2611	AVG		2769		14.4410	25.00000	O
2,5-Dibromotoluene (PID)	2274	1715	+++++	2433	2566	1786	AVG		2155		17.8318	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10038.D
Report Date: 01-Jun-2020 08:03

Katahdin Analytical Services

RECOVERY REPORT

Client Name: Client SDG: SDGa01556
Sample Matrix: LIQUID Fraction: VPH
Lab Smp Id: IND
Level: LOW Operator: DL
Data Type: GC DATA SampleType: LCS
SpikeList File: ind.spk Quant Type: ESTD
Sublist File: IND.sub
Method File: \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Misc Info: WG277230,WG277230-4

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
2 Methyl tert-butyle	100	95.3	95.32	80-120
3 Benzene	100	98.1	98.08	80-120
4 Toluene	100	99.7	99.66	80-120
5 Ethylbenzene	100	102	102.56	80-120
6 m+p-Xylene	200	204	101.91	80-120
7 o-Xylene	100	102	101.83	80-120
8 1,2,4-trimethylben	100	105	104.67	80-120
10 Naphthalene	100	111	111.41	80-120

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
$ 11 2,5-Dibromotoluene	100	117	116.85	70-130

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN3819
Project : JV, LTM, DCI Spring 2020 **Instrument ID:** GC02
Lab File IDs : 2NE10031.D 2NE10032.D 2NE10037.D 2NE10036.D 2NE10034.D 2NE10035.D **Calibration Date(s):** 07-MAY-20 08:43 07-MAY-20 14:39

	Level 1 1.0000	Level 2 5.0000	Level 3 10.0000	Level 4 50.0000	Level 5 100.0000	Level 6 300.0000	Crv New	b	m1	m2	%RSD	Max %RSD	
C5-C8 Aliphatic	5517	5727	5486	5639	5562	4787	AVG		5453		6.18987	25.00000	M C
C9-C12 Aliphatic	5393	5202	5196	5540	5789	6344	AVG		5577		7.83095	25.00000	M C
n-Pentane	4893	5095	4918	5071	5225	4097	AVG		4883		8.27021	25.00000	O
2-Methylpentane	5817	5819	5507	5664	5478	4763	AVG		5508		7.13290	25.00000	O
Methyl tert-butylether	4827	4506	4586	4238	4472	4253	AVG		4480		4.91417	25.00000	O
2,2,4-Trimethylpentane	5842	6268	6033	6181	5982	5502	AVG		5968		4.57751	25.00000	O
Benzene	7981	7809	8006	7554	7827	7749	AVG		7821		2.10939	25.00000	O
Toluene	7488	7650	7896	7530	7796	7762	AVG		7687		2.06964	25.00000	O
n-Nonane	5316	5073	5175	5605	5634	6100	AVG		5484		6.86907	25.00000	O
n-Decane	5241	4292	4329	5009	5679	6382	AVG		5155		15.60283	25.00000	O
Ethylbenzene	6766	6908	7348	7291	7575	7574	AVG		7244		4.67308	25.00000	O
m+p-Xylene	7128	7378	7979	7582	7801	7701	AVG		7595		4.02538	25.00000	O
o-Xylene	7109	7430	8156	7657	7929	7777	AVG		7677		4.82948	25.00000	O
1,2,4-trimethylbenzene	6680	6801	7123	7405	7774	7638	AVG		7237		6.15087	25.00000	O
n-Butylcyclohexane	5544	6112	6062	6070	5900	6305	AVG		5999		4.29738	25.00000	O
Naphthalene	5671	4589	4268	5559	5921	5635	AVG		5274		12.77292	25.00000	O
2,5-Dibromotoluene (FID)	2187	1573	+++++	2080	2220	1934	AVG		1999		13.15424	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Data File: 2NE10038.D
Report Date: 01-Jun-2020 08:03

Katahdin Analytical Services

RECOVERY REPORT

Client Name: Client SDG: SDGa01556
Sample Matrix: LIQUID Fraction: VPH
Lab Smp Id: IND
Level: LOW Operator: DL
Data Type: GC DATA SampleType: LCS
SpikeList File: ind.spk Quant Type: ESTD
Sublist File: IND.sub
Method File: \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Misc Info: WG277230,WG277230-4

	SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
5	n-Pentane	100	99.4	99.43	80-120
6	2-Methylpentane	100	100	100.03	80-120
7	Methyl tert-butyle	100	91.7	91.73	80-120
8	2,2,4-Trimethylpen	100	102	101.87	80-120
9	Benzene	100	95.6	95.66	80-120
11	Toluene	100	95.8	95.83	80-120
12	n-Nonane	100	105	105.41	80-120
13	n-Decane	100	114	113.70	80-120
14	Ethylbenzene	100	98.9	98.94	80-120
15	m+p-Xylene	200	195	97.55	80-120
16	o-Xylene	100	98.2	98.19	80-120
18	1,2,4-trimethylben	100	101	100.74	80-120
19	n-Butylcyclohexane	100	102	101.88	80-120
20	Naphthalene	100	105	105.31	80-120

	SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
$ 21	2,5-Dibromotoluene	100	108	108.34	70-130

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10031.D
Report Date: 01-Jun-2020 08:02

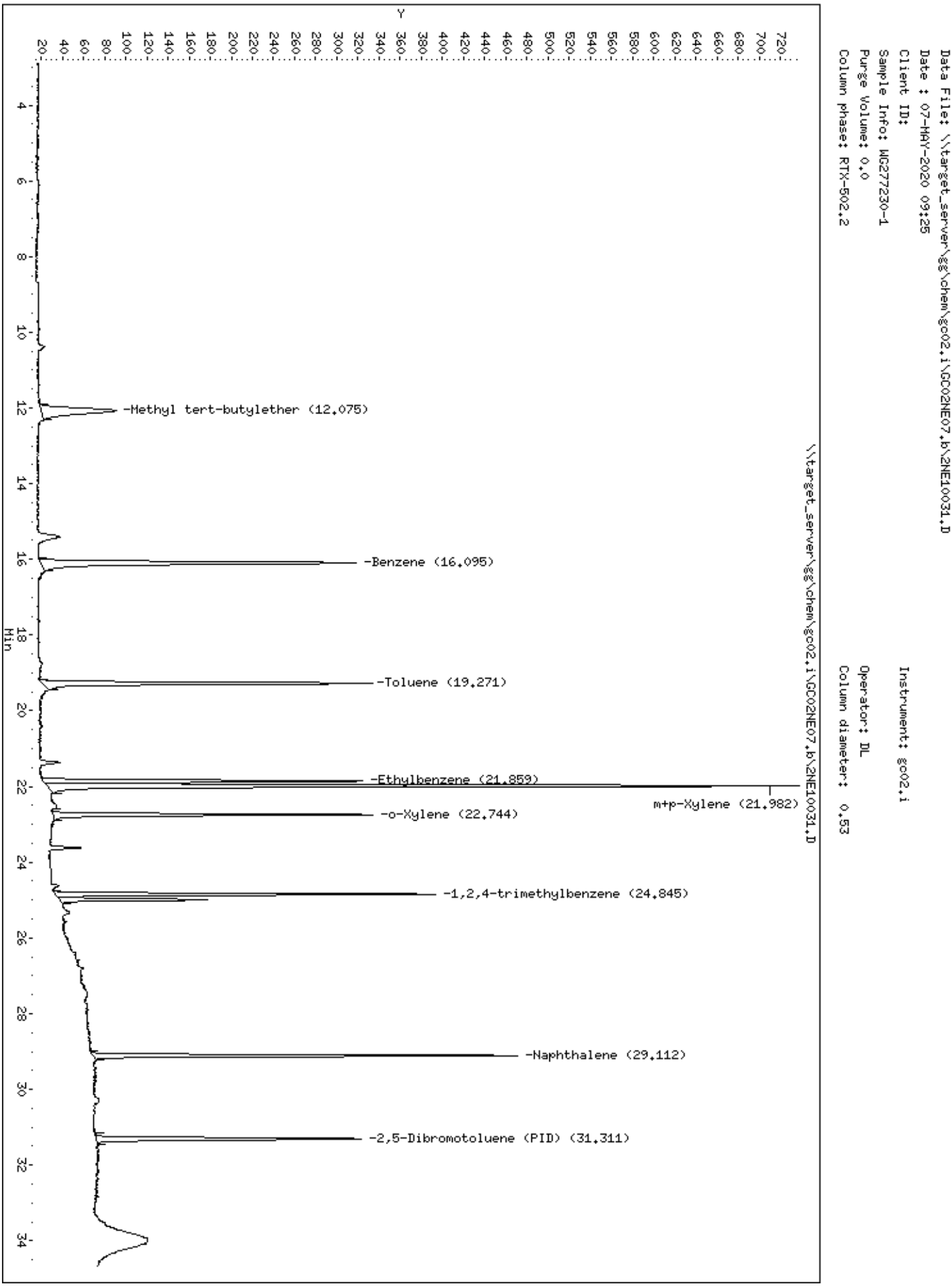
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10031.D
Lab Smp Id: ICAL1
Inj Date : 07-MAY-2020 09:25
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-1
Misc Info :
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 09:25   Cal File: 2NE10031.D
Als bottle: 1   Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
M	1	C9-C10 Aromatic				2653	1.00000		
	2	Methyl tert-butylether	12.074	12.078	-0.004	1484	1.00000		
	3	Benzene	16.094	16.099	-0.005	3397	1.00000		
	4	Toluene	19.271	19.274	-0.003	2922	1.00000		
	5	Ethylbenzene	21.859	21.860	-0.001	2501	1.00000		
	6	m+p-Xylene	21.982	21.983	-0.001	6152	2.00000		
	7	o-Xylene	22.743	22.745	-0.002	2559	1.00000		
	8	1,2,4-trimethylbenzene	24.844	24.844	0.000	2653	1.00000		
	10	Naphthalene	29.111	29.110	0.001	2949	1.00000		
$	11	2,5-Dibromotoluene (PID)	31.310	31.309	0.001	2274	1.00000		


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10031.D
Date : 07-MAY-2020 09:25
Client ID:
Sample Info: WG277230-1
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10031.D
Y
Min
-Methyl tert-butylether (12.075)
-Benzene (16.095)
-Toluene (19.271)
-Ethylbenzene (21.859)
m+p-Xylene (21.982)
-o-Xylene (22.744)
-1,2,4-trimethylbenzene (24.845)
-Naphthalene (29.112)
-2,5-Dibromotoluene (PID) (31.311)

Data File: 2NE10031.D
Report Date: 01-Jun-2020 08:03

Katahdin Analytical Services

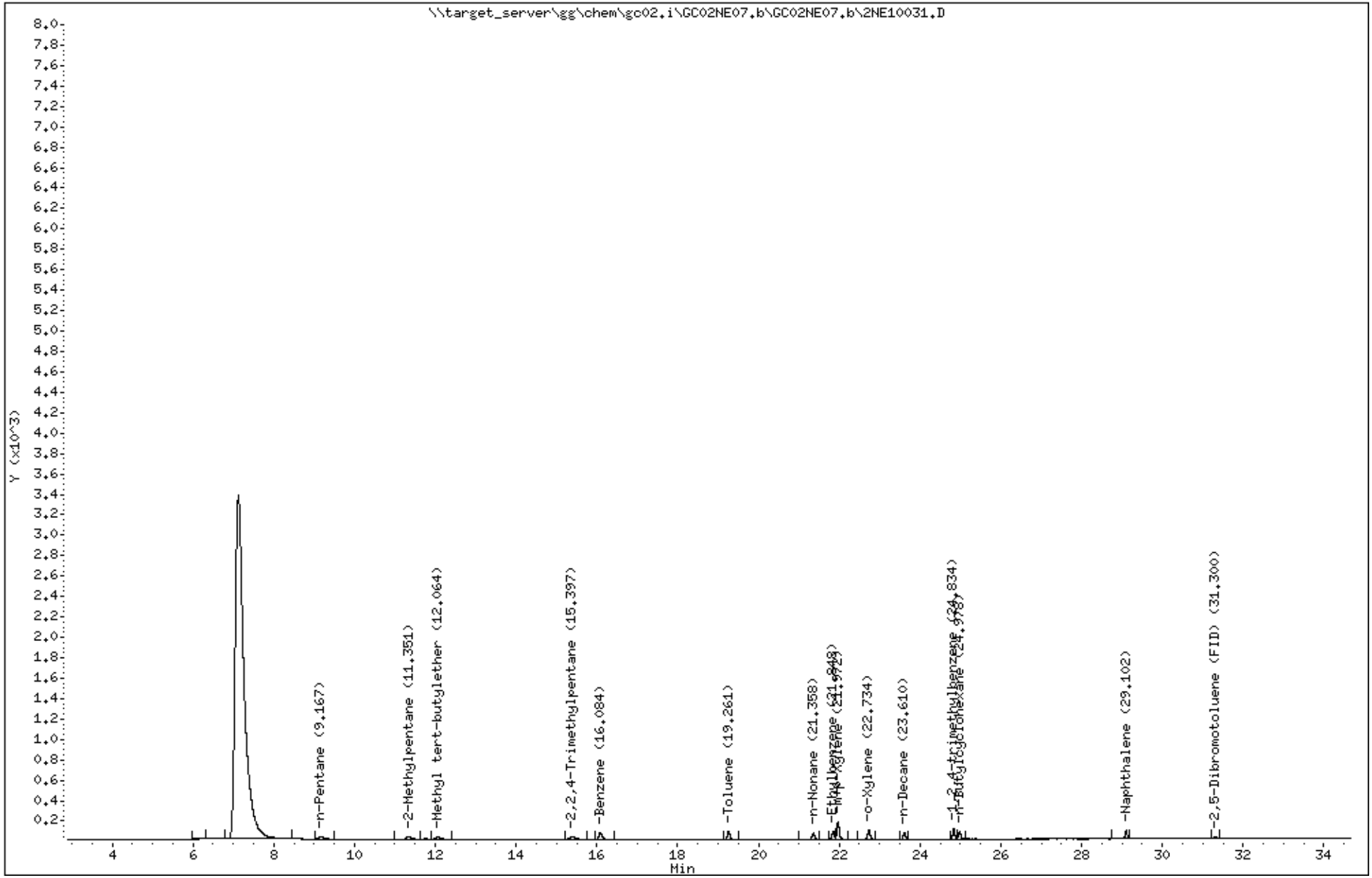
Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10031.D
Lab Smp Id: ICAL1
Inj Date : 07-MAY-2020 09:25
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-1
Misc Info :
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 09:25   Cal File: 2NE10031.D
Als bottle: 1   Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
M	1 C5-C8 Aliphatic				16552	3.00000	3.06	
M	2 C9-C12 Aliphatic				10785	2.00000	2.06	
	5 n-Pentane	9.167	9.065	0.102	4893	1.00000	1.01	
	6 2-Methylpentane	11.351	11.282	0.069	5817	1.00000	1.04	
	7 Methyl tert-butylether	12.063	11.992	0.071	4827	1.00000	1.06	
	8 2,2,4-Trimethylpentane	15.397	15.386	0.011	5842	1.00000	1.00	
	9 Benzene	16.084	16.065	0.019	7981	1.00000	1.02	
	11 Toluene	19.260	19.257	0.003	7488	1.00000	0.992	
	12 n-Nonane	21.357	21.361	-0.004	5316	1.00000	1.01	
	14 Ethylbenzene	21.848	21.850	-0.002	6766	1.00000	0.962	
	15 m+p-Xylene	21.971	21.975	-0.004	14255	2.00000	1.94	
	16 o-Xylene	22.733	22.736	-0.003	7109	1.00000	0.962	
	13 n-Decane	23.610	23.614	-0.004	5241	1.00000	1.07	
	18 1,2,4-trimethylbenzene	24.834	24.838	-0.004	6680	1.00000	0.956	
	19 n-Butylcyclohexane	24.977	24.982	-0.005	5544	1.00000	0.986	
	20 Naphthalene	29.101	29.104	-0.003	5671	1.00000	1.08	
$	21 2,5-Dibromotoluene (FID)	31.299	31.304	-0.005	2187	1.00000	1.00	

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10031.D
Date : 07-MAY-2020 09:25
Client ID:
Instrument: gc02.i
Sample Info: WG277230-1
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



06/05/2020
Katahdin Analytical Services 1000022

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10032.D
Report Date: 01-Jun-2020 08:02

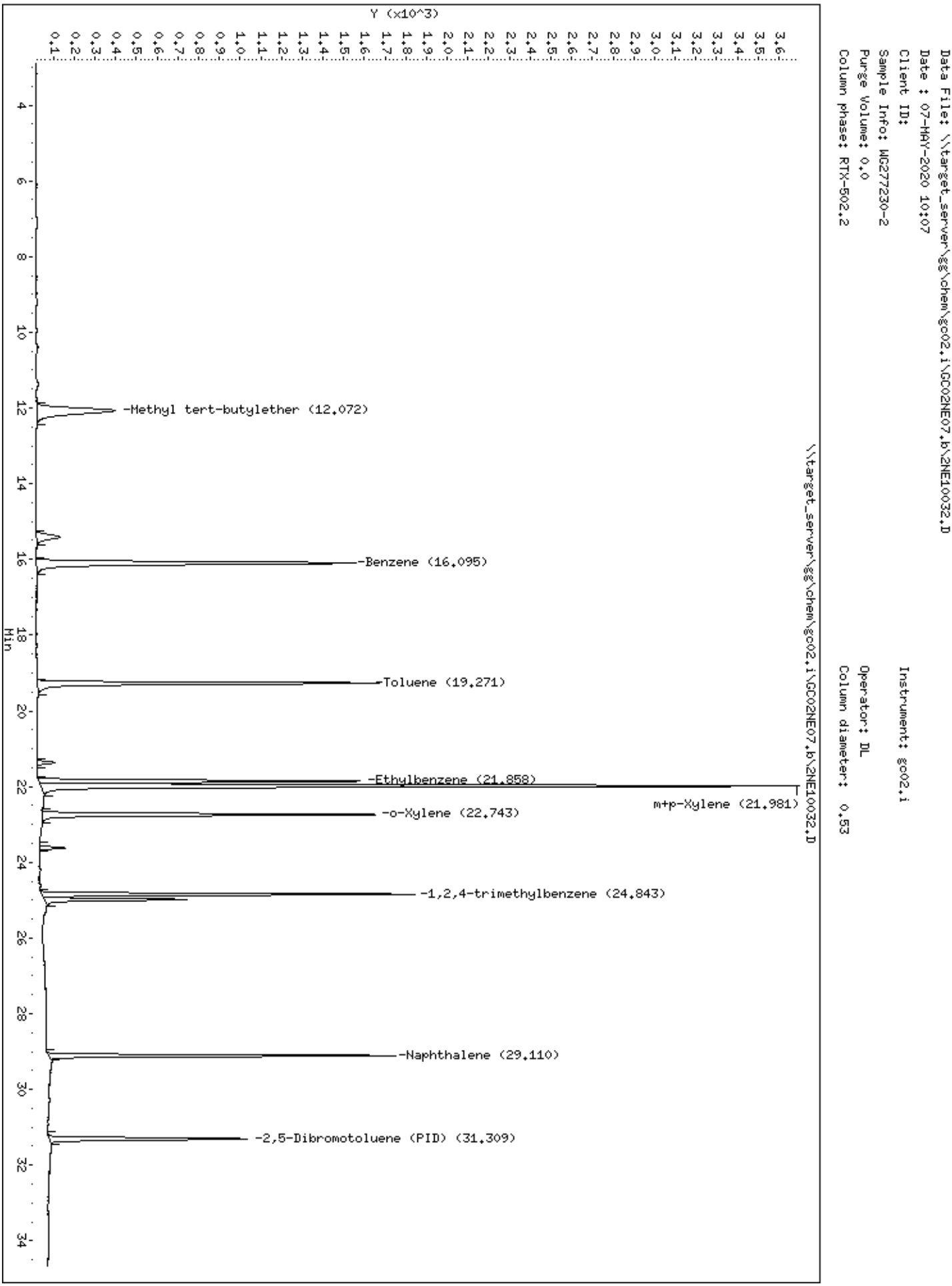
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10032.D
Lab Smp Id: ICAL5
Inj Date : 07-MAY-2020 10:07
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-2
Misc Info :
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 10:07   Cal File: 2NE10032.D
Als bottle: 1   Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
M	1 C9-C10 Aromatic				13514	5.00000		
	2 Methyl tert-butylether	12.072	12.078	-0.006	8368	5.00000	5.64	
	3 Benzene	16.095	16.099	-0.004	17591	5.00000	5.18	
	4 Toluene	19.270	19.274	-0.004	15969	5.00000	5.46	
	5 Ethylbenzene	21.857	21.860	-0.003	13105	5.00000	5.24	
	6 m+p-Xylene	21.980	21.983	-0.003	32468	10.0000	10.6	
	7 o-Xylene	22.742	22.745	-0.003	13854	5.00000	5.41	
	8 1,2,4-trimethylbenzene	24.842	24.844	-0.002	13514	5.00000	5.09	
	10 Naphthalene	29.110	29.110	0.000	12051	5.00000	4.09	
$	11 2,5-Dibromotoluene (PID)	31.308	31.309	-0.001	8574	5.00000	3.77	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10032.D
Date : 07-MAY-2020 10:07
Client ID:
Sample Info: WG277230-2
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
\\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10032.D
-Methyl tert-butylether (12.072)
-Benzene (16.095)
-Toluene (19.271)
-Ethylbenzene (21.858)
m+p-Xylene (21.981)
-o-Xylene (22.743)
-1,2,4-trimethylbenzene (24.843)
-Naphthalene (29.110)
-2,5-Dibromotoluene (PID) (31.309)

Data File: 2NE10032.D
Report Date: 01-Jun-2020 08:03

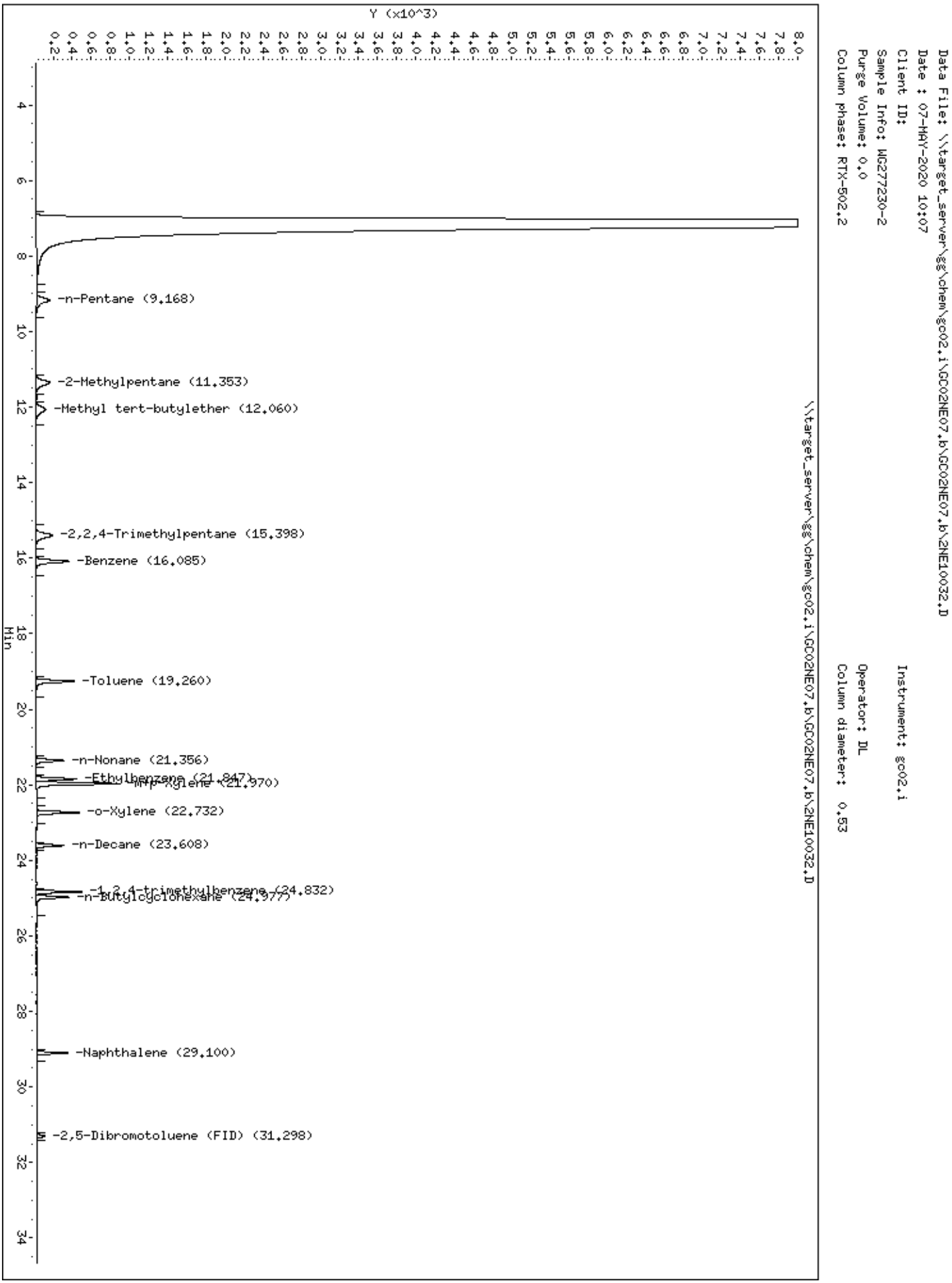
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10032.D
Lab Smp Id: ICAL5
Inj Date : 07-MAY-2020 10:07
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-2
Misc Info :
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 10:07   Cal File: 2NE10032.D
Als bottle: 1   Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
M	1	C5-C8 Aliphatic				85905	15.0000	15.6	
M	2	C9-C12 Aliphatic				52022	10.0000	10.0	
	5	n-Pentane	9.168	9.065	0.103	25474	5.00000	5.17	
	6	2-Methylpentane	11.352	11.282	0.070	29093	5.00000	5.14	
	7	Methyl tert-butylether	12.060	11.992	0.068	22532	5.00000	4.98	
	8	2,2,4-Trimethylpentane	15.397	15.386	0.011	31338	5.00000	5.25	
	9	Benzene	16.084	16.065	0.019	39046	5.00000	5.00	
	11	Toluene	19.260	19.257	0.003	38250	5.00000	5.04	
	12	n-Nonane	21.356	21.361	-0.005	25363	5.00000	4.87	
	14	Ethylbenzene	21.847	21.850	-0.003	34541	5.00000	4.94	
	15	m+p-Xylene	21.970	21.975	-0.005	73778	10.0000	10.0	
	16	o-Xylene	22.732	22.736	-0.004	37152	5.00000	5.02	
	13	n-Decane	23.608	23.614	-0.006	21461	5.00000	4.74	
	18	1,2,4-trimethylbenzene	24.832	24.838	-0.006	34005	5.00000	4.91	
	19	n-Butylcyclohexane	24.976	24.982	-0.006	30561	5.00000	5.28	
	20	Naphthalene	29.099	29.104	-0.005	22947	5.00000	4.55	
$	21	2,5-Dibromotoluene (FID)	31.298	31.304	-0.006	7864	5.00000	5.62	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10032.D
Date : 07-MAY-2020 10:07
Client ID:
Sample Info: WG277230-2
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10032.D
Y (x10^3)
Min
-n-Pentane (9.168)
-2-Methylpentane (11.353)
-Methyl tert-butylether (12.060)
-2,2,4-Trimethylpentane (15.398)
-Benzene (16.085)
-Toluene (19.260)
-n-Nonane (21.356)
-Ethylbenzene (21.847)
-m,p-Xylene (21.970)
-o-Xylene (22.732)
-n-Decane (23.608)
-1,2,4-trimethylbenzene (24.832)
-n-Butylcyclohexane (24.977)
-Naphthalene (29.100)
-2,5-Dibromotoluene (FID) (31.298)

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10037.D
Report Date: 01-Jun-2020 08:02

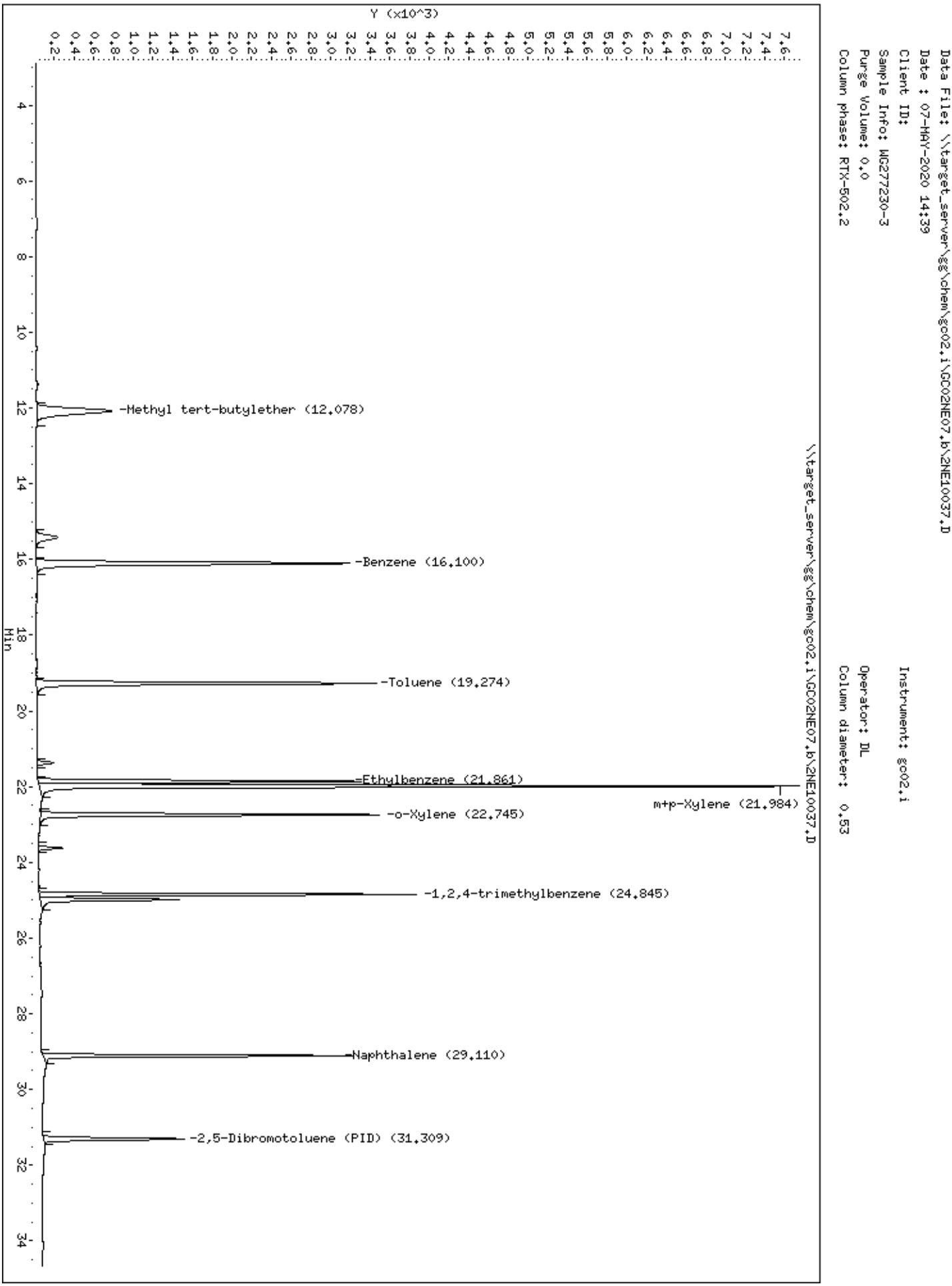
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10037.D
Lab Smp Id: ICAL10
Inj Date : 07-MAY-2020 14:39
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-3
Misc Info :
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
M	1	C9-C10 Aromatic				28362	10.0000		
	2	Methyl tert-butylether	12.077	12.078	-0.001	16857	10.0000	10.3	
	3	Benzene	16.099	16.099	0.000	35606	10.0000	10.2	
	4	Toluene	19.274	19.274	0.000	32657	10.0000	10.5	
	5	Ethylbenzene	21.860	21.860	0.000	27398	10.0000	10.2	
	6	m+p-Xylene	21.983	21.983	0.000	67524	20.0000	21.9	
	7	o-Xylene	22.745	22.745	0.000	28892	10.0000	10.5	
	8	1,2,4-trimethylbenzene	24.844	24.844	0.000	28362	10.0000	10.0	
	10	Naphthalene	29.110	29.110	0.000	22700	10.0000	7.91	
$	11	2,5-Dibromotoluene (PID)	31.308	31.309	-0.001	12745	10.0000	5.91	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10037.D
Date : 07-MAY-2020 14:39
Client ID:
Sample Info: WG277230-3
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
-Methyl tert-butylether (12.078)
-Benzene (16.100)
-Toluene (19.274)
=Ethylbenzene (21.861)
m+p-Xylene (21.984)
-o-Xylene (22.745)
-1,2,4-trimethylbenzene (24.845)
Naphthalene (29.110)
-2,5-Dibromotoluene (PID) (31.309)
\\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10037.D

Data File: 2NE10037.D
Report Date: 01-Jun-2020 08:03

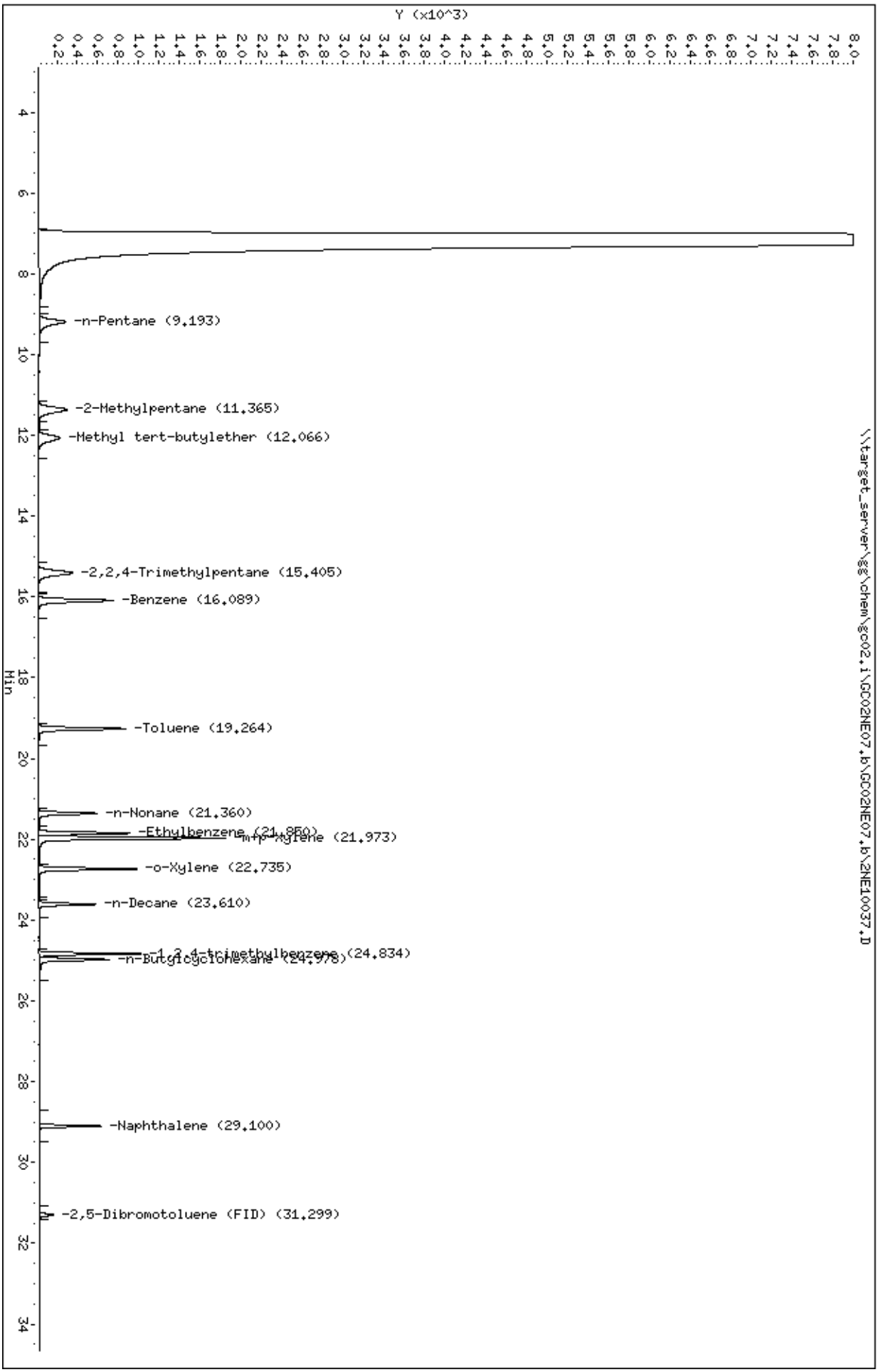
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10037.D
Lab Smp Id: ICAL10
Inj Date : 07-MAY-2020 14:39
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-3
Misc Info :
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
M	1 C5-C8 Aliphatic				164588	30.0000	30.2	
M	2 C9-C12 Aliphatic				103916	20.0000	18.5	
	5 n-Pentane	9.193	9.065	0.128	49181	10.0000	10.1	
	6 2-Methylpentane	11.365	11.282	0.083	55073	10.0000	10.0	
	7 Methyl tert-butylether	12.066	11.992	0.074	45858	10.0000	10.2	
	8 2,2,4-Trimethylpentane	15.405	15.386	0.019	60334	10.0000	10.1	
	9 Benzene	16.089	16.065	0.024	80055	10.0000	10.2	
	11 Toluene	19.263	19.257	0.006	78955	10.0000	10.3	
	12 n-Nonane	21.359	21.361	-0.002	51753	10.0000	9.44	
	14 Ethylbenzene	21.850	21.850	0.000	73478	10.0000	10.1	
	15 m+p-Xylene	21.973	21.975	-0.002	159585	20.0000	21.0	
	16 o-Xylene	22.734	22.736	-0.002	81564	10.0000	10.6	
	13 n-Decane	23.610	23.614	-0.004	43292	10.0000	8.40	
	18 1,2,4-trimethylbenzene	24.834	24.838	-0.004	71232	10.0000	9.84	
	19 n-Butylcyclohexane	24.978	24.982	-0.004	60624	10.0000	10.1	
	20 Naphthalene	29.099	29.104	-0.005	42678	10.0000	8.09	
$	21 2,5-Dibromotoluene (FID)	31.298	31.304	-0.006	11557	10.0000	5.78	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10037.D
Date : 07-MAY-2020 14:39
Client ID:
Sample Info: WG277230-3
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10037.D
Y (x10^3)
Min
-n-Pentane (9.193)
-2-Methylpentane (11.365)
-Methyl tert-butylether (12.066)
-2,2,4-Trimethylpentane (15.405)
-Benzene (16.089)
-Toluene (19.264)
-n-Nonane (21.360)
-Ethylbenzene (21.850)
-m+p-Xylene (21.973)
-o-Xylene (22.735)
-n-Decane (23.610)
-1,2,4-trimethylbenzene (24.834)
-n-Butylcyclohexane (24.978)
-Naphthalene (29.100)
-2,5-Dibromotoluene (FID) (31.299)

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10036.D
Report Date: 01-Jun-2020 08:02

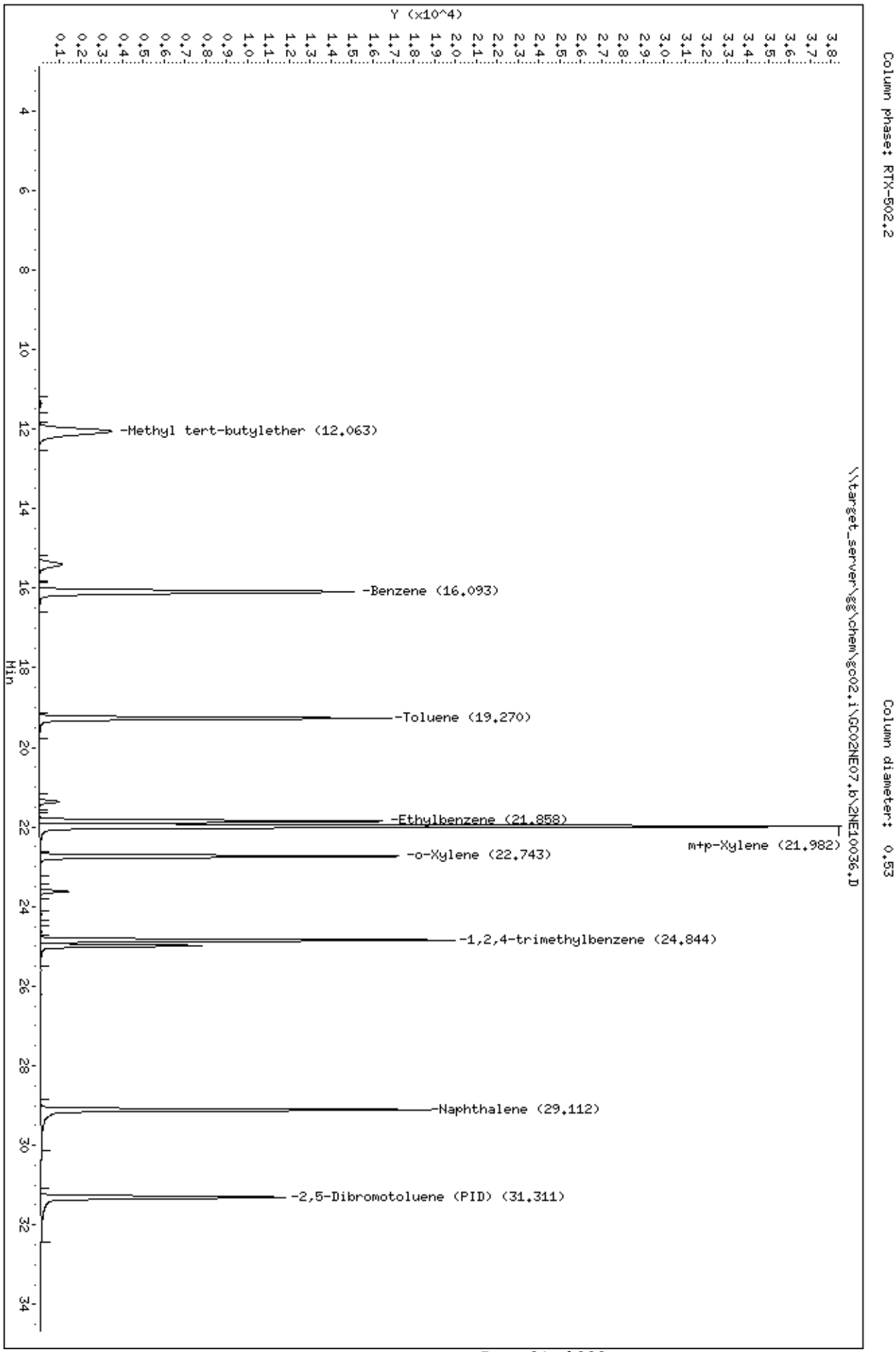
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10036.D
Lab Smp Id: ICAL50
Inj Date : 07-MAY-2020 13:58
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-4
Misc Info :
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 13:58   Cal File: 2NE10036.D
Als bottle: 1   Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

							AMOUNTS		
		Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/L)	ON-COL (ug/L)	REVIEW CODE
M	1	C9-C10 Aromatic				151033	50.0000		
	2	Methyl tert-butylether	12.063	12.078	-0.015	78463	50.0000	47.6	
	3	Benzene	16.093	16.099	-0.006	169359	50.0000	48.4	
	4	Toluene	19.270	19.274	-0.004	157470	50.0000	50.8	
	5	Ethylbenzene	21.858	21.860	-0.002	138493	50.0000	52.1	
	6	m+p-Xylene	21.981	21.983	-0.002	336182	100.000	111	
	7	o-Xylene	22.742	22.745	-0.003	145547	50.0000	53.5	
	8	1,2,4-trimethylbenzene	24.844	24.844	0.000	151033	50.0000	54.4	
	10	Naphthalene	29.111	29.110	0.001	155132	50.0000	55.2	
$	11	2,5-Dibromotoluene (PID)	31.310	31.309	0.001	121637	50.0000	58.3	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10036.D
Date : 07-MAY-2020 13:58
Client ID:
Sample Info: WG277230-4
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.063)
-Benzene (16.093)
-Toluene (19.270)
-Ethylbenzene (21.858)
m+p-Xylene (21.982)
-o-Xylene (22.743)
-1,2,4-trimethylbenzene (24.844)
-Naphthalene (29.112)
-2,5-Dibromotoluene (PID) (31.311)
\\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10036.D

Data File: 2NE10036.D
Report Date: 01-Jun-2020 08:03

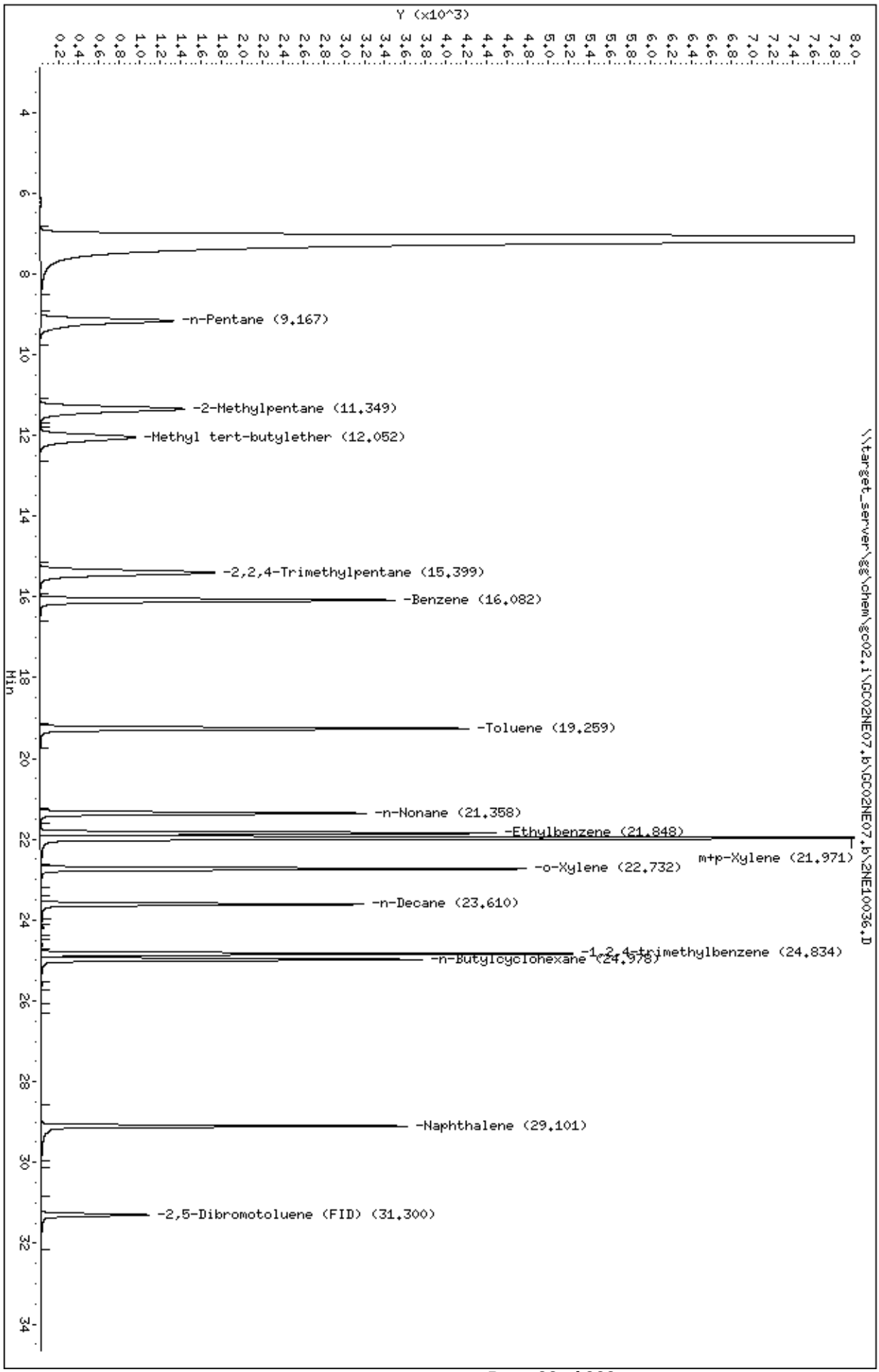
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10036.D
Lab Smp Id: ICAL50
Inj Date : 07-MAY-2020 13:58
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-4
Misc Info :
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 13:58   Cal File: 2NE10036.D
Als bottle: 1   Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
M	1 C5-C8 Aliphatic				845815	150.000	154	
M	2 C9-C12 Aliphatic				553964	100.000	98.9	
	5 n-Pentane	9.166	9.065	0.101	253559	50.0000	51.4	
	6 2-Methylpentane	11.348	11.282	0.066	283200	50.0000	50.9	
	7 Methyl tert-butylether	12.052	11.992	0.060	211894	50.0000	47.4	
	8 2,2,4-Trimethylpentane	15.398	15.386	0.012	309056	50.0000	51.4	
	9 Benzene	16.082	16.065	0.017	377714	50.0000	48.1	
	11 Toluene	19.259	19.257	0.002	376517	50.0000	48.7	
	12 n-Nonane	21.357	21.361	-0.004	280255	50.0000	50.9	
	14 Ethylbenzene	21.847	21.850	-0.003	364564	50.0000	50.2	
	15 m+p-Xylene	21.971	21.975	-0.004	758232	100.000	100	
	16 o-Xylene	22.732	22.736	-0.004	382871	50.0000	50.2	
	13 n-Decane	23.609	23.614	-0.005	250464	50.0000	48.7	
	18 1,2,4-trimethylbenzene	24.833	24.838	-0.005	370229	50.0000	51.1	
	19 n-Butylcyclohexane	24.977	24.982	-0.005	303500	50.0000	50.3	
	20 Naphthalene	29.101	29.104	-0.003	277932	50.0000	54.4	
$	21 2,5-Dibromotoluene (FID)	31.300	31.304	-0.004	103997	50.0000	52.0	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10036.D
Date : 07-MAY-2020 13:58
Client ID:
Sample Info: WG277230-4
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
-n-Pentane (9.167)
-2-Methylpentane (11.349)
-Methyl tert-butylether (12.052)
-2,2,4-Trimethylpentane (15.399)
-Benzene (16.082)
-Toluene (19.259)
-n-Nonane (21.358)
-Ethylbenzene (21.848)
m+p-Xylene (21.971)
-o-Xylene (22.732)
-n-Decane (23.610)
-1,2,4-trimethylbenzene (24.834)
-n-Butylcyclohexane (24.978)
-Naphthalene (29.101)
-2,5-Dibromotoluene (FID) (31.300)
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Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10034.D
Report Date: 01-Jun-2020 08:02

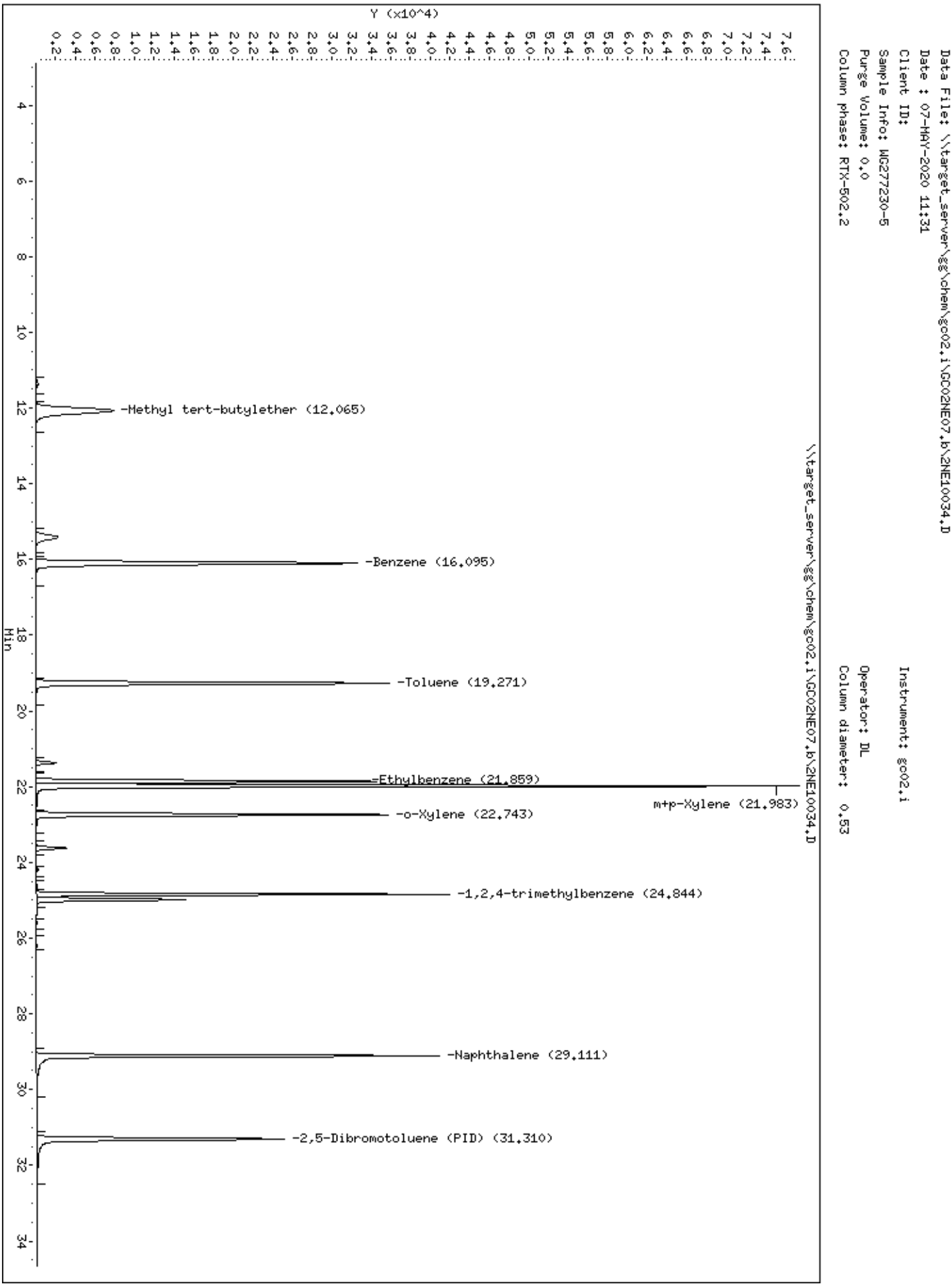
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10034.D
Lab Smp Id: ICAL100
Inj Date : 07-MAY-2020 11:31
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-5
Misc Info :
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 11:31   Cal File: 2NE10034.D
Als bottle: 1   Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
M	1	C9-C10 Aromatic				313802	100.000		
	2	Methyl tert-butylether	12.065	12.078	-0.013	177132	100.000	112	
	3	Benzene	16.094	16.099	-0.005	361642	100.000	104	
	4	Toluene	19.270	19.274	-0.004	332465	100.000	109	
	5	Ethylbenzene	21.858	21.860	-0.002	291708	100.000	114	
	6	m+p-Xylene	21.982	21.983	-0.001	669939	200.000	212	
	7	o-Xylene	22.742	22.745	-0.003	296441	100.000	111	
	8	1,2,4-trimethylbenzene	24.843	24.844	-0.001	313802	100.000	117	
	10	Naphthalene	29.111	29.110	0.001	327219	100.000	122	
$	11	2,5-Dibromotoluene (PID)	31.309	31.309	0.000	256649	100.000	129	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10034.D
Date : 07-MAY-2020 11:31
Client ID:
Sample Info: WG277230-5
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.065)
-Benzene (16.095)
-Toluene (19.271)
=Ethylbenzene (21.859)
m+p-Xylene (21.983)
-o-Xylene (22.743)
-1,2,4-trimethylbenzene (24.844)
-Naphthalene (29.111)
-2,5-Dibromotoluene (PID) (31.310)
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Data File: 2NE10034.D
Report Date: 01-Jun-2020 08:03

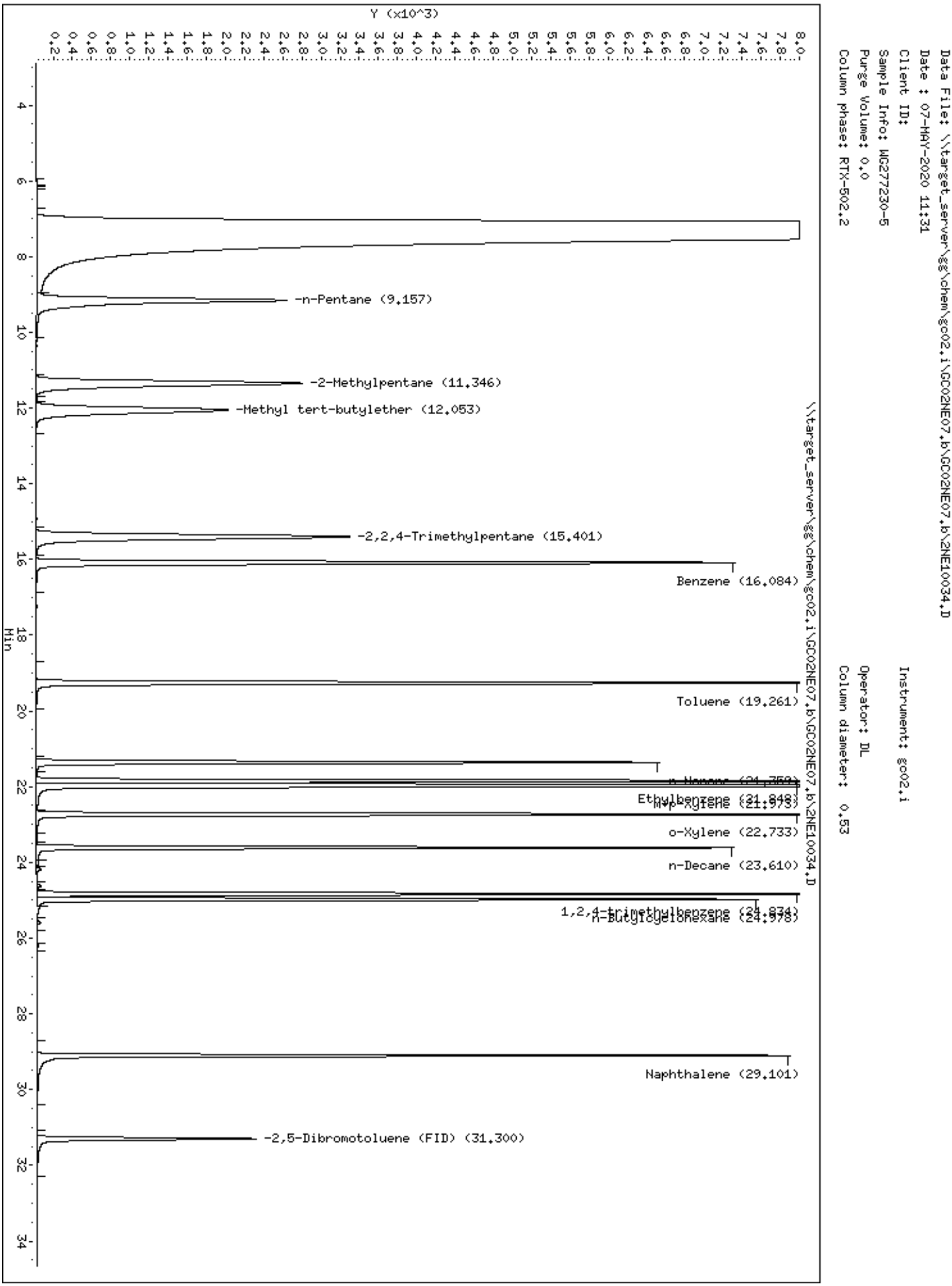
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10034.D
Lab Smp Id: ICAL100
Inj Date : 07-MAY-2020 11:31
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-5
Misc Info :
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 11:31   Cal File: 2NE10034.D
Als bottle: 1   Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/L)	ON-COL (ug/L)	REVIEW CODE
M	1 C5-C8 Aliphatic				1668466	300.000	300	
M	2 C9-C12 Aliphatic				1157841	200.000	203	
	5 n-Pentane	9.157	9.065	0.092	522459	100.000	104	
	6 2-Methylpentane	11.346	11.282	0.064	547815	100.000	96.8	
	7 Methyl tert-butylether	12.052	11.992	0.060	447197	100.000	98.9	
	8 2,2,4-Trimethylpentane	15.401	15.386	0.015	598192	100.000	99.1	
	9 Benzene	16.084	16.065	0.019	782678	100.000	99.2	
	11 Toluene	19.260	19.257	0.003	779632	100.000	101	
	12 n-Nonane	21.359	21.361	-0.002	563377	100.000	106	
	14 Ethylbenzene	21.848	21.850	-0.002	757506	100.000	105	
	15 m+p-Xylene	21.972	21.975	-0.003	1560223	200.000	206	
	16 o-Xylene	22.732	22.736	-0.004	792920	100.000	104	
	13 n-Decane	23.609	23.614	-0.005	567866	100.000	103	
	18 1,2,4-trimethylbenzene	24.833	24.838	-0.005	777387	100.000	109	
	19 n-Butylcyclohexane	24.977	24.982	-0.005	589975	100.000	99.8	
	20 Naphthalene	29.100	29.104	-0.004	592101	100.000	122	
$	21 2,5-Dibromotoluene (FID)	31.299	31.304	-0.005	221990	100.000	104	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10034.D
Date : 07-MAY-2020 11:31
Client ID:
Sample Info: WG277230-5
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
\\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10034.D
-n-Pentane (9.157)
-2-Methylpentane (11.346)
-Methyl tert-butylether (12.053)
-2,2,4-Trimethylpentane (15.401)
Benzene (16.084)
Toluene (19.261)
n-Heptane (21.359)
Ethylbenzene (21.848)
m,p-Xylene (21.973)
o-Xylene (22.733)
n-Decane (23.610)
1,2,4-trimethylbenzene (24.834)
n-Butylcyclohexane (24.978)
Naphthalene (29.101)
-2,5-Dibromotoluene (FID) (31.300)

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10035.D
Report Date: 01-Jun-2020 08:02

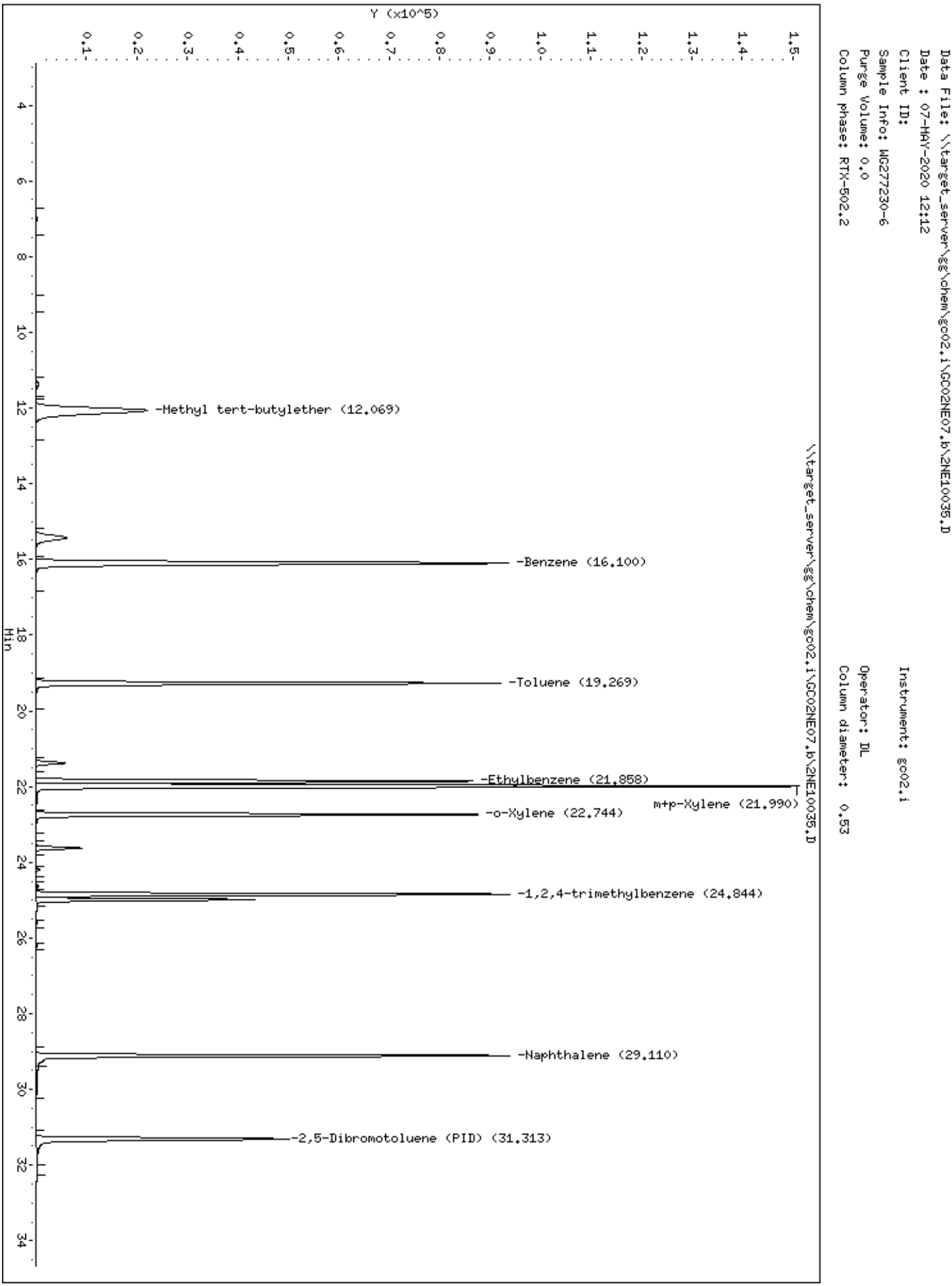
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10035.D
Lab Smp Id: ICAL300
Inj Date : 07-MAY-2020 12:12
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-6
Misc Info :
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 12:12   Cal File: 2NE10035.D
Als bottle: 1   Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
M	1 C9-C10 Aromatic				780873	300.000		
	2 Methyl tert-butylether	12.069	12.078	-0.009	500729	300.000	305	
	3 Benzene	16.099	16.099	0.000	1040942	300.000	296	
	4 Toluene	19.268	19.274	-0.006	890310	300.000	283	
	5 Ethylbenzene	21.858	21.860	-0.002	776035	300.000	290	
	6 m+p-Xylene	21.990	21.983	0.007	1445815	600.000	448	
	7 o-Xylene	22.744	22.745	-0.001	777201	300.000	281	
	8 1,2,4-trimethylbenzene	24.843	24.844	-0.001	780873	300.000	276	
	10 Naphthalene	29.109	29.110	-0.001	783322	300.000	272	
$	11 2,5-Dibromotoluene (PID)	31.313	31.309	0.004	535799	300.000	245	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10035.D
Date : 07-MAY-2020 12:12
Client ID:
Sample Info: WG277230-6
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^5)
Min
\\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10035.D
-Methyl tert-butylether (12.069)
-Benzene (16.100)
-Toluene (19.269)
-Ethylbenzene (21.858)
m+p-Xylene (21.990)
-o-Xylene (22.744)
-1,2,4-trimethylbenzene (24.844)
-Naphthalene (29.110)
-2,5-Dibromotoluene (PID) (31.313)

Data File: 2NE10035.D
Report Date: 01-Jun-2020 08:03

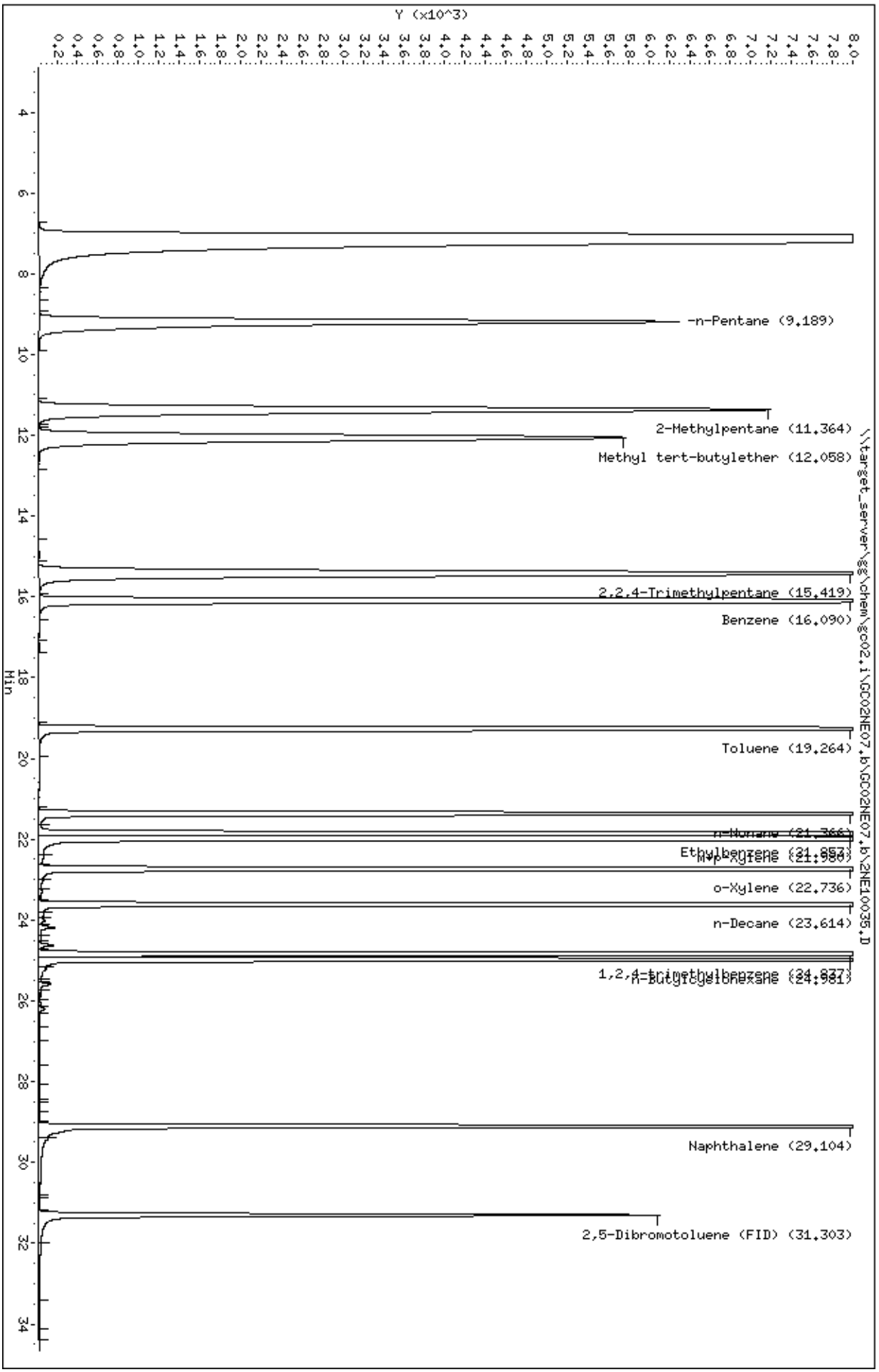
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10035.D
Lab Smp Id: ICAL300
Inj Date : 07-MAY-2020 12:12
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-6
Misc Info :
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 12:12   Cal File: 2NE10035.D
Als bottle: 1   Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: Peaks.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
M	1 C5-C8 Aliphatic				4308653	900.000	788	
M	2 C9-C12 Aliphatic				3806111	600.000	620	
	5 n-Pentane	9.189	9.065	0.124	1229217	300.000	252	
	6 2-Methylpentane	11.364	11.282	0.082	1428984	300.000	259	
	7 Methyl tert-butylether	12.058	11.992	0.066	1275987	300.000	285	
	8 2,2,4-Trimethylpentane	15.418	15.386	0.032	1650452	300.000	277	
	9 Benzene	16.089	16.065	0.024	2324808	300.000	295	
	11 Toluene	19.264	19.257	0.007	2328586	300.000	301	
	12 n-Nonane	21.366	21.361	0.005	1830035	300.000	336	
	14 Ethylbenzene	21.853	21.850	0.003	2272281	300.000	313	
	15 m+p-Xylene	21.979	21.975	0.004	4620809	600.000	609	
	16 o-Xylene	22.736	22.736	0.000	2333081	300.000	306	
	13 n-Decane	23.613	23.614	-0.001	1914659	300.000	303	
	18 1,2,4-trimethylbenzene	24.836	24.838	-0.002	2291507	300.000	317	
	19 n-Butylcyclohexane	24.980	24.982	-0.002	1891452	300.000	316	
	20 Naphthalene	29.103	29.104	-0.001	1690566	300.000	338	
$	21 2,5-Dibromotoluene (FID)	31.303	31.304	-0.001	580299	300.000	296	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10035.D
Date : 07-MAY-2020 12:12
Client ID:
Sample Info: WG277230-6
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
-n-Pentane (9.189)
2-Methylpentane (11.364)
Methyl tert-butylether (12.058)
2,2,4-Trimethylpentane (15.419)
Benzene (16.090)
Toluene (19.264)
n-Nonane (21.366)
Ethylbenzene (21.857)
m,p-Xylene (21.986)
o-Xylene (22.736)
n-Decane (23.614)
1,2,4-Trimethylbenzene (24.837)
n-Butylcyclohexane (24.981)
Naphthalene (29.104)
2,5-Dibromotoluene (FID) (31.303)
\\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10035.D

Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10038.D
Report Date: 01-Jun-2020 08:03

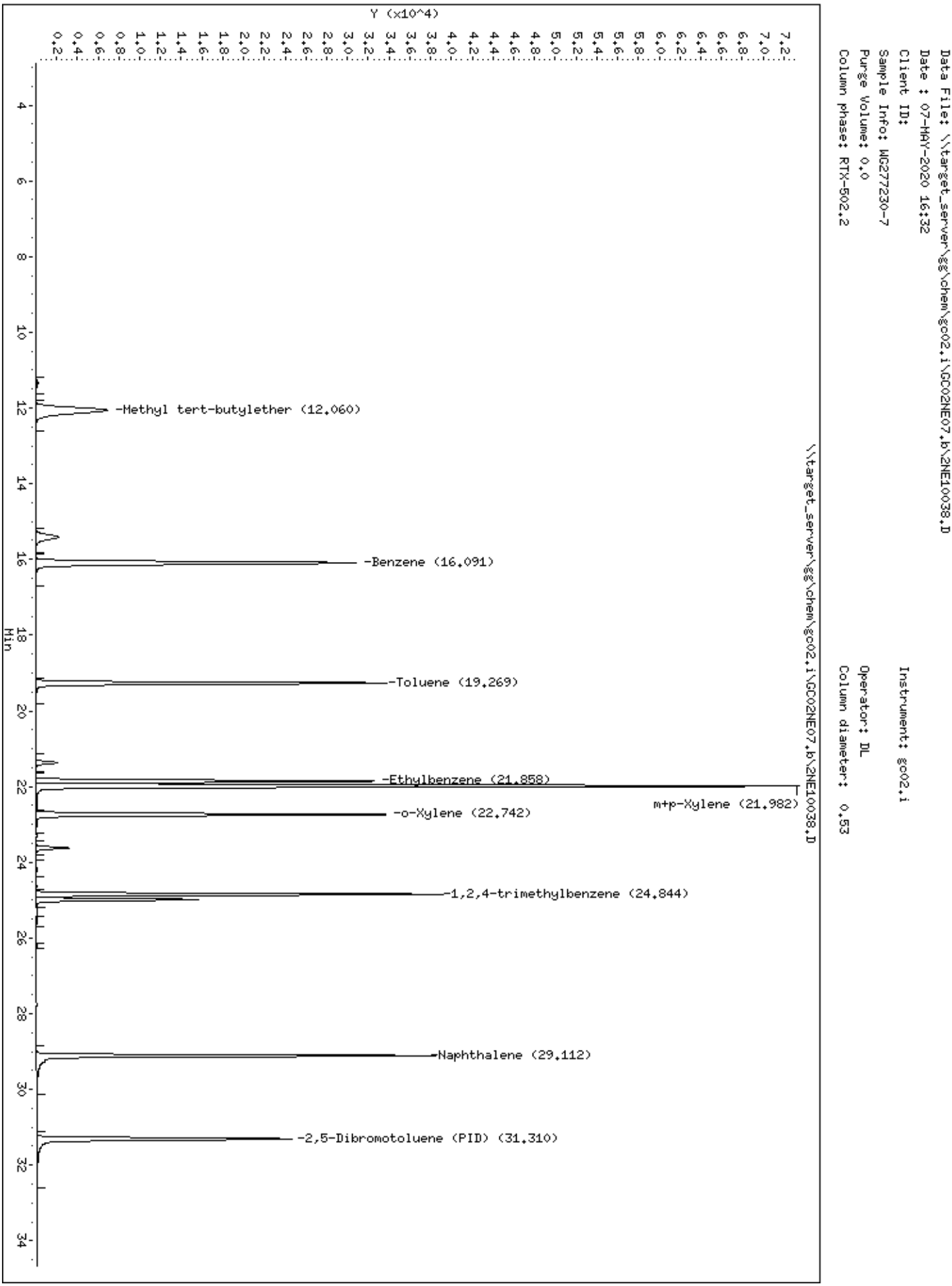
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10038.D
Lab Smp Id: IND
Inj Date : 07-MAY-2020 16:32
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-7
Misc Info : WG277230,WG277230-4
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m
Meth Date : 12-May-2020 10:55 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: IND.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
2	Methyl tert-butylether	12.059	12.078	-0.019	156532	95.3206	95.3	
3	Benzene	16.091	16.099	-0.008	342444	98.0784	98.1	
4	Toluene	19.269	19.274	-0.005	312662	99.6625	99.7	
5	Ethylbenzene	21.857	21.860	-0.003	275799	102.556	102	
6	m+p-Xylene	21.982	21.983	-0.001	639321	203.820	204	
7	o-Xylene	22.742	22.745	-0.003	283164	101.827	102	
8	1,2,4-trimethylbenzene	24.843	24.844	-0.001	295759	104.671	105	
10	Naphthalene	29.111	29.110	0.001	308511	111.409	111	
$ 11	2,5-Dibromotoluene (PID)	31.310	31.309	0.001	251794	116.852	117	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10038.D
Date : 07-MAY-2020 16:32
Client ID:
Sample Info: WG277230-7
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.060)
-Benzene (16.091)
-Toluene (19.269)
-Ethylbenzene (21.858)
m+p-Xylene (21.982)
-o-Xylene (22.742)
-1,2,4-trimethylbenzene (24.844)
Naphthalene (29.112)
-2,5-Dibromotoluene (PID) (31.310)
\\target_server\gg\chem\gc02.i\GC02NE07.b\2NE10038.D

Data File: 2NE10038.D
Report Date: 01-Jun-2020 08:03

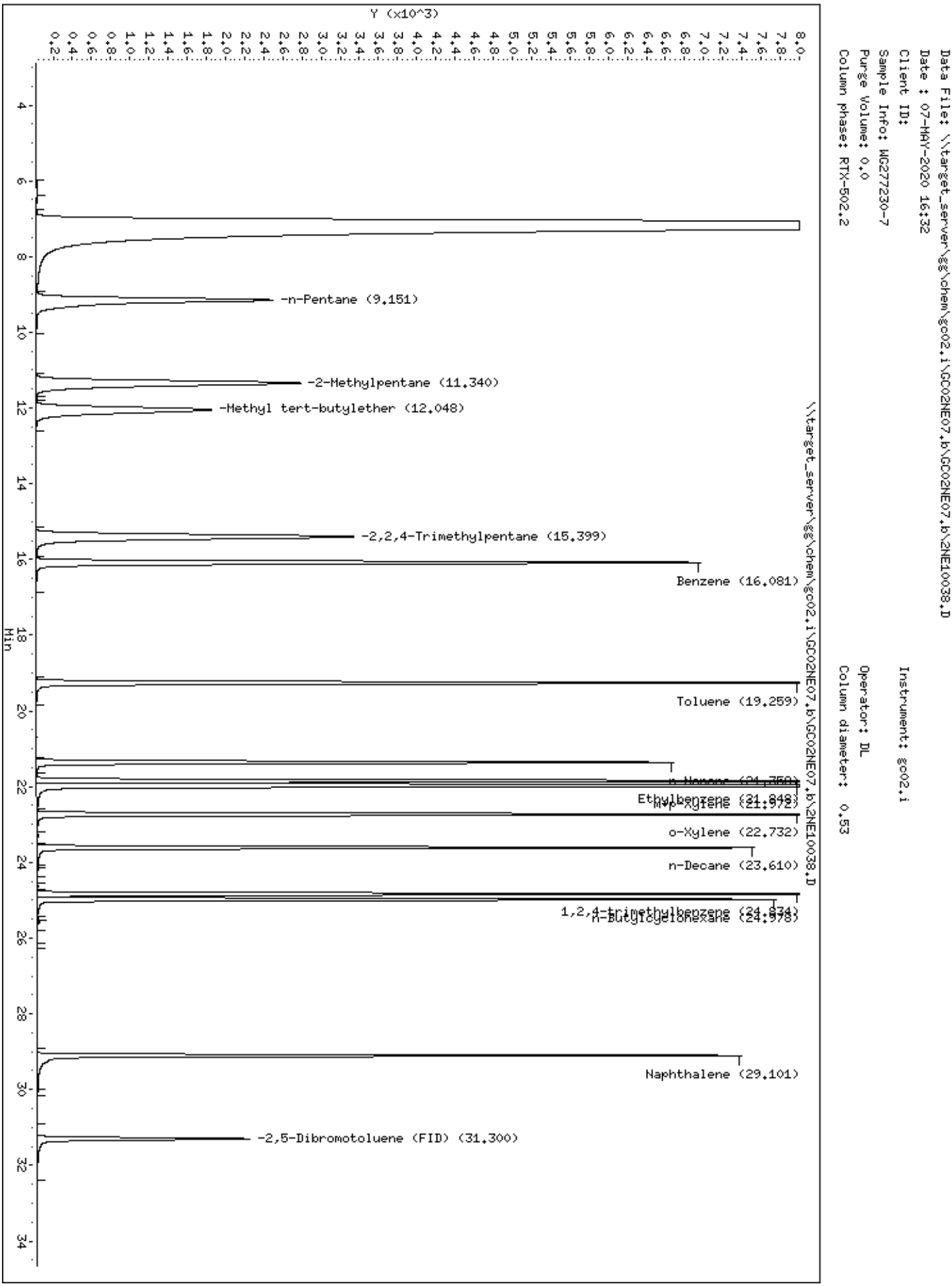
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10038.D
Lab Smp Id: IND
Inj Date : 07-MAY-2020 16:32
Operator : DL   Inst ID: gc02.i
Smp Info : WG277230-7
Misc Info : WG277230,WG277230-4
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE07.b\VPHPID91.m\VPHFID91.m
Meth Date : 08-May-2020 07:39 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: IND.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
5	n-Pentane	9.150	9.065	0.085	485526	99.4283	99.4	
6	2-Methylpentane	11.340	11.282	0.058	550992	100.034	100	
7	Methyl tert-butylether	12.048	11.992	0.056	410967	91.7257	91.7	
8	2,2,4-Trimethylpentane	15.399	15.386	0.013	607934	101.867	102	
9	Benzene	16.080	16.065	0.015	748122	95.6553	95.6	
11	Toluene	19.259	19.257	0.002	736654	95.8309	95.8	
12	n-Nonane	21.358	21.361	-0.003	578043	105.409	105	
14	Ethylbenzene	21.847	21.850	-0.003	716730	98.9444	98.9	
15	m+p-Xylene	21.971	21.975	-0.004	1481803	195.105	195	
16	o-Xylene	22.732	22.736	-0.004	753735	98.1866	98.2	
13	n-Decane	23.609	23.614	-0.005	586184	113.702	114	
18	1,2,4-trimethylbenzene	24.833	24.838	-0.005	729068	100.744	101	
19	n-Butylcyclohexane	24.977	24.982	-0.005	611139	101.876	102	
20	Naphthalene	29.101	29.104	-0.003	555370	105.306	105	
$ 21	2,5-Dibromotoluene (FID)	31.300	31.304	-0.004	216552	108.341	108	


Data File: \\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10038.D
Date : 07-MAY-2020 16:32
Client ID:
Sample Info: WG277230-7
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE07.b\GC02NE07.b\2NE10038.D
Y (x10^3)
Min
-n-Pentane (9.151)
-2-Methylpentane (11.340)
-Methyl tert-butylether (12.048)
-2,2,4-Trimethylpentane (15.399)
Benzene (16.081)
Toluene (19.259)
n-Heptane (21.368)
Ethylbenzene (21.848)
m,p-Xylene (21.972)
o-Xylene (22.732)
n-Decane (23.610)
1,2,4-trimethylbenzene (24.834)
n-Butylcyclohexane (24.978)
Naphthalene (29.101)
-2,5-Dibromotoluene (FID) (31.300)

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020
SDG: SN3819
Lab ID : WG278133-4
Analytical Date: 05/21/20 09:36
Lab File ID : 2NE10119.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
10	C9-C10 Aromatic	2826	2887	0.100	2.19056	25.00000	Averaged
20	Benzene	3492	3242	0.100	-7.14169	25.00000	Averaged
30	Ethylbenzene	2689	2636	0.100	-1.97132	25.00000	Averaged
40	Methyl tert-butylether	1642	1625	0.100	-1.05975	25.00000	Averaged
50	Naphthalene	2769	2756	0.100	-0.48620	25.00000	Averaged
60	Toluene	3137	2986	0.100	-4.82557	25.00000	Averaged
70	m+p-Xylene	3137	3121	0.100	-0.49227	25.00000	Averaged
80	o-Xylene	2781	2730	0.100	-1.83890	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	2155	1902	0.100	-11.72196	25.00000	Averaged
180	1,2,4-trimethylbenzene	2826	2887	0.100	2.19004	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10119.D
Report Date: 01-Jun-2020 10:20

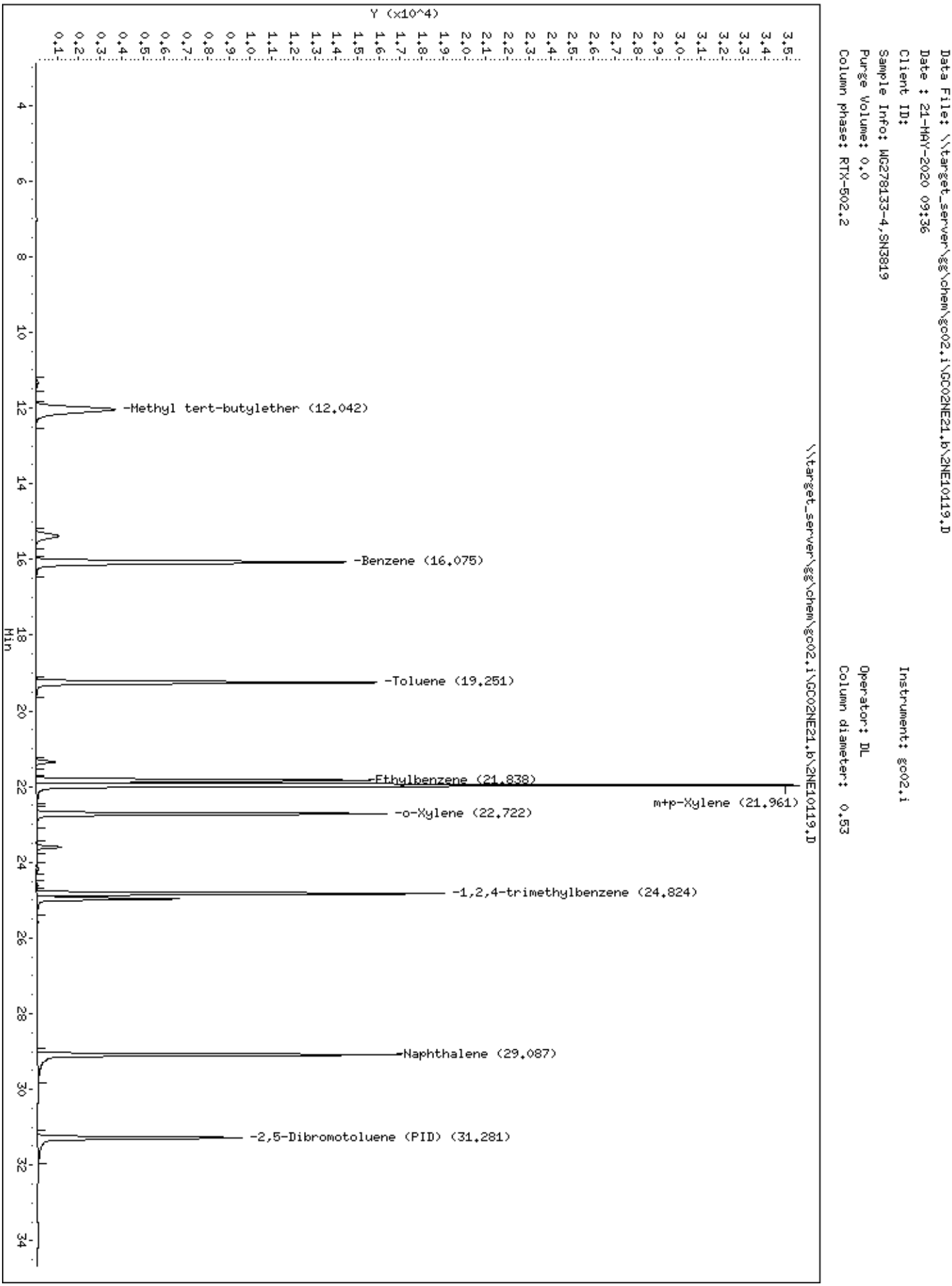
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10119.D
Lab Smp Id: WG278133-4
Inj Date : 21-MAY-2020 09:36
Operator : DL   Inst ID: gc02.i
Smp Info : WG278133-4,SN3819
Misc Info : WG278133,WG277230-4,SN3819-1
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
	2 Methyl tert-butylether	12.041	12.078	-0.037	81238	50.0000	49.5	
	3 Benzene	16.074	16.099	-0.025	162109	50.0000	46.4	
	4 Toluene	19.250	19.274	-0.024	149291	50.0000	47.6	
	5 Ethylbenzene	21.837	21.860	-0.023	131812	50.0000	49.0	
	6 m+p-Xylene	21.961	21.983	-0.022	312126	100.000	99.5	
	7 o-Xylene	22.722	22.745	-0.023	136485	50.0000	49.1	
	8 1,2,4-trimethylbenzene	24.824	24.844	-0.020	144374	50.0000	51.1	
	10 Naphthalene	29.087	29.110	-0.023	137786	50.0000	49.8	
M	1 C9-C10 Aromatic				144374	50.0000	51.1	
$	11 2,5-Dibromotoluene (PID)	31.280	31.309	-0.029	95111	50.0000	44.1	


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10119.D
Date : 21-MAY-2020 09:36
Client ID:
Sample Info: WG278133-4,SN3819
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.042)
-Benzene (16.075)
-Toluene (19.251)
-Ethylbenzene (21.838)
m+p-Xylene (21.961)
-o-Xylene (22.722)
-1,2,4-trimethylbenzene (24.824)
Naphthalene (29.087)
-2,5-Dibromotoluene (PID) (31.281)
\\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10119.D

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020
SDG: SN3819
Lab ID : WG278133-4
Analytical Date: 05/21/20 09:36
Lab File ID : 2NE10119.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
30	C5-C8 Aliphatic	5453	4905	0.100	-10.05248	25.00000	Averaged
40	C9-C12 Aliphatic	5577	4908	0.100	-11.99198	25.00000	Averaged
60	Benzene	7821	7227	0.100	-7.59466	25.00000	Averaged
70	Ethylbenzene	7244	7025	0.100	-3.01402	25.00000	Averaged
80	Methyl tert-butylether	4480	4293	0.100	-4.18959	25.00000	Averaged
90	Naphthalene	5274	5156	0.100	-2.23869	25.00000	Averaged
100	Toluene	7687	7193	0.100	-6.43213	25.00000	Averaged
110	m+p-Xylene	7595	7346	0.100	-3.27982	25.00000	Averaged
120	o-Xylene	7677	7474	0.100	-2.64310	25.00000	Averaged
200	n-Pentane	4883	4030	0.100	-17.46315	25.00000	Averaged
210	2-Methylpentane	5508	5054	0.100	-8.24928	25.00000	Averaged
220	2,2,4-Trimethylpentane	5968	5631	0.100	-5.65263	25.00000	Averaged
230	n-Nonane	5484	4949	0.100	-9.75406	30.00000	Averaged
240	n-Decane	5155	4325	0.100	-16.10969	25.00000	Averaged
250	n-Butylcyclohexane	5999	5492	0.100	-8.45268	25.00000	Averaged
260	1,2,4-trimethylbenzene	7237	7300	0.100	0.87477	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	1999	1687	0.100	-15.59610	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: 2NE10119.D
Report Date: 01-Jun-2020 10:25

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10119.D
Lab Smp Id: WG278133-4
Inj Date : 21-MAY-2020 09:36
Operator : DL   Inst ID: gc02.i
Smp Info : WG278133-4,SN3819
Misc Info : WG278133,WG277230-4,SN3819-1
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

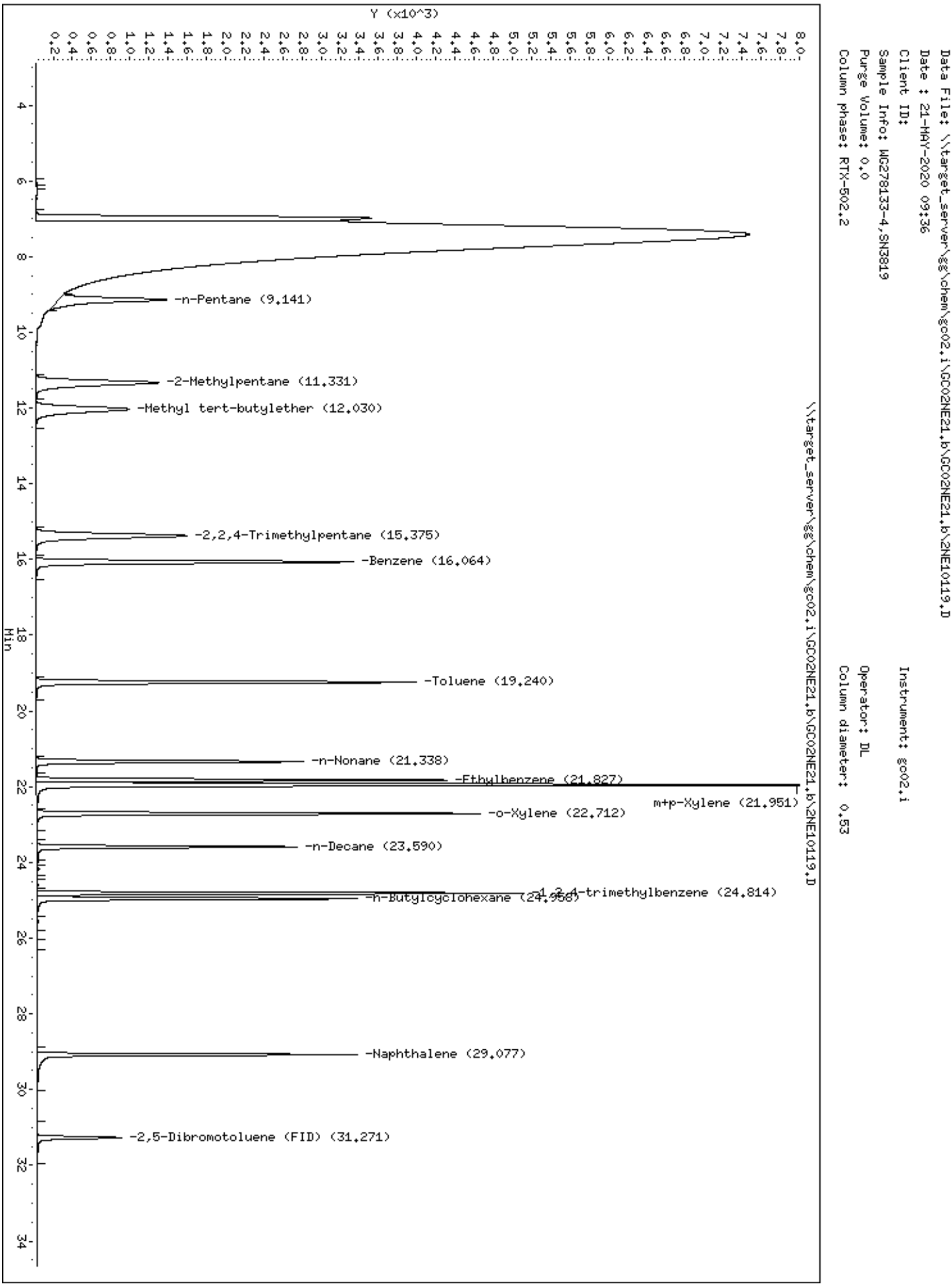
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)	REVIEW CODE
5	n-Pentane	9.141	9.065	0.076	201521	50.0000	41.3(M)	M2
6	2-Methylpentane	11.331	11.282	0.049	252684	50.0000	45.9	
7	Methyl tert-butylether	12.030	11.992	0.038	214634	50.0000	47.9	
8	2,2,4-Trimethylpentane	15.374	15.386	-0.012	281529	50.0000	47.2	
9	Benzene	16.064	16.065	-0.001	361352	50.0000	46.2	
11	Toluene	19.240	19.257	-0.017	359629	50.0000	46.8	
12	n-Nonane	21.338	21.361	-0.023	247446	50.0000	45.1	
14	Ethylbenzene	21.827	21.850	-0.023	351272	50.0000	48.5	
15	m+p-Xylene	21.951	21.975	-0.024	734579	100.000	96.7	
16	o-Xylene	22.712	22.736	-0.024	373683	50.0000	48.7	
13	n-Decane	23.590	23.614	-0.024	216245	50.0000	41.9	
18	1,2,4-trimethylbenzene	24.814	24.838	-0.024	365007	50.0000	50.4	
19	n-Butylcyclohexane	24.957	24.982	-0.025	274590	50.0000	45.8	
20	Naphthalene	29.077	29.104	-0.027	257789	50.0000	48.9	
$ 21	2,5-Dibromotoluene (FID)	31.270	31.304	-0.034	84353	50.0000	42.2	

DL
11:33 am, Jun 01, 2020

QC Flag Legend

M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10119.D
Date : 21-MAY-2020 09:36
Client ID:
Sample Info: WG278133-4,SN3819
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10119.D
Y (x10^3)
Min
-n-Pentane (9.141)
-2-Methylpentane (11.331)
-Methyl tert-butylether (12.030)
-2,2,4-Trimethylpentane (15.375)
-Benzene (16.064)
-Toluene (19.240)
-n-Nonane (21.338)
-Ethylbenzene (21.827)
m+p-Xylene (21.951)
-o-Xylene (22.712)
-n-Decane (23.590)
1,2,4-trimethylbenzene (24.814)
-n-Butylcyclohexane (24.958)
-Naphthalene (29.077)
-2,5-Dibromotoluene (FID) (31.271)

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020
SDG: SN3819
Lab ID : WG278133-5
Analytical Date: 05/22/20 01:36
Lab File ID : 2NE10139.D
Instrument ID: GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
10	C9-C10 Aromatic	2826	2849	0.100	0.84239	25.00000	Averaged	
20	Benzene	3492	3367	0.100	-3.57134	25.00000	Averaged	
30	Ethylbenzene	2689	2688	0.100	-0.05853	25.00000	Averaged	
40	Methyl tert-butylether	1642	1536	0.100	-6.48308	25.00000	Averaged	
50	Naphthalene	2769	2736	0.100	-1.21277	25.00000	Averaged	
60	Toluene	3137	3123	0.100	-0.43823	25.00000	Averaged	
70	m+p-Xylene	3137	3229	0.100	2.92852	25.00000	Averaged	
80	o-Xylene	2781	2807	0.100	0.95667	25.00000	Averaged	
90	2,5-Dibromotoluene (PID)	2155	1425	0.100	-33.86224	25.00000	Averaged	<-
180	1,2,4-trimethylbenzene	2826	2849	0.100	0.84236	25.00000	Averaged	

*** = Compound out of QC criteria**

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10139.D
Report Date: 01-Jun-2020 10:20

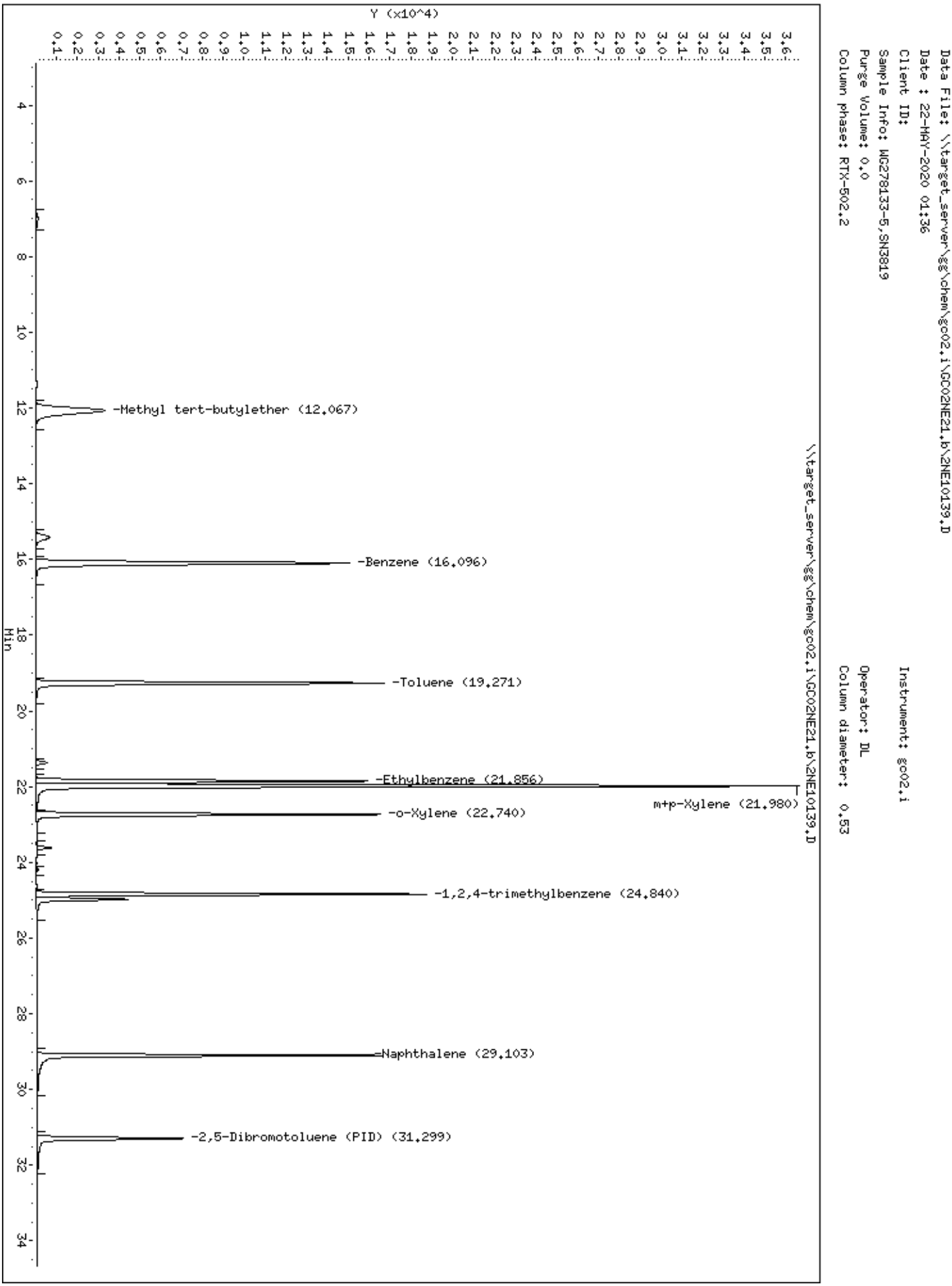
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10139.D
Lab Smp Id: WG278133-5
Inj Date : 22-MAY-2020 01:36
Operator : DL   Inst ID: gc02.i
Smp Info : WG278133-5,SN3819
Misc Info : WG278133,WG277230-4,SN3819-1
Comment   : AROMATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
	2 Methyl tert-butylether	12.066	12.078	-0.012	76785	50.0000	46.8	
	3 Benzene	16.096	16.099	-0.003	168342	50.0000	48.2	
	4 Toluene	19.270	19.274	-0.004	156173	50.0000	49.8	
	5 Ethylbenzene	21.856	21.860	-0.004	134384	50.0000	50.0	
	6 m+p-Xylene	21.979	21.983	-0.004	322856	100.000	103	
	7 o-Xylene	22.740	22.745	-0.005	140372	50.0000	50.5	
	8 1,2,4-trimethylbenzene	24.839	24.844	-0.005	142470	50.0000	50.4	
	10 Naphthalene	29.103	29.110	-0.007	136780	50.0000	49.4	
M	1 C9-C10 Aromatic				142470	50.0000	50.4	
$	11 2,5-Dibromotoluene (PID)	31.299	31.309	-0.010	71257	50.0000	33.1	


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10139.D
Date : 22-MAY-2020 01:36
Client ID:
Sample Info: WG278133-5,SN3819
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.067)
-Benzene (16.096)
-Toluene (19.271)
-Ethylbenzene (21.856)
m+p-Xylene (21.980)
-o-Xylene (22.740)
-1,2,4-trimethylbenzene (24.840)
Naphthalene (29.103)
-2,5-Dibromotoluene (PID) (31.299)
\\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10139.D

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020 **SDG:** SN3819
Lab ID : WG278133-5 **Analytical Date:** 05/22/20 01:36
Lab File ID : 2NE10139.D **Instrument ID:** GC02
Initial Calibration Date(s): 05/07/20 09:25 05/07/20 14:39 **Column ID:** B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
30	C5-C8 Aliphatic	5453	3455	0.100	-36.63294	25.00000	Averaged	<-
40	C9-C12 Aliphatic	5577	3216	0.100	-42.34226	25.00000	Averaged	<-
60	Benzene	7821	7861	0.100	0.51579	25.00000	Averaged	
70	Ethylbenzene	7244	7454	0.100	2.90583	25.00000	Averaged	
80	Methyl tert-butylether	4480	4312	0.100	-3.75302	25.00000	Averaged	
90	Naphthalene	5274	5262	0.100	-0.23332	25.00000	Averaged	
100	Toluene	7687	7845	0.100	2.05387	25.00000	Averaged	
110	m+p-Xylene	7595	7811	0.100	2.84219	25.00000	Averaged	
120	o-Xylene	7677	7877	0.100	2.61472	25.00000	Averaged	
200	n-Pentane	4883	3078	0.100	-36.97545	25.00000	Averaged	<-
210	2-Methylpentane	5508	3477	0.100	-36.88080	25.00000	Averaged	<-
220	2,2,4-Trimethylpentane	5968	3812	0.100	-36.12453	25.00000	Averaged	<-
230	n-Nonane	5484	3100	0.100	-43.47694	30.00000	Averaged	<-
240	n-Decane	5155	2639	0.100	-48.80963	25.00000	Averaged	<-
250	n-Butylcyclohexane	5999	3792	0.100	-36.78404	25.00000	Averaged	<-
260	1,2,4-trimethylbenzene	7237	7440	0.100	2.80489	25.00000	Averaged	
21	2,5-Dibromotoluene (FID)	1999	1269	0.100	-36.49971	25.00000	Averaged	<-

*** = Compound out of QC criteria**

Data File: 2NE10139.D
Report Date: 01-Jun-2020 10:25

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10139.D
Lab Smp Id: WG278133-5
Inj Date : 22-MAY-2020 01:36
Operator : DL   Inst ID: gc02.i
Smp Info : WG278133-5,SN3819
Misc Info : WG278133,WG277230-4,SN3819-1
Comment   : ALIPHATIC
Method   : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry   Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39   Cal File: 2NE10037.D
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: cv.sub
Target Version: 4.12
Processing Host: V200T3

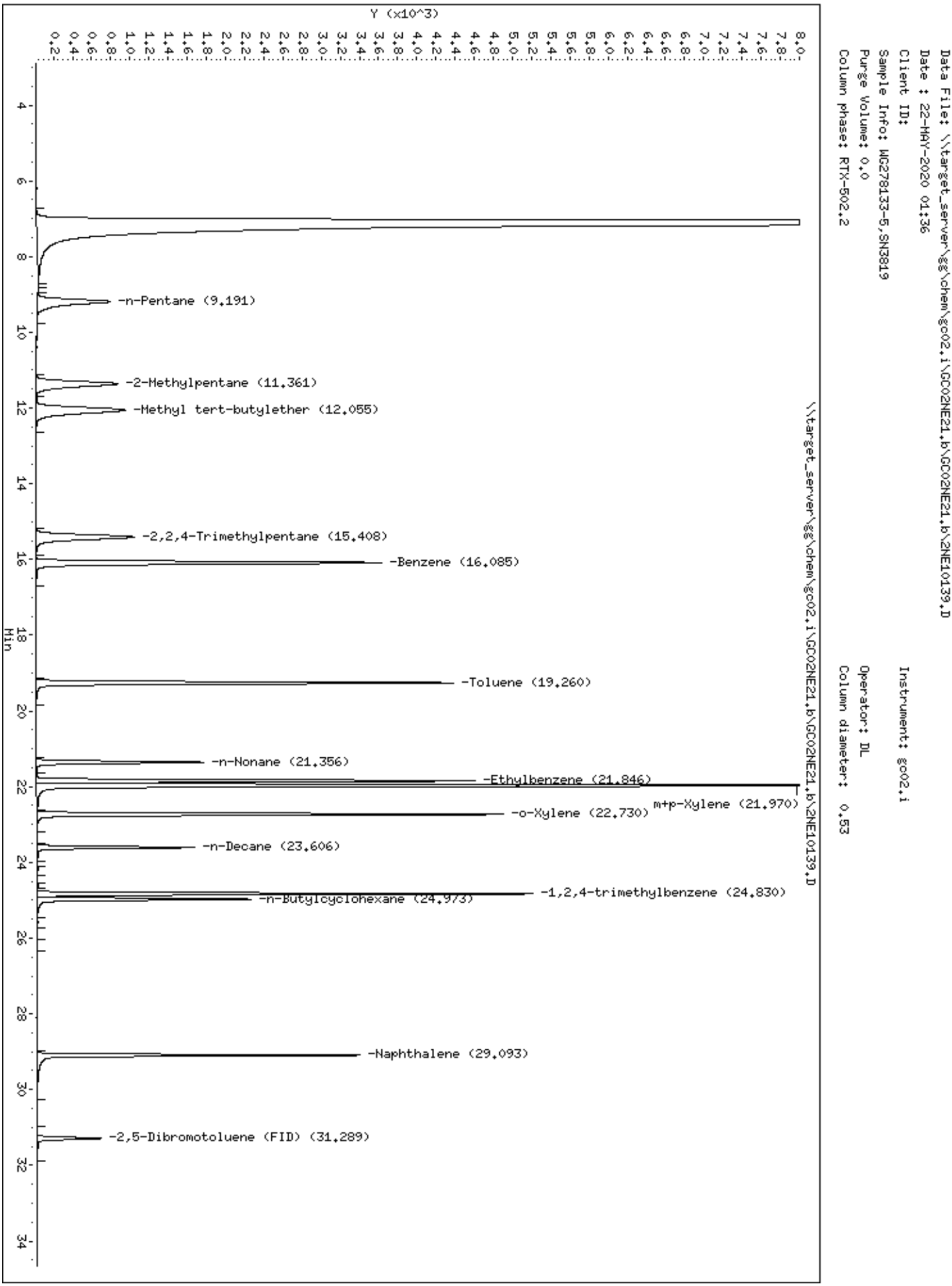
Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)	REVIEW CODE
	5 n-Pentane	9.190	9.065	0.125	153880	50.0000	31.5	
	6 2-Methylpentane	11.361	11.282	0.079	173832	50.0000	31.6	
	7 Methyl tert-butylether	12.055	11.992	0.063	215612	50.0000	48.1	
	8 2,2,4-Trimethylpentane	15.407	15.386	0.021	190602	50.0000	31.9	
	9 Benzene	16.085	16.065	0.020	393068	50.0000	50.2	
	11 Toluene	19.260	19.257	0.003	392245	50.0000	51.0	
	12 n-Nonane	21.356	21.361	-0.005	154981	50.0000	28.3	
	14 Ethylbenzene	21.845	21.850	-0.005	372713	50.0000	51.4	
	15 m+p-Xylene	21.969	21.975	-0.006	781075	100.000	103	
	16 o-Xylene	22.730	22.736	-0.006	393864	50.0000	51.3	
	13 n-Decane	23.605	23.614	-0.009	131954	50.0000	25.6	
	18 1,2,4-trimethylbenzene	24.829	24.838	-0.009	371991	50.0000	51.4	
	19 n-Butylcyclohexane	24.973	24.982	-0.009	189612	50.0000	31.6	
	20 Naphthalene	29.092	29.104	-0.012	263077	50.0000	49.9	
M	1 C5-C8 Aliphatic				518314	150.000	95.0(a)	
M	2 C9-C12 Aliphatic				321566	100.000	57.2(a)	
$	21 2,5-Dibromotoluene (FID)	31.288	31.304	-0.016	63462	50.0000	31.8	

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10139.D
Date : 22-MAY-2020 01:36
Client ID:
Sample Info: WG278133-5,SN3819
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
\\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10139.D
Y (x10^3)
Min
-n-Pentane (9.191)
-2-Methylpentane (11.361)
-Methyl tert-butylether (12.055)
-2,2,4-Trimethylpentane (15.408)
-Benzene (16.085)
-Toluene (19.260)
-n-Nonane (21.356)
-Ethylbenzene (21.846)
m+p-Xylene (21.970)
-o-Xylene (22.730)
-n-Decane (23.606)
-1,2,4-trimethylbenzene (24.830)
-n-Butylcyclohexane (24.973)
-Naphthalene (29.093)
-2,5-Dibromotoluene (FID) (31.289)

Raw QC Data Section

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG278133-1
Client ID: Method Blank Sample
Project:
SDG: SN3819
Lab File ID: 2NE10120.D

Sample Date:
Received Date:
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-JUN-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.
Benzene	U	3.0	ug/L	1	3	3.0	0.31
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6
Toluene	U	5.0	ug/L	1	5	5.0	0.34
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47
2,5-Dibromotoluene (FID)		71.4	%				
2,5-Dibromotoluene (PID)		72.0	%				

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029
http://www.katahdinlab.com

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10120.D
Report Date: 01-Jun-2020 09:27

Katahdin Analytical Services

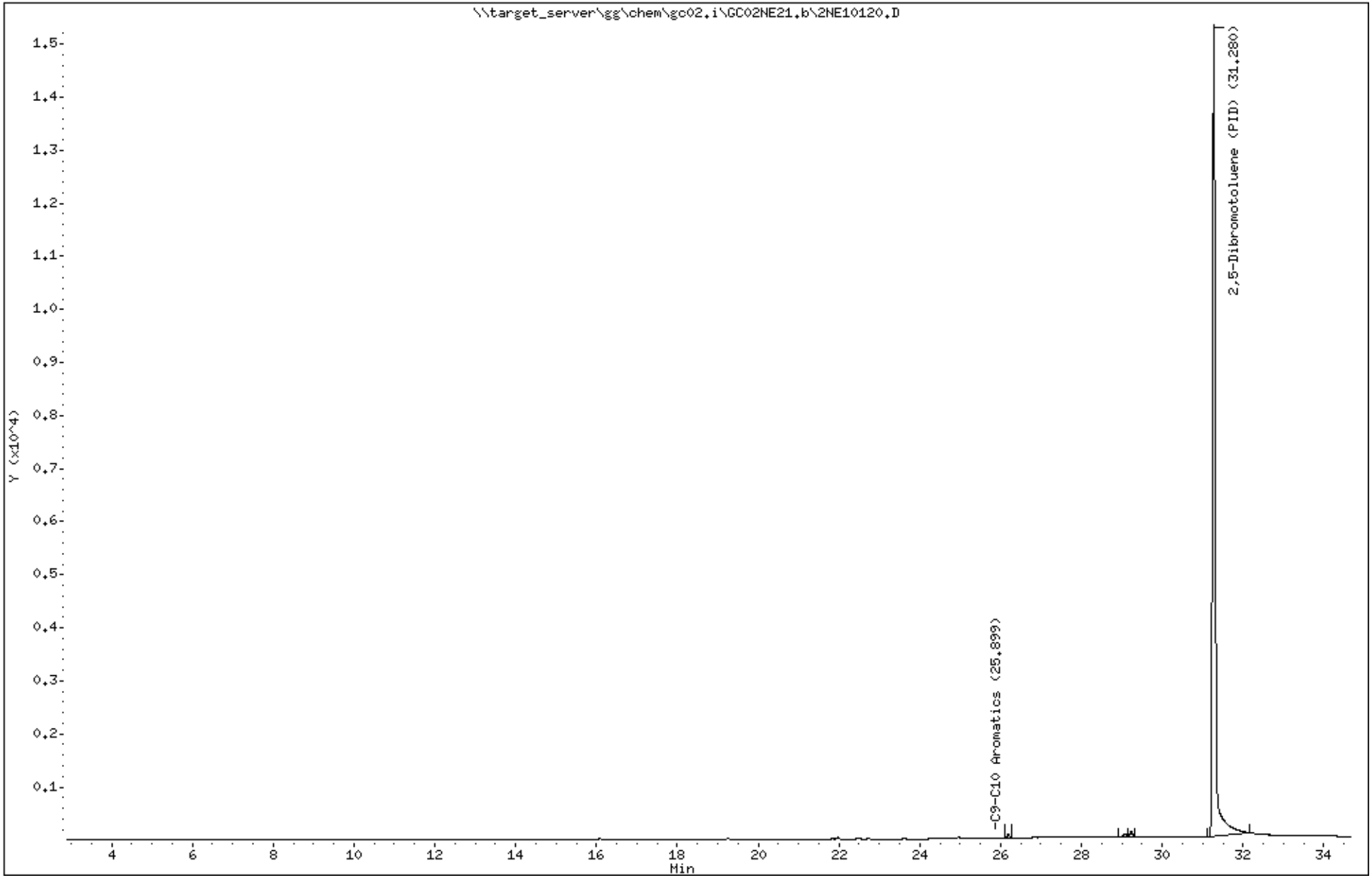
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Lab Smp Id: WG278133-1 Client Smp ID: WG278133-Blank
Inj Date : 21-MAY-2020 10:59
Operator : DL Inst ID: gc02.i
Smp Info : WG278133-1,SN3819
Misc Info : WG278133,WG277230-4,SN3819-1
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 11 2,5-Dibromotoluene (PID)	31.279	31.309	-0.030	155144	71.9991	72.0	

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10120.D
Date : 21-MAY-2020 10:59
Client ID: WG278133-Blank
Instrument: gc02.i
Sample Info: WG278133-1,SN3819
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



Data File: 2NE10120.D
Report Date: 01-Jun-2020 09:28

Katahdin Analytical Services

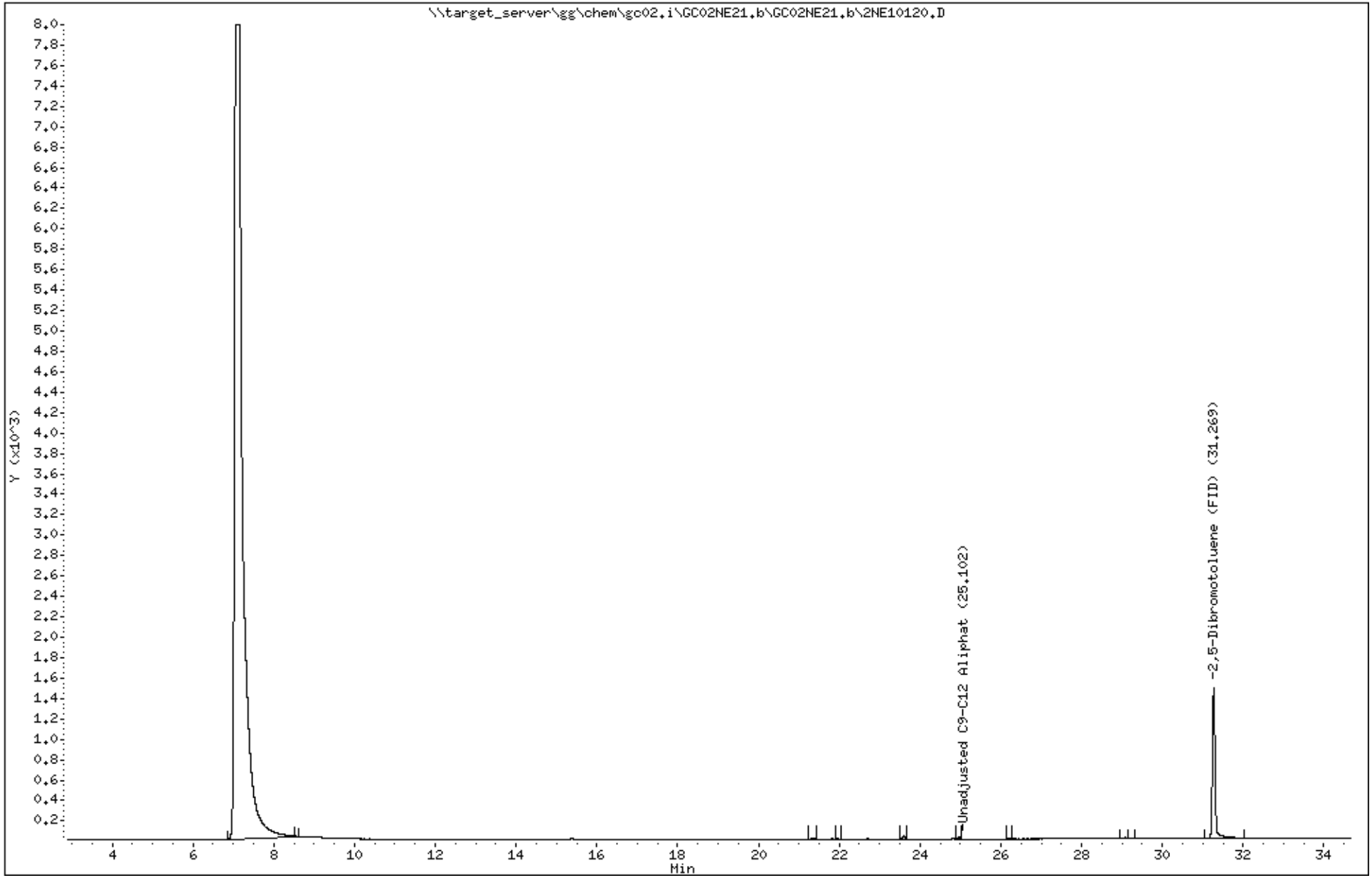
Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10120.D
Lab Smp Id: WG278133-1 Client Smp ID: WG278133-Blank
Inj Date : 21-MAY-2020 10:59
Operator : DL Inst ID: gc02.i
Smp Info : WG278133-1,SN3819
Misc Info : WG278133,WG277230-4,SN3819-1
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: MA-VPH.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 21 2,5-Dibromotoluene (FID)	31.269	31.304	-0.035	142650	71.3680	71.4	

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10120.D
Date : 21-MAY-2020 10:59
Client ID: WG278133-Blank
Instrument: gc02.i
Sample Info: WG278133-1,SN3819
Purge Volume: 0.0
Operator: DL
Column phase: RTX-502.2
Column diameter: 0.53



Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG278133-2
LCSD ID: WG278133-3
Project:
SDG: SN3819
Report Date: 01-JUN-20
LCS File ID: 2NE10121.D

Received Date:
Extract Date: 21-MAY-20
Extracted By: DL
Extraction Method: MA-VPH
Lab Prep Batch: WG278133
LCSD File ID: 2NE10122.D

Analysis Date: 21-MAY-20
Analyst: DL
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	269.	89.7	275.	91.7	ug/L	2	25	70-130
C9-C12 Aliphatics	200.	190.	95.0	187.	93.5	ug/L	2	25	70-130
C9-C10 Aromatics	100.	94.3	94.3	95.4	95.4	ug/L	1	25	70-130
Benzene	100.	87.9	87.9	91.1	91.1	ug/L	4	25	70-130
Ethylbenzene	100.	92.2	92.2	94.8	94.8	ug/L	3	25	70-130
Methyl tert-butylether	100.	90.4	90.4	90.4	90.4	ug/L	0	25	70-130
Naphthalene	100.	91.0	91.0	94.0	94.0	ug/L	3	25	70-130
Toluene	100.	89.2	89.2	92.6	92.6	ug/L	4	25	70-130
m+p-Xylenes	200.	183.	91.5	187.	93.5	ug/L	2	25	70-130
o-Xylene	100.	91.6	91.6	93.1	93.1	ug/L	2	25	70-130
2,5-Dibromotoluene (FID)			87.1		91.9				70-130
2,5-Dibromotoluene (PID)			89.4		96.1				70-130

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029
http://www.katahdinlab.com

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10121.D
Report Date: 01-Jun-2020 09:27

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10121.D
Lab Smp Id: WG278133-2 Client Smp ID: WG278133-LCS
Inj Date : 21-MAY-2020 11:39
Operator : DL Inst ID: gc02.i
Smp Info : WG278133-2,SN3819
Misc Info : WG278133,WG277230-4,SN3819-1
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

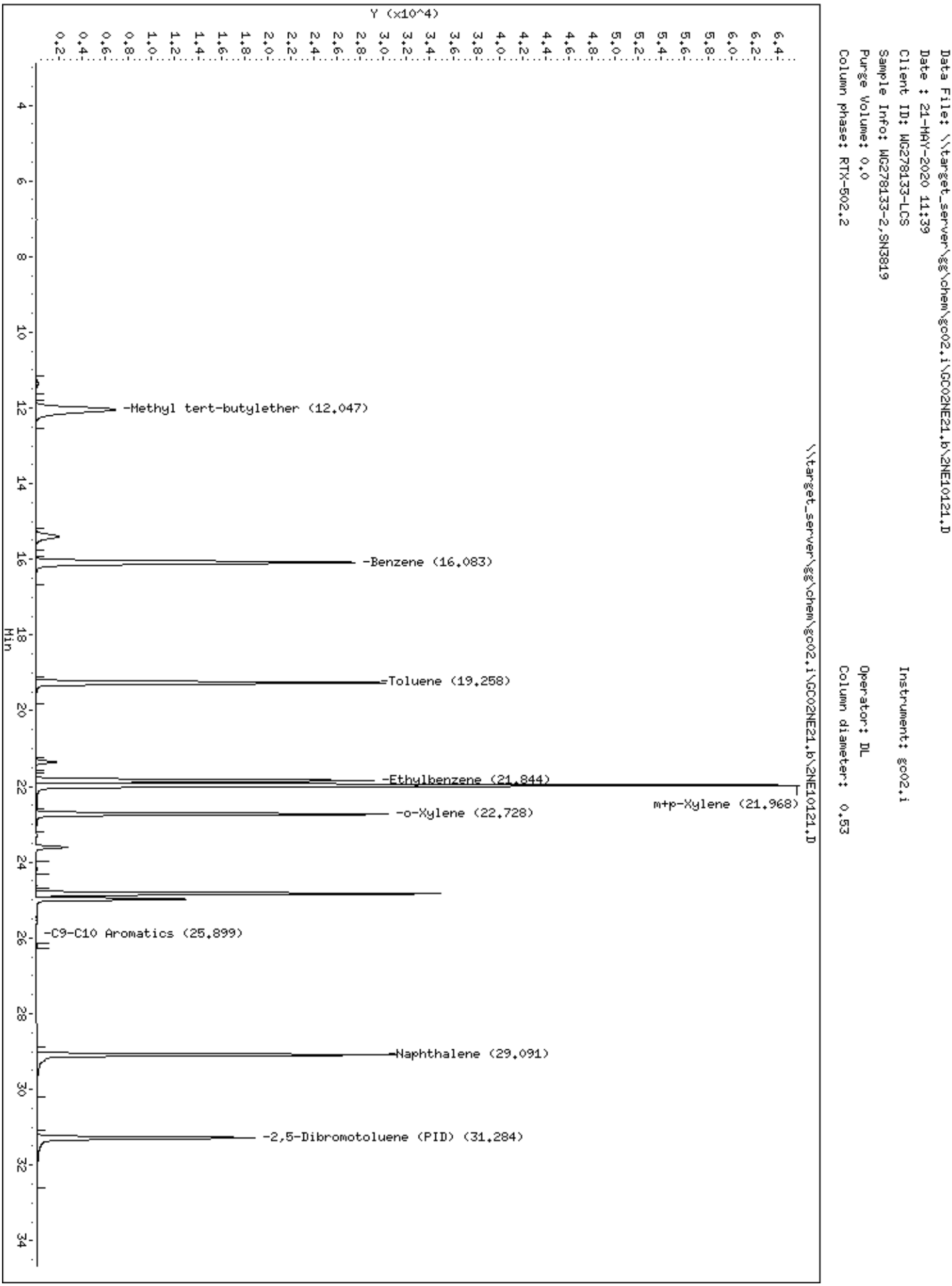
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
2	Methyl tert-butylether	12.046	12.078	-0.032	148440	90.3930	90.4	
3	Benzene	16.083	16.099	-0.016	306968	87.9178	87.9	
4	Toluene	19.257	19.274	-0.017	279754	89.1729	89.2	
5	Ethylbenzene	21.843	21.860	-0.017	248067	92.2438	92.2	
6	m+p-Xylene	21.967	21.983	-0.016	574366	183.111	183	
7	o-Xylene	22.727	22.745	-0.018	254663	91.5778	91.6	
S 9	C9-C10 Aromatics	22.818	-28.980		266585	94.3464	94.3(aM)	M3
10	Naphthalene	29.090	29.110	-0.020	251907	90.9680	91.0	
$ 11	2,5-Dibromotoluene (PID)	31.283	31.309	-0.026	192612	89.3872	89.4	

DL
11:34 am, Jun 01, 2020

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10124.D
Date : 21-MAY-2020 11:39
Client ID: WG278133-LCS
Sample Info: WG278133-2,SN3819
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.047)
-Benzene (16.083)
-Toluene (19.258)
-Ethylbenzene (21.844)
m+p-Xylene (21.968)
-o-Xylene (22.728)
-C9-C10 Aromatics (25.899)
-Naphthalene (29.091)
-2,5-Dibromotoluene (PID) (31.284)
\\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10121.D

Data File: 2NE10121.D
Report Date: 01-Jun-2020 09:28

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10121.D
Lab Smp Id: WG278133-2 Client Smp ID: WG278133-LCS
Inj Date : 21-MAY-2020 11:39
Operator : DL Inst ID: gc02.i
Smp Info : WG278133-2,SN3819
Misc Info : WG278133,WG277230-4,SN3819-1
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

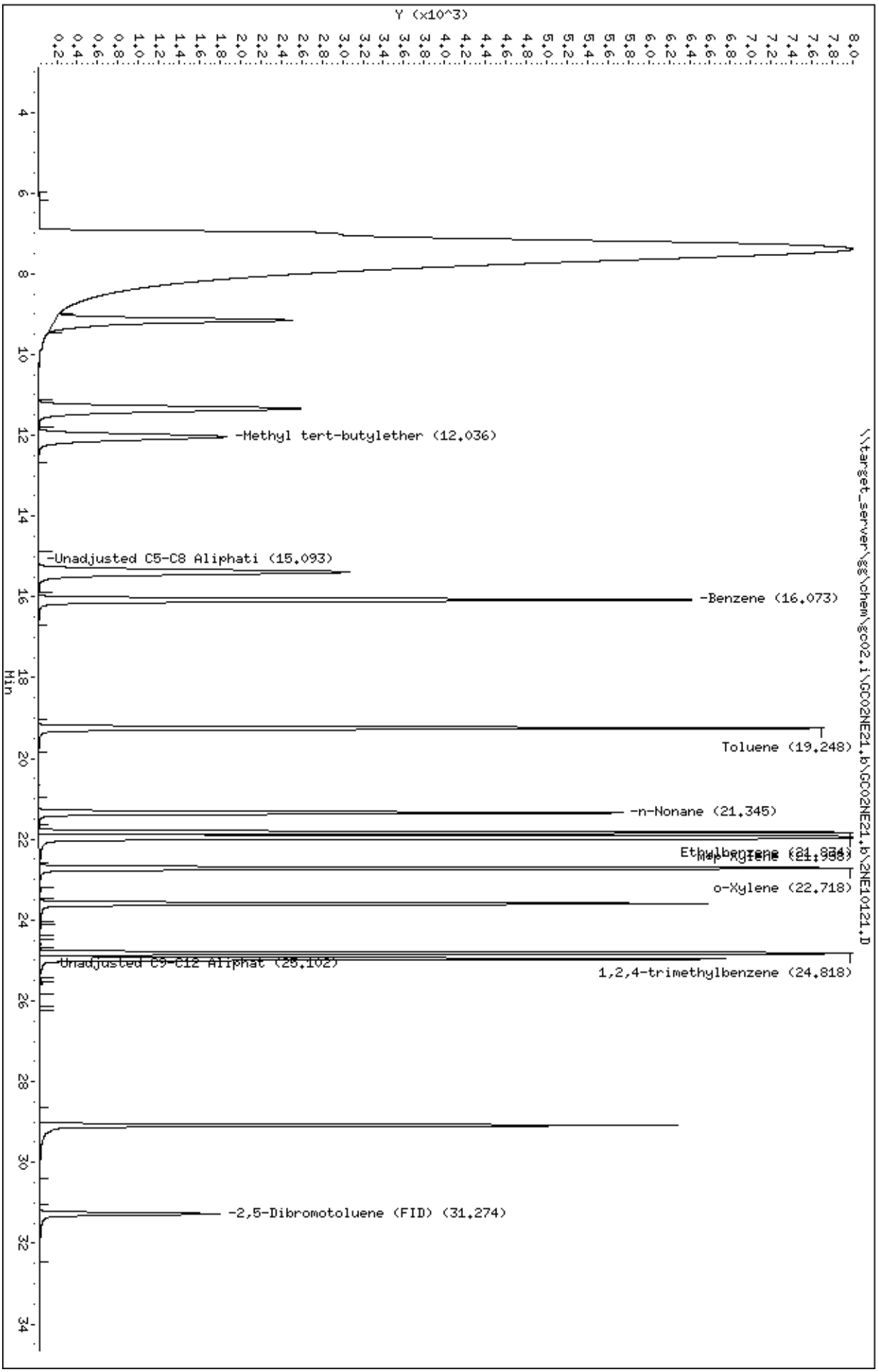
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)	REVIEW CODE
	7 Methyl tert-butylether	12.035	11.992	0.043	391378	87.3536	87.4	
	9 Benzene	16.072	16.065	0.007	692326	88.5212	88.5	
	11 Toluene	19.247	19.257	-0.010	685257	89.1447	89.1	
	12 n-Nonane	21.344	21.361	-0.017	498316	90.8703	90.9	
	14 Ethylbenzene	21.833	21.850	-0.017	672453	92.8319	92.8	
	15 m+p-Xylene	21.957	21.975	-0.018	1394615	183.625	184	
	16 o-Xylene	22.717	22.736	-0.019	711276	92.6556	92.6	
	18 1,2,4-trimethylbenzene	24.818	24.838	-0.020	686996	94.9305	94.9	
S	10 Unadjusted C5-C8 Aliphatics	8.953-21.233			1468377	269.276	269(M)	M2
S	17 Unadjusted C9-C12 Aliphatics	21.234-28.969			1057944	189.692	190(M)	M2
$	21 2,5-Dibromotoluene (FID)	31.273	31.304	-0.031	174136	87.1205	87.1	

DL
11:34 am, Jun 01, 2020

QC Flag Legend

M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10121.D
Date : 21-MAY-2020 11:39
Client ID: WG278133-LCS
Sample Info: WG278133-2,SN3819
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
-Methyl tert-butylether (12.036)
-Unadjusted C5-C8 Aliphati (15.093)
-Benzene (16.073)
Toluene (19.248)
-n-Nonane (21.345)
Ethylbenzene (21.934)
m&p-Xylene (21.988)
o-Xylene (22.718)
Unadjusted C9-C12 Aliphat (25.102)
1,2,4-trimethylbenzene (24.818)
-2,5-Dibromotoluene (FID) (31.274)
\\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10121.D

Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10122.D
Report Date: 01-Jun-2020 09:27

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10122.D
Lab Smp Id: WG278133-3 Client Smp ID: WG278133-LCSD
Inj Date : 21-MAY-2020 12:20
Operator : DL Inst ID: gc02.i
Smp Info : WG278133-3,SN3819
Misc Info : WG278133,WG277230-4,SN3819-1
Comment : AROMATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m
Meth Date : 22-May-2020 07:52 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

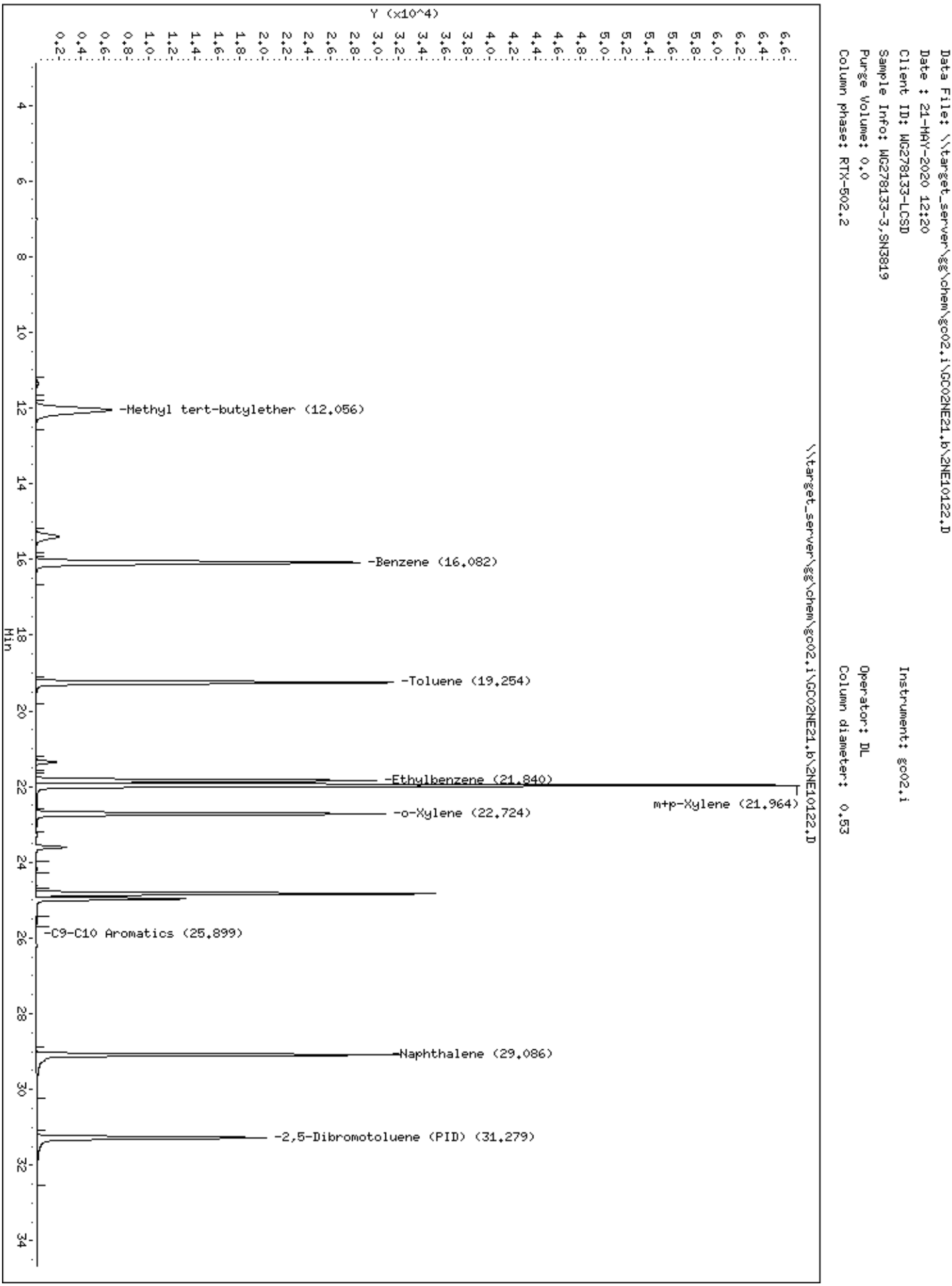
Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
2	Methyl tert-butylether	12.055	12.078	-0.023	148463	90.4070	90.4	
3	Benzene	16.082	16.099	-0.017	318221	91.1407	91.1	
4	Toluene	19.254	19.274	-0.020	290580	92.6237	92.6	
5	Ethylbenzene	21.839	21.860	-0.021	255065	94.8460	94.8	
6	m+p-Xylene	21.964	21.983	-0.019	586428	186.957	187	
7	o-Xylene	22.724	22.745	-0.021	258873	93.0918	93.1	
S 9	C9-C10 Aromatics	22.818	-28.980		269593	95.4109	95.4(aM)	M3
10	Naphthalene	29.086	29.110	-0.024	260421	94.0425	94.0	
$ 11	2,5-Dibromotoluene (PID)	31.279	31.309	-0.030	207160	96.1386	96.1	

DL
11:35 am, Jun 01, 2020

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10122.D
Date : 21-MAY-2020 12:20
Client ID: WG278133-LCSD
Sample Info: WG278133-3,SN3819
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^4)
Min
-Methyl tert-butylether (12.056)
-Benzene (16.082)
-Toluene (19.254)
-Ethylbenzene (21.840)
m+p-Xylene (21.964)
-o-Xylene (22.724)
-C9-C10 Aromatics (25.899)
Naphthalene (29.086)
-2,5-Dibromotoluene (PID) (31.279)
\\target_server\gg\chem\gc02.i\GC02NE21.b\2NE10122.D

Data File: 2NE10122.D
Report Date: 01-Jun-2020 09:28

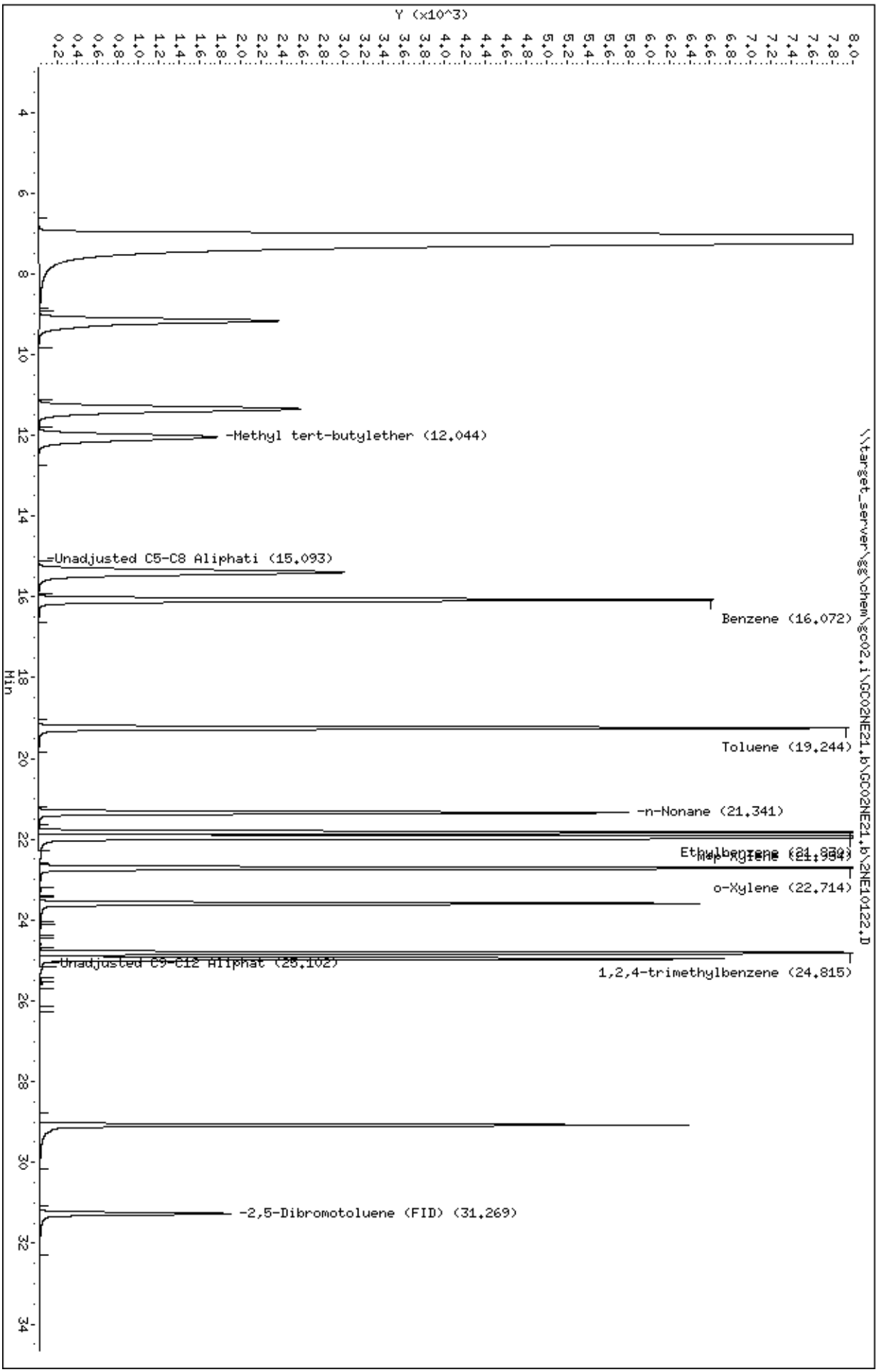
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10122.D
Lab Smp Id: WG278133-3 Client Smp ID: WG278133-LCSD
Inj Date : 21-MAY-2020 12:20
Operator : DL Inst ID: gc02.i
Smp Info : WG278133-3,SN3819
Misc Info : WG278133,WG277230-4,SN3819-1
Comment : ALIPHATIC
Method : \\target_server\gg\chem\gc02.i\GC02NE21.b\VPHPID91.m\VPHFID91.m
Meth Date : 22-May-2020 07:59 dlewry Quant Type: ESTD
Cal Date : 07-MAY-2020 14:39 Cal File: 2NE10037.D
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: LCS-MS.sub
Target Version: 4.12
Processing Host: V200T3

Concentration Formula: Amt * DF * 0.005/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	0.00500	Sample Volume (L)
Cpnd Variable		Local Compound Variable

		Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
	7	Methyl tert-butylether	12.043	11.992	0.051	385834	86.1162	86.1	
	9	Benzene	16.071	16.065	0.006	709024	90.6562	90.6	
	11	Toluene	19.244	19.257	-0.013	702150	91.3423	91.3	
	12	n-Nonane	21.341	21.361	-0.020	500557	91.2790	91.3	
	14	Ethylbenzene	21.829	21.850	-0.021	684399	94.4811	94.5	
	15	m+p-Xylene	21.954	21.975	-0.021	1401211	184.494	184	
	16	o-Xylene	22.714	22.736	-0.022	714228	93.0401	93.0	
	18	1,2,4-trimethylbenzene	24.814	24.838	-0.024	684529	94.5896	94.6	
S	10	Unadjusted C5-C8 Aliphatics	8.953-21.233			1502007	275.443	275	
S	17	Unadjusted C9-C12 Aliphatics	21.234-28.969			1043390	187.083	187	
$	21	2,5-Dibromotoluene (FID)	31.269	31.304	-0.035	183652	91.8814	91.9	


Data File: \\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10122.D
Date : 21-MAY-2020 12:20
Client ID: WG278133-LCSD
Sample Info: WG278133-3,SN3819
Purge Volume: 0.0
Column phase: RTX-502.2
Instrument: gc02.i
Operator: DL
Column diameter: 0.53
Y (x10^3)
Min
-Methyl tert-butylether (12.044)
=Unadjusted C5-C8 Aliphati (15.093)
Benzene (16.072)
Toluene (19.244)
-n-Nonane (21.341)
Ethylbenzene (21.834)
m&p-Xylene (21.994)
o-Xylene (22.714)
-Unadjusted C9-C12 Aliphat (25.102)
1,2,4-trimethylbenzene (24.815)
-2,5-Dibromotoluene (FID) (31.269)
\\target_server\gg\chem\gc02.i\GC02NE21.b\GC02NE21.b\2NE10122.D

Logbooks and Supporting Documents

Katahdin Analytical Services

GC Laboratory Instrument Runlog

Instrument: GC02

Method (Circle): (MADEP-VPH-98-1) MEDEP 4.2.17 SW846 8015(M)

Date	Init.	Sample Name	Amt. Purged	SP. #	Result File	Dil.	Y/N	Method	pH	Comments
5-6-20	DL	CV50	5mL	7	2NE10027	1	N	VPHR1DFID40	—	
↓	↓	CV50	↓	8	↓ 28	↓	N	↓	↓	55V PID
5-7-20	DL	Rinse	5mL	1	2NE10029	1	N	VPHR1DFID91	—	
		Ical50	50uL	2	30		N			
		1	10	3	31		Y			WG-277230-1
		5	50	4	32		Y			↓ -2
		10	100	5	33		N			
		100	100	6	34		Y			WG-277230-5
		300	60	7	35		Y			-6
		50	50	8	36		Y			-4
		↓ 10	100	9	37		Y			-3
↓	↓	IND	50 ↓	10	↓ 38	↓	Y	↓	↓	↓ -7

	Std. Name	Conc.	Std. Code	Std. Code
1	VPH Cal mix	50 ug/ml	GCV 4409	GCV
2	VPH Surr. mix	100 ug/ml	GCV	GCV
3	VPH LCS mix	100 ug/ml	GCV 4413	GCV
4	GRO Cal mix	250 ug/mL Total	GCV	GCV
5	GRO Surr. Mix	50 ug/mL	GCV	GCV
6	GRO LCS mix	250 ug/mL Total	GCV	GCV
7	VPH L	5ug/mL	GCV 4410	
8	VPH H	25ug/mL	GCV 4411	

VPH CC = 50uL Std. 1
VPH LCS = 50uL Std. 3
VPH Samples = 50uL Std. 2

GRO CC = 20uL Std. 4
GRO LCS = 20uL Std. 5 and 6
GRO Samples = 20uL Std. 5

Katahdin Analytical Services
GC Laboratory Instrument Runlog

Instrument: GC02

Method (Circle): (MADEP-VPH-98-1) MEDEP 4.2.17 SW846 8015(M)

Date	Init.	Sample Name	Amt. Purged	SP. #	Result File	Dil.	Y/N	Method	pH	Comments
5-20-20	DL	SN3760-3REB	20mL	10	2NE10114	1	Y	VPHPIDFID91	—	
		-4REB		11	115		Y			
		CV50	5mL	12	116		Y			SS WG278045-5
5-21-20	DL	Rinse	5mL	1	2NE0117	1	N	VPHPIDFID91	—	DL 6-1-20
		CV50		2	118		N			SS WG278[illegible]-4
				3	119		Y			
		WG278[illegible]-1		4	120		Y			*DL 6-1-20
		-2		5	121		Y			
		-3		6	122		Y			
		SN3818-1A		7	123		Y		12	
		-2A		8	124		N			SS
		-3A		9	125		Y			
		-4A		10	126		Y			C9-C10 overlap RTB C9-C12
		-5A		11	127		Y			
		SN3819-1AB*		12	128		Y			*DL 5-22-20
		SN3820-1A		13	129		N			SS
		-2A		14	130		N			
		-3A		15	131		N			
		-4A		16	132		N			
		SN3830-1A		17	133		N			
		-2A		18	134		N			
		-3A		19	135		N			
		-4A		20	136		N			
5-22-20		-5A		21	137		N			
		-6A		22	138		N			
		CV50		23	139		Y		—	SS 6 FID
5-22-20	DL	Rinse	5mL	1	2NE10140	1	N	VPHPIDFID90	—	DL 5-27-20*
		CV50		2	141		Y			WG27811[illegible]-5 DL 6-1-20
		WG278236-1		3	142		N			News MIX SS

	Std. Name	Conc.	Std. Code	Std. Code
1	VPH Cal mix	50 ug/ml	GCV 4415	GCV
2	VPH Surr. mix	100 ug/ml	GCV 4418	GCV 4425
3	VPH LCS mix	100 ug/ml	GCV 4417	GCV
4	GRO Cal mix	250 ug/mL Total	GCV	GCV
5	GRO Surr. Mix	50 ug/mL	GCV	GCV
6	GRO LCS mix	250 ug/mL Total	GCV	GCV
7				
8				

VPH CC = 50uL Std. 1
VPH LCS = 50uL Std. 3
VPH Samples = 50uL Std. 2

GRO CC = 20uL Std. 4
GRO LCS = 20uL Std. 5 and 6
GRO Samples = 20uL Std. 5

pH lot # 690803

QAGC394 Katahdin Analytical Services 1000076

EXTRACTABLE PETROLEUM HYDROCARBON DATA

QC Summary Section

Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** JV, LTM, DCI Spring 2020 **Matrix:** AQ
Lab Code: KAS **SDG:** SN3819

Client Sample ID	Lab Sample ID	Col. ID	2BN	#	2FBP	#	5AA	#	OTP	#
LFM-99-O2B-SPR20	SN3819-1	B	67.5		68.0		52.4		57.1	
Method Blank Sample	WG278026-1	B	56.4		56.7		58.0		53.7	
Laboratory Control S	WG278026-2	B	79.1		78.9		62.2		76.1	
Laboratory Control S	WG278026-3	B	62.1		61.7		46.0		54.8	

		QC Limits
5AA	5-ALPHA ANDROSTANE	40-140
OTP	O-TERPHENYL	40-140
2FBP	2-FLUOROBIPHENYL	40-140
2BN	2-BROMONAPHTHALENE	40-140

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://katahdinlab.com
sales@katahdinlab.com

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020
Lab File ID : CNE1113.D
Instrument ID : GC12

SDG : SN3819
Lab Sample ID : WG278026-1
Date Analyzed : 22-MAY-20
Time Analyzed : 17:16
Date Extracted : 20-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278026-2	CNE1114.I	05/22/20	18:03
Laboratory Control S	WG278026-3	CNE1115.I	05/22/20	18:49
LFM-99-O2B-SPR20	SN3819-1	CNE1116.I	05/22/20	19:35

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020
Lab File ID : CNE1113A.D
Instrument ID : GC12

SDG : SN3819
Lab Sample ID : WG278026-1
Date Analyzed : 22-MAY-20
Time Analyzed : 17:16
Date Extracted : 20-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278026-2	CNE1114A	05/22/20	18:03
Laboratory Control S	WG278026-3	CNE1115A	05/22/20	18:49
LFM-99-O2B-SPR20	SN3819-1	CNE1116A	05/22/20	19:35

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020
Lab File ID : CNE2113.D
Instrument ID : GC12

SDG : SN3819
Lab Sample ID : WG278026-1
Date Analyzed : 22-MAY-20
Time Analyzed : 17:16
Date Extracted : 20-MAY-20

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG278026-2	CNE2114.I	05/22/20	18:03
Laboratory Control S	WG278026-3	CNE2115.I	05/22/20	18:49
LFM-99-O2B-SPR20	SN3819-1	CNE2116.I	05/22/20	19:35

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: GC12 ICAL SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 9.06 S2 : 10.44

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	S2 RT #
01		WG273574-5	03/06/20	1158	9.07	10.45
02		WG273574-4	03/06/20	1243	9.06	10.44
03		WG273574-3	03/06/20	1329	9.06	10.44
04		WG273574-2	03/06/20	1414	9.05	10.43
05		WG273574-1	03/06/20	1500	9.06	10.44
06		WG273574-6	03/09/20	0623		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS

S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: GC12 ICAL SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION S3 : 15.36					
	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG273574-5	03/06/20	1158	15.37	
02		WG273574-4	03/06/20	1243	15.35	
03		WG273574-3	03/06/20	1329	15.36	
04		WG273574-2	03/06/20	1414	15.35	
05		WG273574-1	03/06/20	1500	15.35	
06		WG273574-6	03/09/20	0623		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SN3819

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 9.05 S2 : 10.43

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	S2 RT #
01		WG278377-1	05/22/20	1157	9.05	10.43
02	WG278026-BLA	WG278026-1	05/22/20	1716	9.03	10.40
03	WG278026-LCS	WG278026-2	05/22/20	1803	9.01	10.39
04	WG278026-LCS	WG278026-3	05/22/20	1849	9.02	10.39
05	LFM-99-O2B-S	SN3819-1	05/22/20	1935	9.02	10.39
06		WG278377-2	05/23/20	0811	9.12	10.49
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SN3819

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.35

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG278377-1	05/22/20	1157	15.35	
02	WG278026-BLA	WG278026-1	05/22/20	1716	15.31	
03	WG278026-LCS	WG278026-2	05/22/20	1803	15.31	
04	WG278026-LCS	WG278026-3	05/22/20	1849	15.31	
05	LFM-99-O2B-S	SN3819-1	05/22/20	1935	15.31	
06		WG278377-2	05/23/20	0811	15.41	
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: GC12 ICAL SDG No.: SDGA02536

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.71

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01		WG273574-11	03/06/20	1158	16.72	
02		WG273574-10	03/06/20	1243	16.70	
03		WG273574-9	03/06/20	1329	16.71	
04		WG273574-8	03/06/20	1414	16.69	
05		WG273574-7	03/06/20	1500	16.69	
06		WG273574-12	03/09/20	0623		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.33 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SN3819

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 03/06/20 03/06/20

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.78

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01		WG278377-3	05/22/20	1157	16.78	
02	WG278026-BLA	WG278026-1	05/22/20	1716	16.76	
03	WG278026-LCS	WG278026-2	05/22/20	1803	16.75	
04	WG278026-LCS	WG278026-3	05/22/20	1849	16.76	
05	LFM-99-O2B-S	SN3819-1	05/22/20	1935	16.76	
06		WG278377-4	05/23/20	0811	16.81	
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.34 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII DRO

Sample Data Section

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N Presumptive evidence of a compound based on a mass spectral library search.

A Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SN3819-1
Client ID: LFM-99-O2B-SPR20
Project: JV, LTM, DCI Spring 2020
SDG: SN3819
Lab File ID: CNE2116.D

Sample Date: 15-MAY-20
Received Date: 19-MAY-20
Extract Date: 20-MAY-20
Extracted By: MR
Extraction Method: SW846 3510C
Lab Prep Batch: WG278026

Analysis Date: 22-MAY-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 28-MAY-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	93	ug/L	1	100	93.	47.	70.
C19-C36 Aliphatics	U	93	ug/L	1	100	93.	47.	70.
C11-C22 Aromatics	U	93	ug/L	1	100	93.	47.	70.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.84	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.93	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.75	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.84	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		52.4	%					
o-Terphenyl		57.1	%					
2-Fluorobiphenyl		68.0	%					
2-Bromonaphthalene		67.5	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029
http://www.katahdinlab.com

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2116.d
Report Date: 28-May-2020 20:00

Katahdin Analytical Services

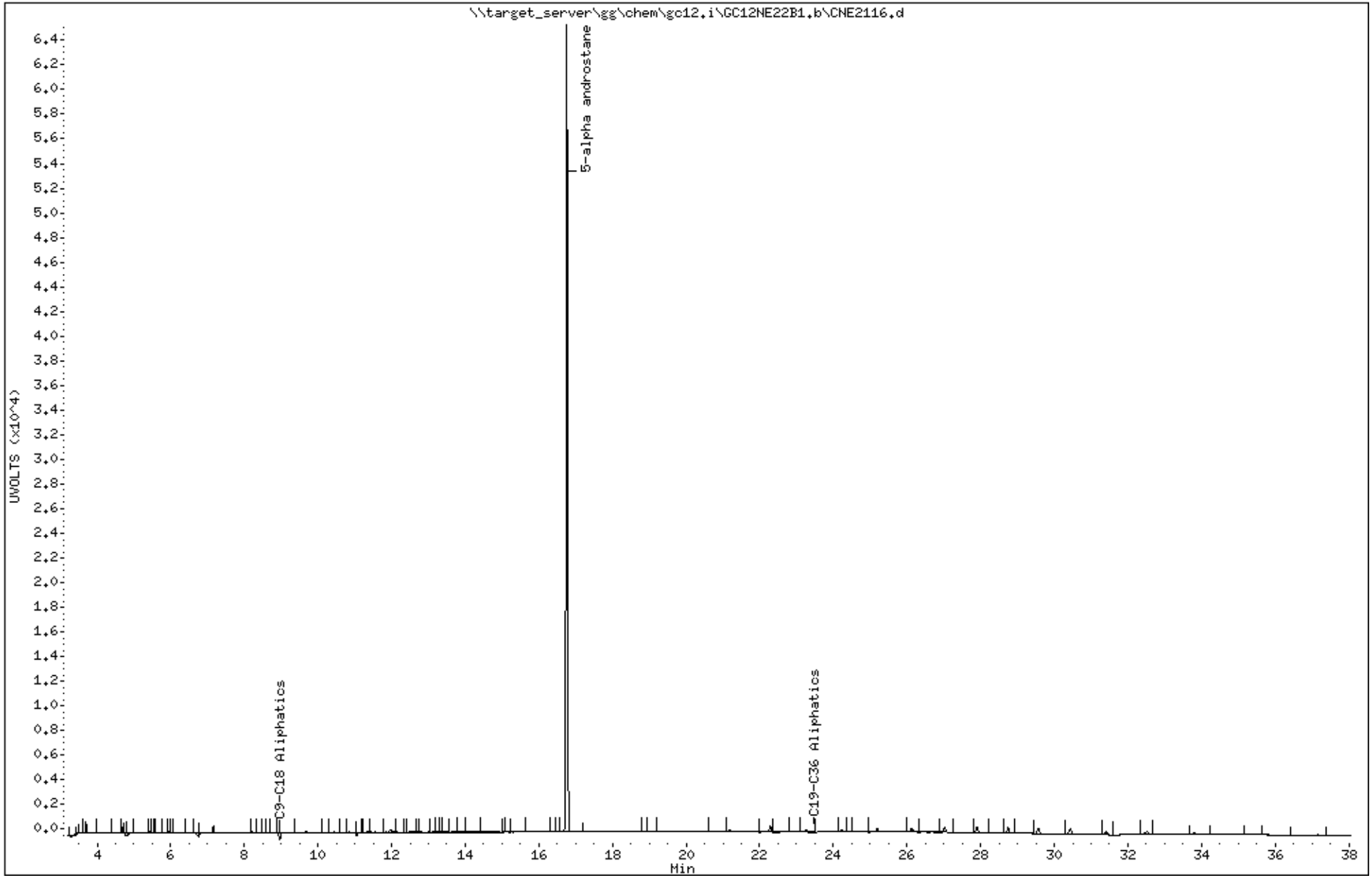
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Lab Smp Id: SN3819-1 Client Smp ID: LFM-99-O2B-SPR20
Inj Date : 22-MAY-2020 19:35
Operator : AAB Inst ID: gc12.i
Smp Info : SN3819-1
Misc Info : WG278377,WG278026,WG273574-9
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\ALIB070A.m
Meth Date : 26-May-2020 10:25 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC2023.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: ALIPHATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.070	Sample Volume (L)
Cpnd Variable		Local Compound Variable

					CONCENTRATIONS		
					ON-COLUMN	FINAL	
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/ml)	(ug/L)	REVIEW CODE
$ 44 5-alpha androstane	16.758	16.778	-0.020	235114	23.5819	44.1	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2116.d
Date : 22-MAY-2020 19:35
Client ID: LFM-99-02B-SPR20 Instrument: gc12.i
Sample Info: SN3819-1
Purge Volume: 1.1 Operator: AAB
Column phase: RTX-1 Column diameter: 0.53



Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1116.d
Report Date: 28-May-2020 19:56

Katahdin Analytical Services

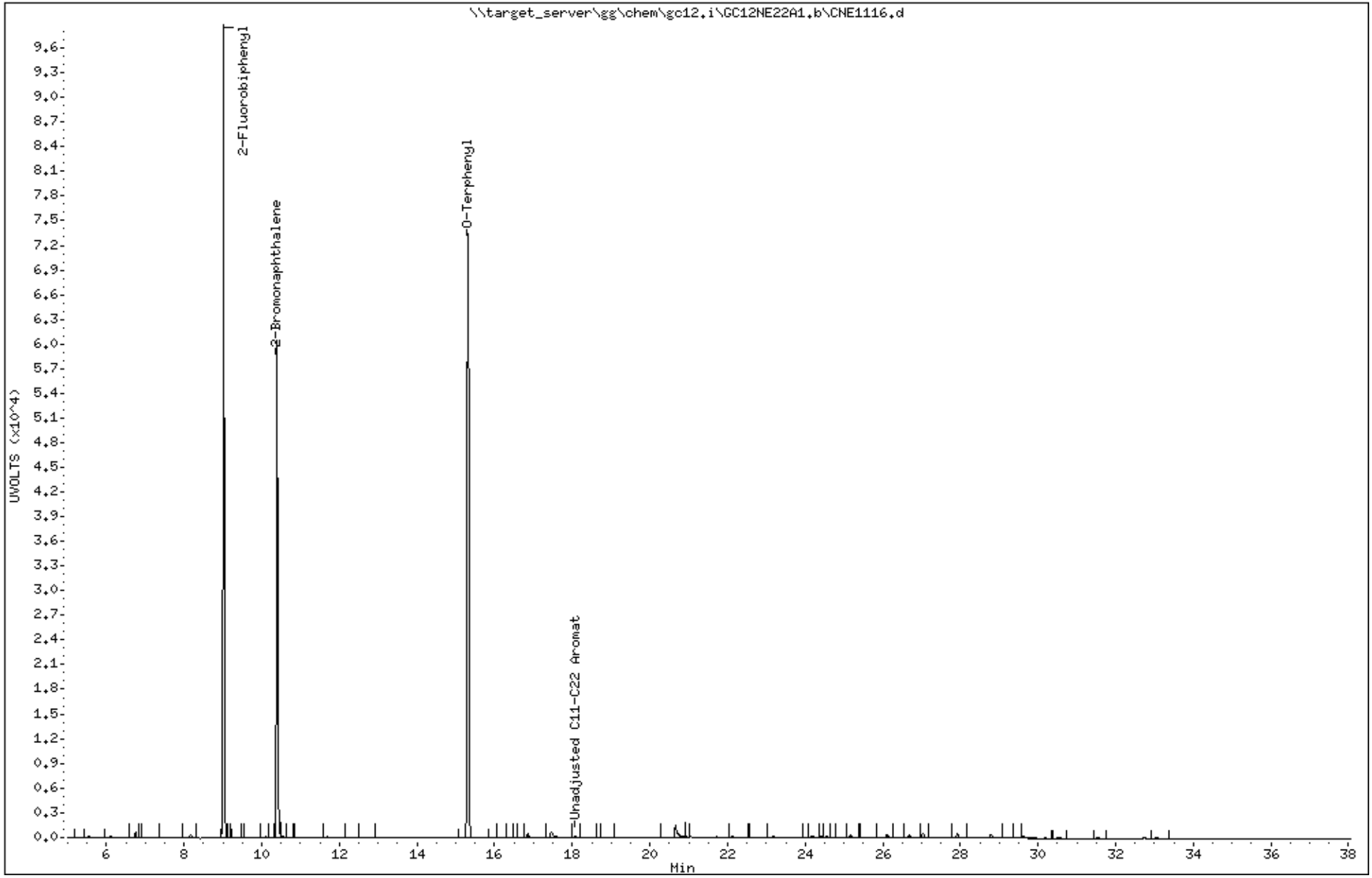
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Inj Date : 22-MAY-2020 19:35
Operator : AAB Inst ID: gc12.i
Smp Info : SN3819-1
Misc Info : WG278377,WG278026,WG273574-3
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: AROMATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.070	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 4 2-Fluorobiphenyl	9.016	9.054	-0.038	266121	30.6304	57.2	
$ 6 2-Bromonaphthalene	10.394	10.430	-0.036	181776	30.4101	56.8	
$ 11 O-Terphenyl	15.313	15.346	-0.033	265912	25.7015	48.0	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1116.d
Date : 22-MAY-2020 19:35
Client ID: LFM-99-02B-SPR20
Instrument: gc12.i
Sample Info: SN3819-1
Purge Volume: 1.1
Operator: AAB
Column phase: RTX-5
Column diameter: 0.53



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Report Date: 28-May-2020 19:56

Katahdin Analytical Services

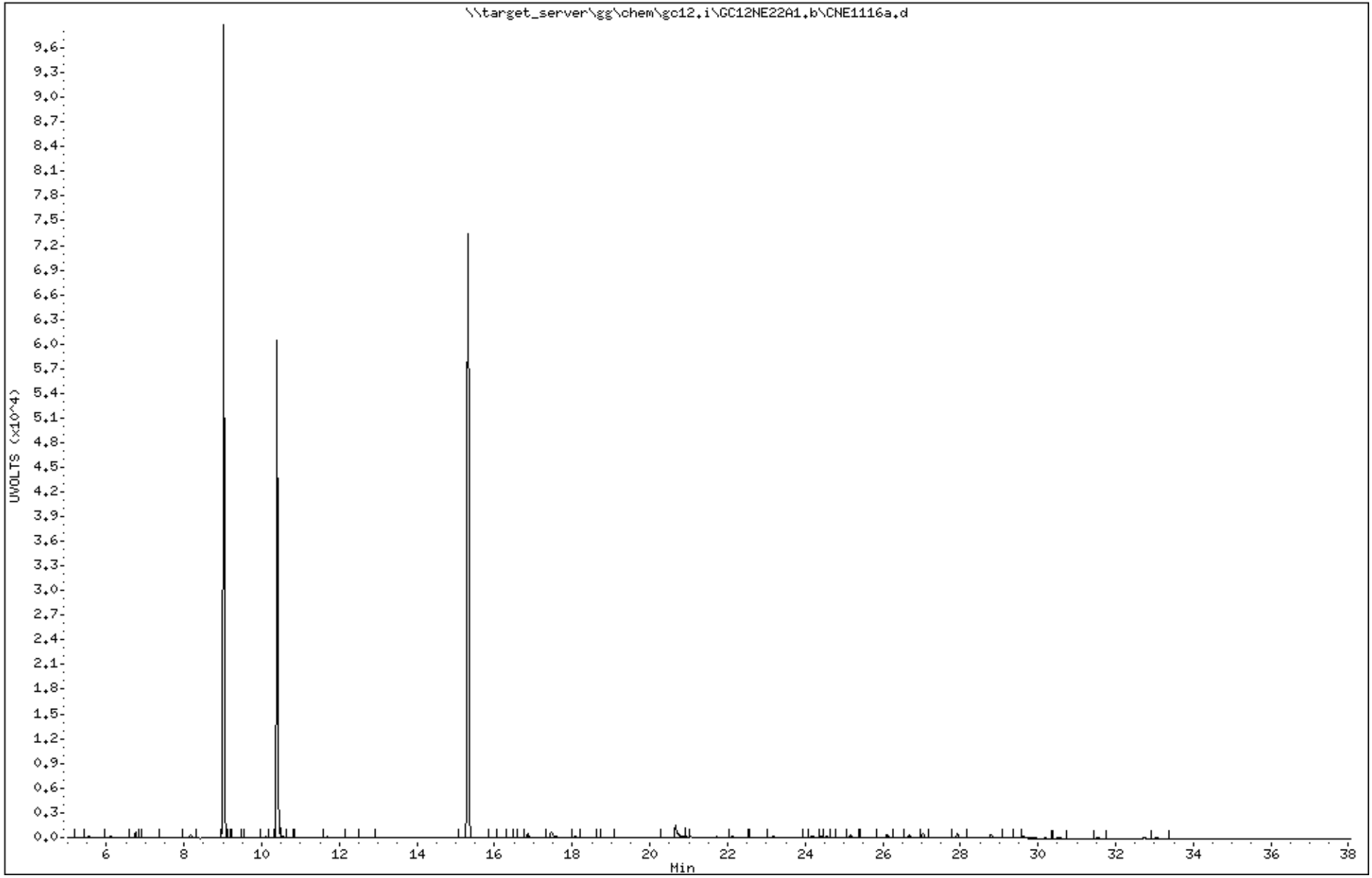
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Lab Smp Id: SN3819-1 Client Smp ID: LFM-99-O2B-SPR20
Inj Date : 22-MAY-2020 19:35
Operator : AAB Inst ID: gc12.i
Smp Info : SN3819-1
Misc Info : WG278377,WG278026,WG273574-3
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: PAH.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.070	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1116a.d
Date : 22-MAY-2020 19:35
Client ID: LFM-99-02B-SPR20 Instrument: gc12.i
Sample Info: SN3819-1
Purge Volume: 1.1 Operator: AAB
Column phase: RTX-5 Column diameter: 0.53



06/05/2020
Katahdin Analytical Services 2000022

Standards Data Section

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN3819
Project : JV, LTM, DCI Spring 2020 **Instrument ID:** GC12
Lab File IDs : CNC1023.d CNC1022.d CNC1021.d CNC1020.d CNC1019.d **Calibration Date(s):** 06-MAR-20 11:58 06-MAR-20 15:00

	Level 1 1.0000	Level 2 10.0000	Level 3 50.0000	Level 4 100.0000	Level 5 200.0000		Crv New	b	m1	m2	%RSD	Max %RSD	
Unadjusted C11-C22 Aromatic	11371	10074	9250	9133	9951		AVG		9956		8.97242	25.00000	M C
Naphthalene	10735	9813	9200	9191	9943		AVG		9776		6.51655	25.00000	O
2-Methylnaphthalene	10255	9764	9180	9120	9882		AVG		9640		5.01227	25.00000	O
Acenaphthylene	11004	9891	9211	9119	9929		AVG		9831		7.68065	25.00000	O
Acenaphthene	11490	10086	9327	9240	10053		AVG		10039		8.98320	25.00000	O
Fluorene	10794	9842	9123	9086	9872		AVG		9743		7.16230	25.00000	O
Phenanthrene	9628	9614	9037	8959	9792		AVG		9406		4.03949	25.00000	O
Anthracene	12544	10063	9093	9009	9851		AVG		10112		14.19291	25.00000	O
Fluoranthene	11860	10138	9231	9100	9944		AVG		10055		10.97242	25.00000	O
Pyrene	11940	10456	9427	9272	10125		AVG		10244		10.40901	25.00000	O
Benzo(a)Anthracene	9587	10127	9251	9178	9993		AVG		9627		4.43352	25.00000	O
Chrysene	12869	10556	9337	9132	9925		AVG		10364		14.53464	25.00000	O
Benzo(b)Fluoranthene	11494	10613	10180	10298	11263		AVG		10770		5.41892	25.00000	O
Benzo(k)Fluoranthene	13075	10075	8763	8314	9042		AVG		9854		19.41921	25.00000	O
Benzo(a)Pyrene	12804	10095	9245	9087	9912		AVG		10229		14.68255	25.00000	O
Indeno(1,2,3-cd)Pyrene	9476	10307	10177	10130	11311		AVG		10280		6.42112	25.00000	O
Dibenzo(a,h)Anthracene	11876	9910	8476	8208	8717		AVG		9438		16.00254	25.00000	O
Benzo(g,h,i)Perylene	11871	9907	8998	8819	9618		AVG		9842		12.37185	25.00000	O
2-Fluorobiphenyl	8755	8953	8389	8295	9049		AVG		8688		3.85622	25.00000	
2-Bromonaphthalene	6115	6013	5760	5733	6267		AVG		5977		3.84577	25.00000	
O-Terphenyl	12500	10279	9412	9370	10169		AVG		10346		12.32082	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1026.d
Report Date: 18-Mar-2020 20:28

Katahdin Analytical Services

RECOVERY REPORT

Client Name: Client SDG: SDGa02536
Sample Matrix: LIQUID Fraction: DRO
Lab Smp Id: WG273574-6
Level: LOW Operator: AAB
Data Type: GC DATA SampleType: LCS
SpikeList File: ind.spk Quant Type: ESTD
Sublist File: ind.sub
Method File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\AROA081A.m
Misc Info: WG273574,WG273574,WG273574-3,SN1975-1

SPIKE	COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
2	Naphthalene	100	91.5	91.50	75-125
3	2-Methylnaphthalen	100	94.2	94.20	75-125
5	Acenaphthylene	100	86.7	86.71	75-125
7	Acenaphthene	100	89.1	89.08	75-125
8	Fluorene	100	91.7	91.72	75-125
9	Phenanthrene	100	95.4	95.41	75-125
10	Anthracene	100	88.2	88.26	75-125
12	Fluoranthene	100	91.7	91.69	75-125
13	Pyrene	100	89.5	89.47	75-125
16	Benzo(a)Anthracene	100	92.2	92.17	75-125
17	Chrysene	100	88.5	88.50	75-125
18	Benzo(b)Fluoranthe	100	89.6	89.63	75-125
19	Benzo(k)Fluoranthe	100	87.8	87.80	75-125
20	Benzo(a)Pyrene	100	89.8	89.76	75-125
21	Indeno(1,2,3-cd)Py	100	95.8	95.79	75-125
22	Dibenzo(a,h)Anthra	100	88.9	88.92	75-125
23	Benzo(g,h,i)Peryle	100	92.0	92.01	75-125

Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1026.d
Report Date: 18-Mar-2020 20:28

Katahdin Analytical Services

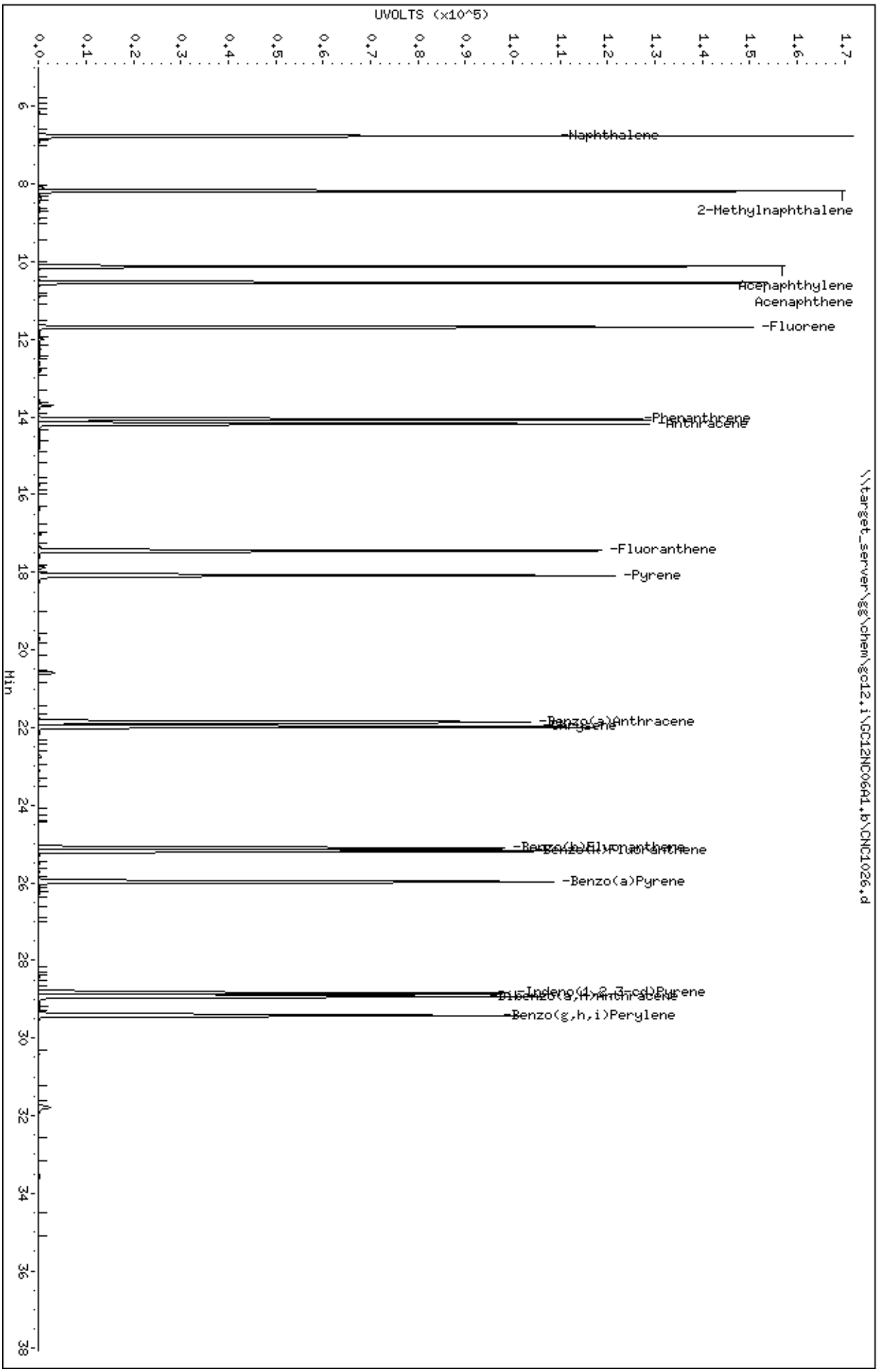
Data file : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1026.d
Lab Smp Id: WG273574-6
Inj Date : 09-MAR-2020 06:23
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-6,SN1975
Misc Info : WG273574,WG273574,WG273574-3,SN1975-1
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\AROA081A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00   Cal File: CNC1023.d
Als bottle: 1   QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: ind.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
2 Naphthalene	6.759	6.784	-0.025	447250	45.7490	91.5	
3 2-Methylnaphthalene	8.174	8.200	-0.026	454031	47.0979	94.2	
5 Acenaphthylene	10.121	10.149	-0.028	426217	43.3553	86.7	
7 Acenaphthene	10.538	10.567	-0.029	447169	44.5419	89.1	
8 Fluorene	11.683	11.716	-0.033	446847	45.8620	91.7	
9 Phenanthrene	14.060	14.098	-0.038	448734	47.7062	95.4	
10 Anthracene	14.179	14.218	-0.039	446229	44.1285	88.2	
12 Fluoranthene	17.446	17.487	-0.041	460971	45.8471	91.7	
13 Pyrene	18.082	18.124	-0.042	458282	44.7372	89.5	
16 Benzo(a)Anthracene	21.859	21.900	-0.041	443651	46.0838	92.2	
17 Chrysene	21.983	22.023	-0.040	458604	44.2501	88.5	
18 Benzo(b)Fluoranthene	25.112	25.155	-0.043	482642	44.8147	89.6(M)	M6
19 Benzo(k)Fluoranthene	25.184	25.225	-0.041	432587	43.9011	87.8(M)	
20 Benzo(a)Pyrene	25.975	26.016	-0.041	459065	44.8806	89.8	
21 Indeno(1,2,3-cd)Pyrene	28.845	28.887	-0.042	492346	47.8931	95.8	
22 Dibenzo(a,h)Anthracene	28.931	28.971	-0.040	419594	44.4597	88.9	
23 Benzo(g,h,i)Perylene	29.422	29.462	-0.040	452808	46.0058	92.0	

AAB
8:32 pm, Mar 18, 2020


Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1026.d
Date : 09-MAR-2020 06:23
Client ID:
Sample Info: WG273574-6,SN1975
Purge Volume: 1.0
Column phase: RTX-5
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1026.d
UVOLTS (x10^5)
Min
-Naphthalene
2-Methylnaphthalene
Acenaphthylene
Acenaphthene
-Fluorene
-Phenanthrene
Anthracene
-Fluoranthene
-Pyrene
-Benzo(a)Anthracene
Chrysene
-Benzo(b)Fluoranthene
Benzo(k)Fluoranthene
-Benzo(a)Pyrene
Indeno(1,2,3-cd)Pyrene
Dibenzo(a,h)Anthracene
-Benzo(g,h,i)Perylene

Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1019.d
Report Date: 18-Mar-2020 20:22

Katahdin Analytical Services

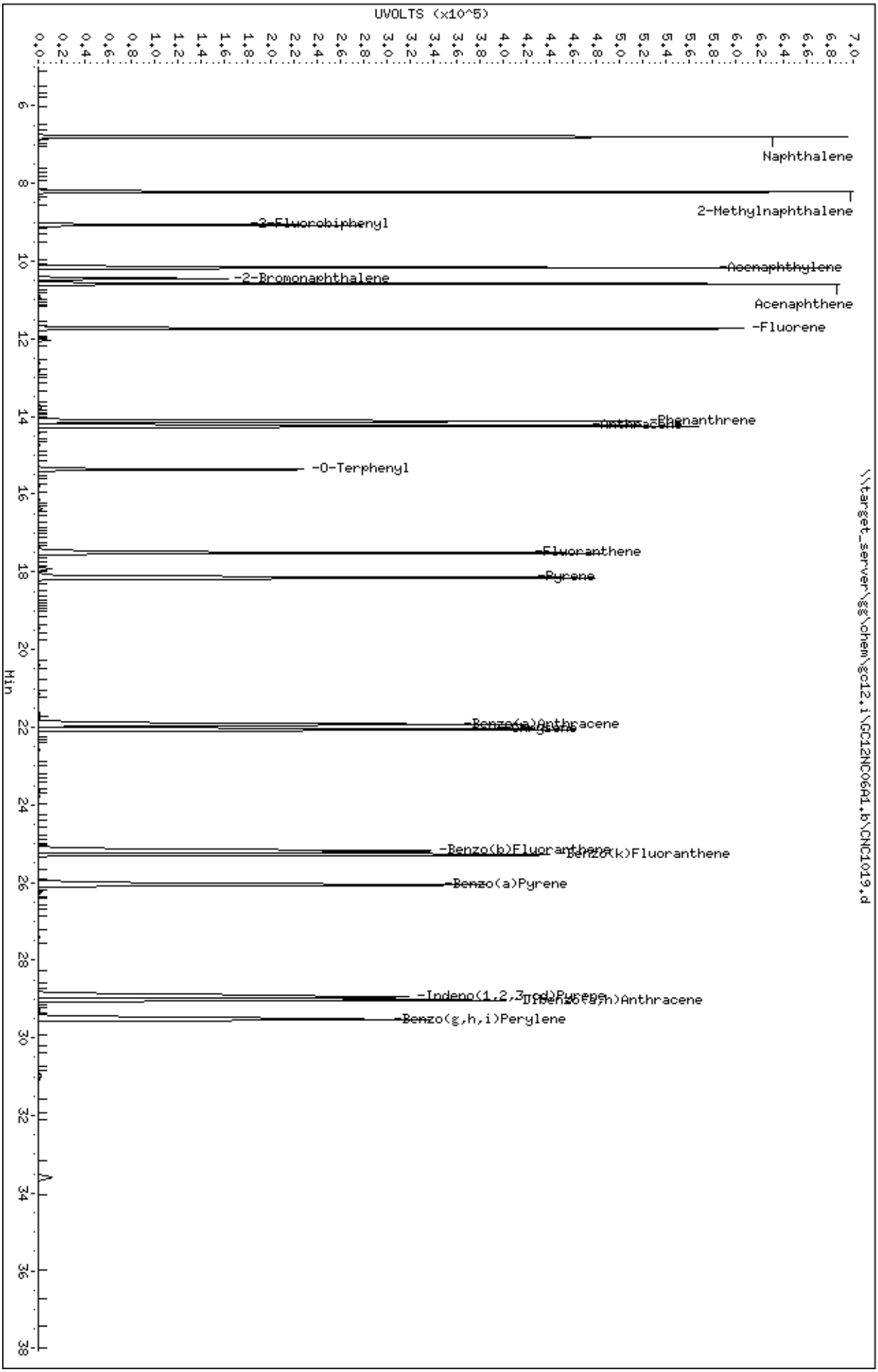
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Lab Smp Id: WG273574-5
Inj Date : 06-MAR-2020 11:58
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-5
Misc Info :
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\AROA081A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 11:58   Cal File: CNC1019.d
Als bottle: 1   Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: ICAL.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	2 Naphthalene	6.794	6.784	0.010	1988564	200.000	210(A)	
	3 2-Methylnaphthalene	8.215	8.200	0.015	1976334	200.000	210(A)	
$	4 2-Fluorobiphenyl	9.066	9.057	0.009	723892	80.0000	84.4	
	5 Acenaphthylene	10.169	10.149	0.020	1985803	200.000	211(A)	
$	6 2-Bromonaphthalene	10.447	10.436	0.011	501364	80.0000	84.7	
	7 Acenaphthene	10.587	10.567	0.020	2010683	200.000	211(A)	
	8 Fluorene	11.737	11.716	0.021	1974467	200.000	211(A)	
	9 Phenanthrene	14.125	14.098	0.027	1958470	200.000	211(A)	
	10 Anthracene	14.250	14.218	0.032	1970168	200.000	211(A)	
$	11 O-Terphenyl	15.365	15.355	0.010	813552	80.0000	84.3	
	12 Fluoranthene	17.517	17.487	0.030	1988713	200.000	211(A)	
	13 Pyrene	18.156	18.124	0.032	2024935	200.000	211(A)	
	16 Benzo(a)Anthracene	21.932	21.900	0.032	1998556	200.000	211(A)	
	17 Chrysene	22.065	22.023	0.042	1985002	200.000	210(A)	
	18 Benzo(b)Fluoranthene	25.193	25.155	0.038	2252634	200.000	213(AM)	M6
	19 Benzo(k)Fluoranthene	25.283	25.225	0.058	1808380	200.000	208(AM)	
	20 Benzo(a)Pyrene	26.064	26.016	0.048	1982440	200.000	210(A)	
	21 Indeno(1,2,3-cd)Pyrene	28.947	28.887	0.060	2262164	200.000	215(AM)	
	22 Dibenzo(a,h)Anthracene	29.030	28.971	0.059	1743472	200.000	206(AM)	
	23 Benzo(g,h,i)Perylene	29.531	29.462	0.069	1923620	200.000	210(A)	
M	1 Unadjusted C11-C22 Aromatic				33834405	3400.00	3580	

8:23 pm, Mar 18, 2020



Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1019.d
Date : 06-MAR-2020 11:58
Client ID:
Sample Info: WG273574-5
Purge Volume: 1.0
Column phase: RTX-5

Instrument: gc12.i
Operator: AAB
Column diameter: 0.53

Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1020.d
Report Date: 18-Mar-2020 20:22

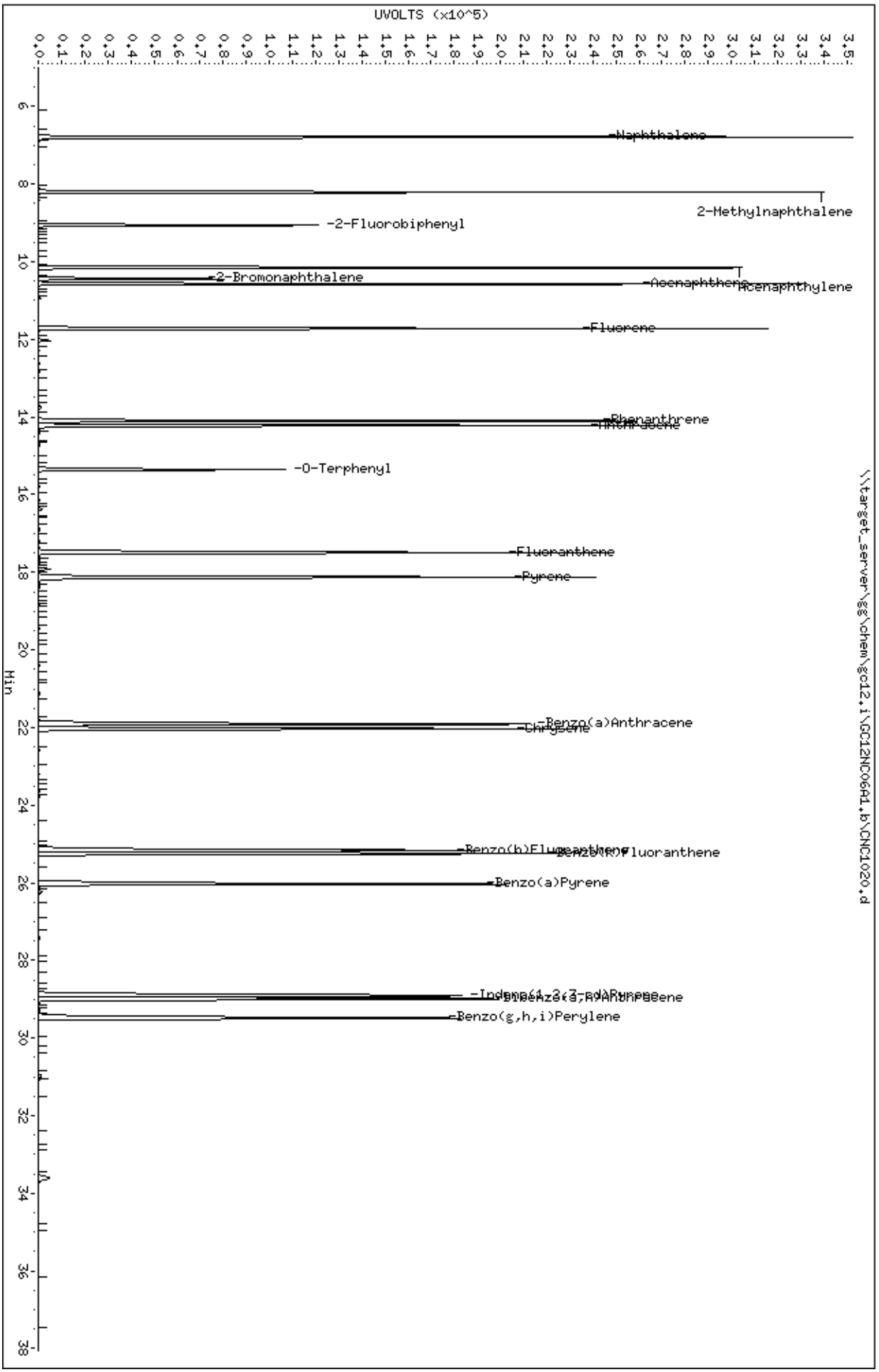
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1020.d
Lab Smp Id: WG273574-4
Inj Date : 06-MAR-2020 12:43
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-4
Misc Info :
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\AROA081A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 12:43   Cal File: CNC1020.d
Als bottle: 1   Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: ICAL.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	2 Naphthalene	6.785	6.784	0.001	919056	100.000	97.3	
	3 2-Methylnaphthalene	8.201	8.200	0.001	912000	100.000	97.1	
$	4 2-Fluorobiphenyl	9.056	9.057	-0.001	331781	40.0000	38.7	
	5 Acenaphthylene	10.152	10.149	0.003	911908	100.000	96.8	
$	6 2-Bromonaphthalene	10.436	10.436	0.000	229300	40.0000	38.7	
	7 Acenaphthene	10.570	10.567	0.003	924012	100.000	96.8	
	8 Fluorene	11.718	11.716	0.002	908584	100.000	97.1	
	9 Phenanthrene	14.101	14.098	0.003	895921	100.000	96.7	
	10 Anthracene	14.223	14.218	0.005	900934	100.000	96.7	
$	11 O-Terphenyl	15.351	15.355	-0.004	374793	40.0000	38.8	
	12 Fluoranthene	17.492	17.487	0.005	910005	100.000	96.6	
	13 Pyrene	18.131	18.124	0.007	927228	100.000	96.5	
	16 Benzo(a)Anthracene	21.909	21.900	0.009	917762	100.000	96.9	
	17 Chrysene	22.037	22.023	0.014	913198	100.000	96.5	
	18 Benzo(b)Fluoranthene	25.170	25.155	0.015	1029810	100.000	105	
	19 Benzo(k)Fluoranthene	25.247	25.225	0.022	831353	100.000	88.0	
	20 Benzo(a)Pyrene	26.035	26.016	0.019	908654	100.000	96.5	
	21 Indeno(1,2,3-cd)Pyrene	28.909	28.887	0.022	1012962	100.000	105	
	22 Dibenzo(a,h)Anthracene	28.994	28.971	0.023	820838	100.000	88.0	
	23 Benzo(g,h,i)Perylene	29.488	29.462	0.026	881868	100.000	96.4	
M	1 Unadjusted C11-C22 Aromatic				15526093	1700.00	1640	


Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1020.d
Date : 06-MAR-2020 12:43
Client ID:
Sample Info: WG273574-4
Purge Volume: 1.0
Column phase: RTX-5
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1020.d
UVOLTS (x10^5)
Min
Naphthalene
2-Methylnaphthalene
2-Fluorobiphenyl
2-Bromonaphthalene
Acenaphthene
Acenaphthylene
Fluorene
Phenanthrene
Anthracene
O-Terphenyl
Fluoranthene
Pyrene
Benzo(a)Anthracene
Chrysene
Benzo(b)Fluoranthene
Benzo(k)Fluoranthene
Benzo(a)Pyrene
Indeno(1,2,3-cd)Pyrene
Dibenz(a,h)Anthracene
Benzo(g,h,i)Perylene

Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1021.d
Report Date: 18-Mar-2020 20:22

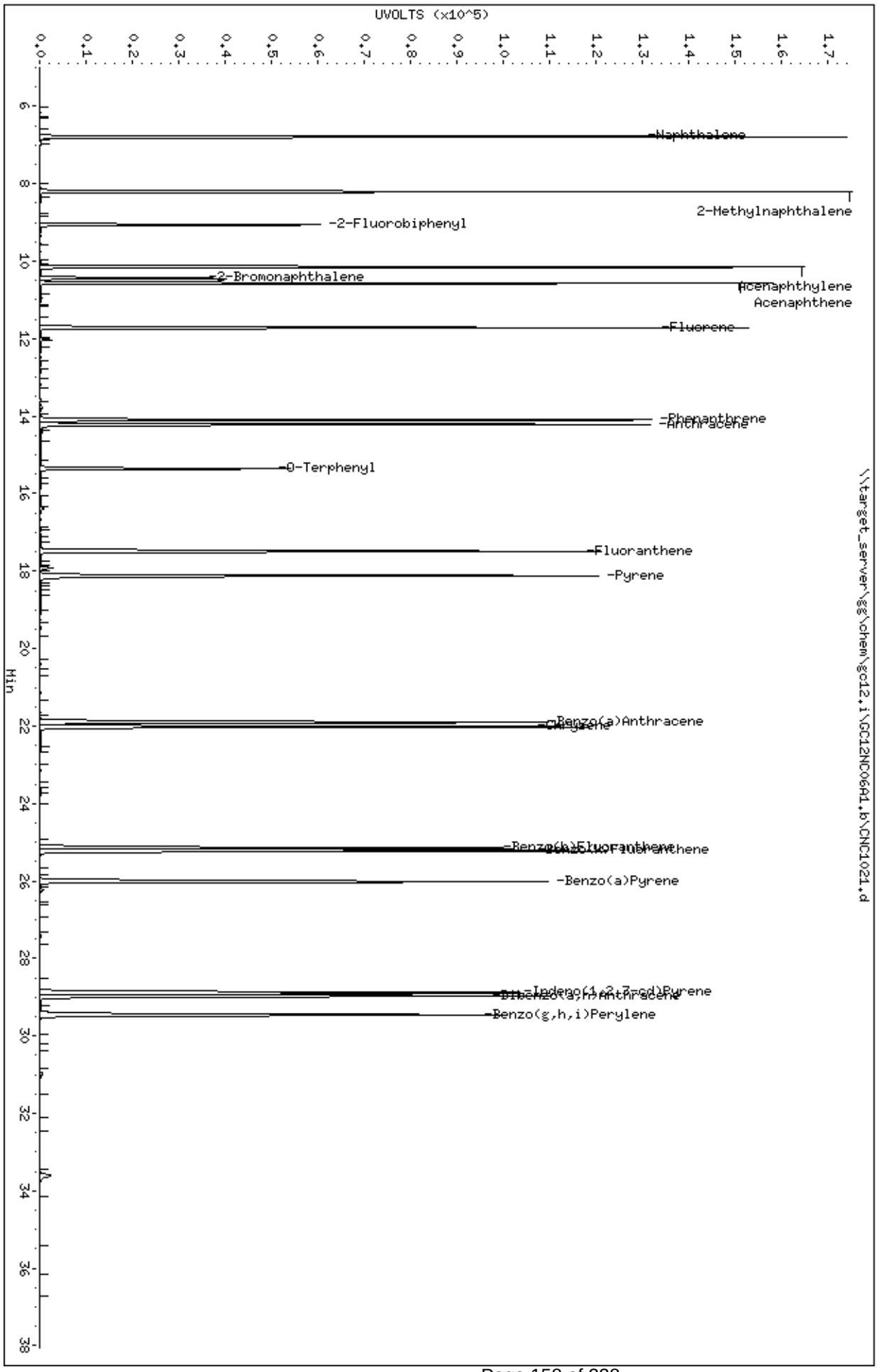
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1021.d
Lab Smp Id: WG273574-3
Inj Date : 06-MAR-2020 13:29
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-3
Misc Info :
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\AROA081A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 13:29   Cal File: CNC1021.d
Als bottle: 1   Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: ICAL.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	2 Naphthalene	6.784	6.784	0.000	459997	50.0000	50.0	
	3 2-Methylnaphthalene	8.200	8.200	0.000	459006	50.0000	50.0	
$	4 2-Fluorobiphenyl	9.057	9.057	0.000	167785	20.0000	20.0	
	5 Acenaphthylene	10.149	10.149	0.000	460544	50.0000	50.0	
$	6 2-Bromonaphthalene	10.436	10.436	0.000	115198	20.0000	20.0	
	7 Acenaphthene	10.567	10.567	0.000	466338	50.0000	50.0	
	8 Fluorene	11.716	11.716	0.000	456126	50.0000	50.0	
	9 Phenanthrene	14.098	14.098	0.000	451863	50.0000	50.0	
	10 Anthracene	14.218	14.218	0.000	454659	50.0000	50.0	
$	11 O-Terphenyl	15.355	15.355	0.000	188249	20.0000	20.0	
	12 Fluoranthene	17.487	17.487	0.000	461545	50.0000	50.0	
	13 Pyrene	18.124	18.124	0.000	471331	50.0000	50.0	
	16 Benzo(a)Anthracene	21.900	21.900	0.000	462545	50.0000	50.0	
	17 Chrysene	22.023	22.023	0.000	466870	50.0000	50.0	
	18 Benzo(b)Fluoranthene	25.155	25.155	0.000	509021	50.0000	50.0	
	19 Benzo(k)Fluoranthene	25.225	25.225	0.000	438159	50.0000	50.0	
	20 Benzo(a)Pyrene	26.016	26.016	0.000	462267	50.0000	50.0	
	21 Indeno(1,2,3-cd)Pyrene	28.887	28.887	0.000	508859	50.0000	50.0	
	22 Dibenzo(a,h)Anthracene	28.971	28.971	0.000	423803	50.0000	50.0	
	23 Benzo(g,h,i)Perylene	29.462	29.462	0.000	449888	50.0000	50.0	
M	1 Unadjusted C11-C22 Aromatic				7862821	850.000	850	


Data File: \\target_server\gc\chem\gc12.i\GC12NC06A1.b\CNC1021.d
Date : 06-MAR-2020 13:29
Client ID:
Sample Info: WG273574-3
Purge Volume: 1.0
Column phase: RTX-5
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gc\chem\gc12.i\GC12NC06A1.b\CNC1021.d
UVOLTS (x10^5)
Min
Naphthalene
2-Methylnaphthalene
-2-Fluorobiphenyl
2-Bromonaphthalene
Acenaphthylene
Acenaphthene
Fluorene
Phenanthrene
Anthracene
0-Terphenyl
Fluoranthene
Pyrene
Benzo(a)Anthracene
Chrysene
Benzo(b)Fluoranthene
Benzo(k)Fluoranthene
Benzo(a)Pyrene
Indeno(1,2,3-cd)Pyrene
Dibenzo(a,h)Anthracene
Benzo(g,h,i)Perylene

Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1022.d
Report Date: 18-Mar-2020 20:22

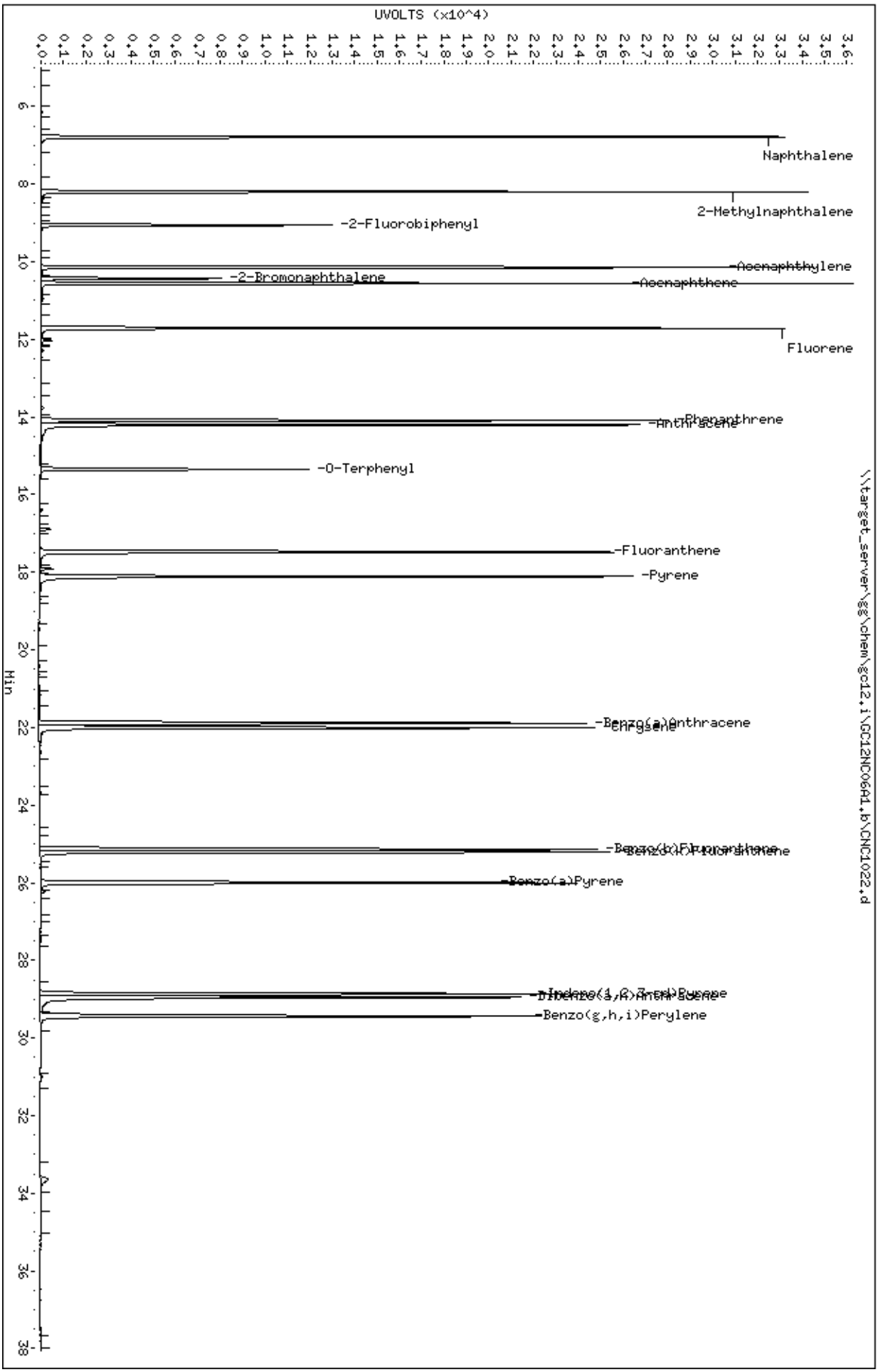
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1022.d
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Inj Date : 06-MAR-2020 14:14
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-2
Misc Info :
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\AROA081A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 14:14   Cal File: CNC1022.d
Als bottle: 1   Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: ICAL.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	2 Naphthalene	6.780	6.784	-0.004	98125	10.0000	10.3	
	3 2-Methylnaphthalene	8.195	8.200	-0.005	97640	10.0000	10.3	
$	4 2-Fluorobiphenyl	9.053	9.057	-0.004	35813	4.00000	4.13	
	5 Acenaphthylene	10.142	10.149	-0.007	98910	10.0000	10.4	
$	6 2-Bromonaphthalene	10.430	10.436	-0.006	24052	4.00000	4.05	
	7 Acenaphthene	10.558	10.567	-0.009	100861	10.0000	10.4	
	8 Fluorene	11.707	11.716	-0.009	98418	10.0000	10.4	
	9 Phenanthrene	14.085	14.098	-0.013	96142	10.0000	10.3	
	10 Anthracene	14.205	14.218	-0.013	100628	10.0000	10.6	
$	11 O-Terphenyl	15.346	15.355	-0.009	41117	4.00000	4.19	
	12 Fluoranthene	17.473	17.487	-0.014	101381	10.0000	10.6	
	13 Pyrene	18.110	18.124	-0.014	104558	10.0000	10.6	
	16 Benzo(a)Anthracene	21.884	21.900	-0.016	101269	10.0000	10.5	
	17 Chrysene	22.005	22.023	-0.018	105562	10.0000	10.8	
	18 Benzo(b)Fluoranthene	25.136	25.155	-0.019	106129	10.0000	10.0	
	19 Benzo(k)Fluoranthene	25.202	25.225	-0.023	100748	10.0000	11.1	
	20 Benzo(a)Pyrene	25.999	26.016	-0.017	100948	10.0000	10.5	
	21 Indeno(1,2,3-cd)Pyrene	28.862	28.887	-0.025	103069	10.0000	9.83	
	22 Dibenzo(a,h)Anthracene	28.951	28.971	-0.020	99103	10.0000	11.2	
	23 Benzo(g,h,i)Perylene	29.434	29.462	-0.028	99065	10.0000	10.6	
M	1 Unadjusted C11-C22 Aromatic				1712556	170.000	178	



Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1022.d
Date : 06-MAR-2020 14:14
Client ID:
Sample Info: WG273574-2
Purge Volume: 1.0
Column phase: RTX-5

Instrument: gc12.i
Operator: AAB
Column diameter: 0.53

Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1023.d
Report Date: 18-Mar-2020 20:22

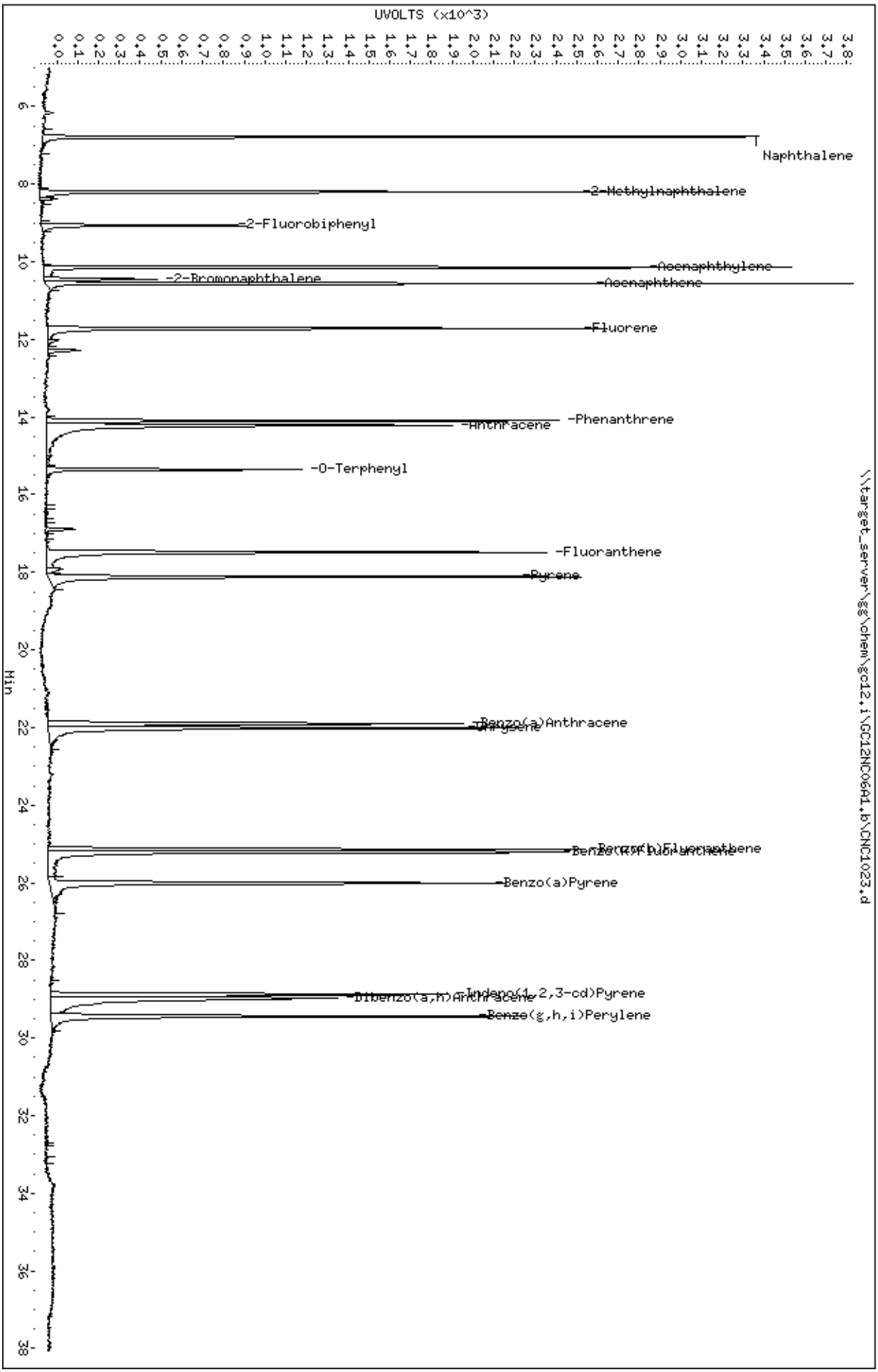
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1023.d
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Inj Date : 06-MAR-2020 15:00
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-1
Misc Info :
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NC06A1.b\AROA081A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00   Cal File: CNC1023.d
Als bottle: 1   Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: ICAL.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/ml)	(ug/ml)	REVIEW CODE
	2 Naphthalene	6.779	6.784	-0.005	10735	1.00000	1.10	
	3 2-Methylnaphthalene	8.197	8.200	-0.003	10255	1.00000	1.06	
$	4 2-Fluorobiphenyl	9.062	9.057	0.005	3502	0.40000	0.403	
	5 Acenaphthylene	10.144	10.149	-0.005	11004	1.00000	1.12	
$	6 2-Bromonaphthalene	10.444	10.436	0.008	2446	0.40000	0.409	
	7 Acenaphthene	10.559	10.567	-0.008	11490	1.00000	1.14	
	8 Fluorene	11.715	11.716	-0.001	10794	1.00000	1.11	
	9 Phenanthrene	14.094	14.098	-0.004	9628	1.00000	1.02	
	10 Anthracene	14.217	14.218	-0.001	12544	1.00000	1.24	
$	11 O-Terphenyl	15.351	15.355	-0.004	5000	0.40000	0.483	
	12 Fluoranthene	17.481	17.487	-0.006	11860	1.00000	1.18	
	13 Pyrene	18.118	18.124	-0.006	11940	1.00000	1.16	
	16 Benzo(a)Anthracene	21.895	21.900	-0.005	9587	1.00000	0.996	
	17 Chrysene	22.012	22.023	-0.011	12869	1.00000	1.24	
	18 Benzo(b)Fluoranthene	25.138	25.155	-0.017	11494	1.00000	1.07	
	19 Benzo(k)Fluoranthene	25.208	25.225	-0.017	13075	1.00000	1.33	
	20 Benzo(a)Pyrene	26.008	26.016	-0.008	12804	1.00000	1.25	
	21 Indeno(1,2,3-cd)Pyrene	28.873	28.887	-0.014	9476	1.00000	0.922	
	22 Dibenzo(a,h)Anthracene	28.974	28.971	0.003	11876	1.00000	1.26	
	23 Benzo(g,h,i)Perylene	29.439	29.462	-0.023	11871	1.00000	1.21	
M	1 Unadjusted C11-C22 Aromatic				193302	17.0000	19.4(a)	


Data File: \\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1023.d
Date : 06-MAR-2020 15:00
Client ID:
Sample Info: WG273574-1
Purge Volume: 1.0
Column phase: RTX-5
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NC06A1.b\CNC1023.d
UVOLTS (x10^3)
Min
Naphthalene
2-Methylnaphthalene
2-Fluorobiphenyl
Acenaphthylene
2-Bromonaphthalene
Acenaphthene
Fluorene
Phenanthrene
Anthracene
O-Terphenyl
Fluoranthene
Pyrene
Benzo(a)Anthracene
Chrysene
Benzo(b)Fluoranthene
Benzo(k)Fluoranthene
Benzo(a)Pyrene
Indeno(1,2,3-cd)Pyrene
Dibenzo(a,h)Anthracene
Benzo(g,h,i)Perylene

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SN3819
Project : JV, LTM, DCI Spring 2020 **Instrument ID:** GC12
Lab File IDs : CNC2023.d CNC2022.d CNC2021.d CNC2020.d CNC2019.d **Calibration Date(s):** 06-MAR-20 11:58 06-MAR-20 15:00

	1.0000 Level 1	10.0000 Level 2	50.0000 Level 3	100.0000 Level 4	200.0000 Level 5		New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C18 Aliphatic	8740	8199	7921	7515	7446		AVG		7964		6.67229	25.00000	M (
C19-C36 Aliphatic	8522	8717	8076	7576	7541		AVG		8086		6.61570	25.00000	S O
C-9	8370	7551	7922	7595	7503		AVG		7788		4.68116	30.00000	O
C-10	9415	8576	7968	7609	7482		AVG		8210		9.69960	25.00000	O
C-12	8515	8400	8002	7594	7506		AVG		8004		5.70440	25.00000	O
C-14	8800	8177	7914	7452	7395		AVG		7948		7.25834	25.00000	O
C-16	8935	8290	7898	7486	7445		AVG		8011		7.74490	25.00000	O
C-18	8403	8201	7822	7351	7343		AVG		7824		6.17061	25.00000	O
C-19	8990	8577	8050	7649	7611		AVG		8175		7.32983	25.00000	O
C-20	7989	8477	8003	7534	7568		AVG		7914		4.86903	25.00000	O
C-22	8213	8485	8050	7622	7613		AVG		7997		4.74652	25.00000	O
C-24	9359	9332	8168	7607	7603		AVG		8414		10.4734	25.00000	O
C-26	9889	9499	8071	7561	7402		AVG		8484		13.4369(	25.00000	O
C-28	8999	8787	8137	7586	7523		AVG		8206		8.22594	25.00000	O
C-30	8088	8681	8187	7608	7536		AVG		8020		5.82428	25.00000	O
C-36	6645	7895	7942	7442	7472		AVG		7479		6.96091	25.00000	O
5-alpha androstane	13400	10104	9174	8620	8553		AVG		9970		20.2140{	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2026.d
Report Date: 18-Mar-2020 20:27

Katahdin Analytical Services

RECOVERY REPORT

Client Name: Client SDG: SDGa02536
Sample Matrix: LIQUID Fraction: DRO
Lab Smp Id: WG273574-12
Level: LOW Operator: AAB
Data Type: GC DATA SampleType: LCS
SpikeList File: ind.spk Quant Type: ESTD
Sublist File: IND.sub
Method File: \\TARGET_SERVER\GG\chem\gc12.i\GC12NC06B1.B\ALIB070A.m
Misc Info: WG273574,WG273574,WG273574-9,SN1975-1

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
3 C-9	100	89.4	89.36	75-125
4 C-10	100	84.7	84.67	75-125
5 C-12	100	87.4	87.37	75-125
7 C-14	100	87.2	87.21	75-125
8 C-16	100	89.0	88.98	75-125
9 C-18	100	92.5	92.50	75-125
10 C-19	100	90.2	90.19	75-125
11 C-20	100	91.5	91.53	75-125
13 C-22	100	91.2	91.17	75-125
14 C-24	100	88.5	88.55	75-125
15 C-26	100	87.2	87.25	75-125
16 C-28	100	90.2	90.24	75-125
18 C-30	100	91.9	91.87	75-125
19 C-36	100	90.7	90.70	75-125

Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2026.d
Report Date: 18-Mar-2020 20:27

Katahdin Analytical Services

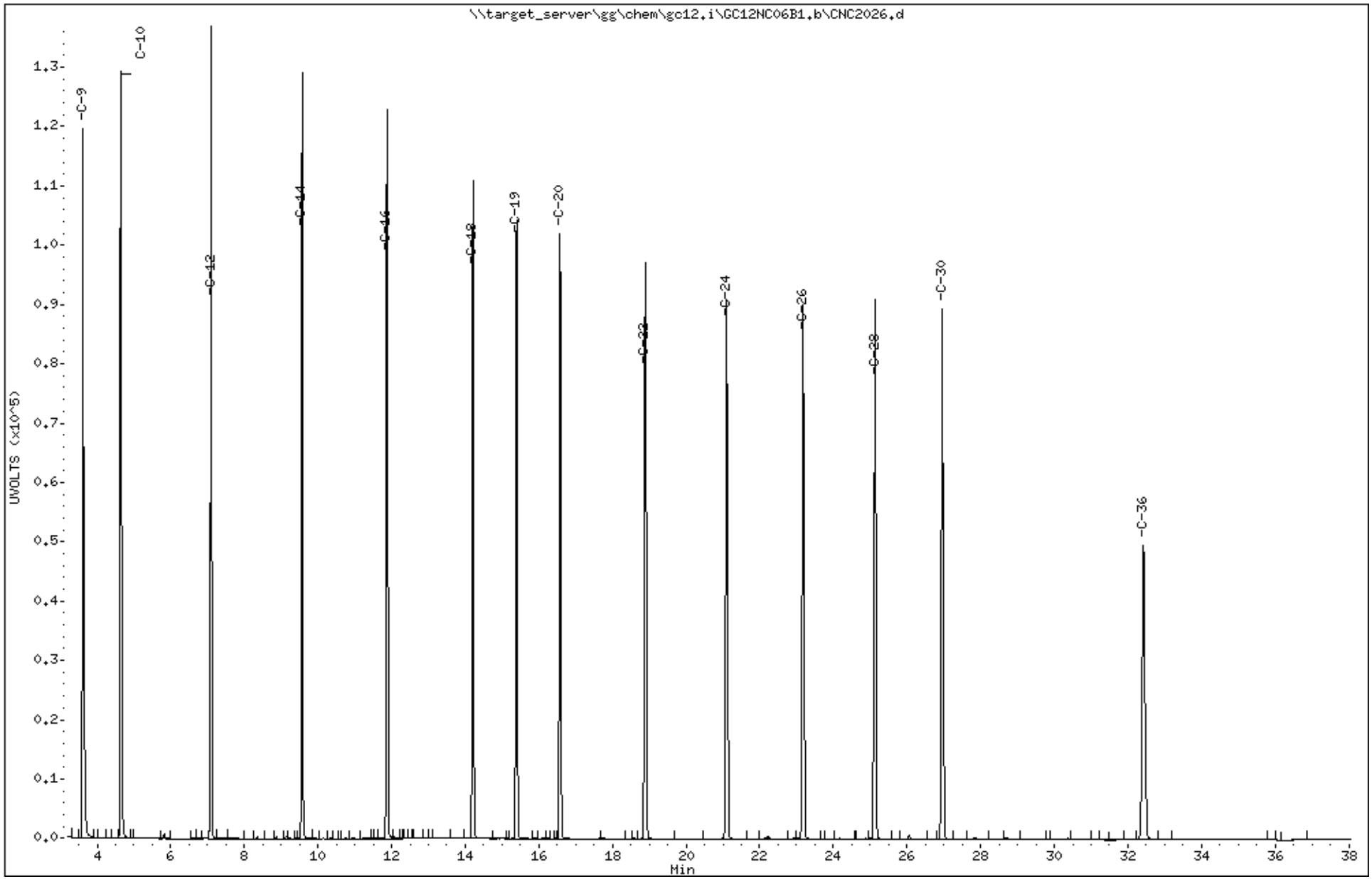
Data file : \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2026.d
Lab Smp Id: WG273574-12
Inj Date : 09-MAR-2020 06:23
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-12,SN1975
Misc Info : WG273574,WG273574,WG273574-9,SN1975-1
Comment   :
Method   : \\TARGET_SERVER\GG\chem\gc12.i\GC12NC06B1.B\ALIB070A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00   Cal File: CNC2023.d
Als bottle: 1   QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: IND.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
3 C-9	3.616	3.631	-0.015	347961	44.6785	89.4	
4 C-10	4.640	4.653	-0.013	347543	42.3325	84.7	
5 C-12	7.092	7.105	-0.013	349630	43.6846	87.4	
7 C-14	9.570	9.584	-0.014	346576	43.6071	87.2	
8 C-16	11.877	11.896	-0.019	356395	44.4890	89.0	
9 C-18	14.210	14.235	-0.025	361873	46.2518	92.5	
10 C-19	15.394	15.422	-0.028	368655	45.0931	90.2	
11 C-20	16.576	16.602	-0.026	362206	45.7660	91.5	
13 C-22	18.892	18.918	-0.026	364528	45.5850	91.2	
14 C-24	21.101	21.125	-0.024	372512	44.2750	88.5	
15 C-26	23.182	23.202	-0.020	370146	43.6266	87.2	
16 C-28	25.132	25.154	-0.022	370280	45.1205	90.2	
18 C-30	26.962	26.984	-0.022	368390	45.9343	91.9	
19 C-36	32.429	32.461	-0.032	339160	45.3481	90.7	

Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2026.d
Date : 09-MAR-2020 06:23
Client ID:
Instrument: gc12.i
Sample Info: WG273574-12,SN1975
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-1
Column diameter: 0.53



Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2019.d
Report Date: 18-Mar-2020 20:26

Katahdin Analytical Services

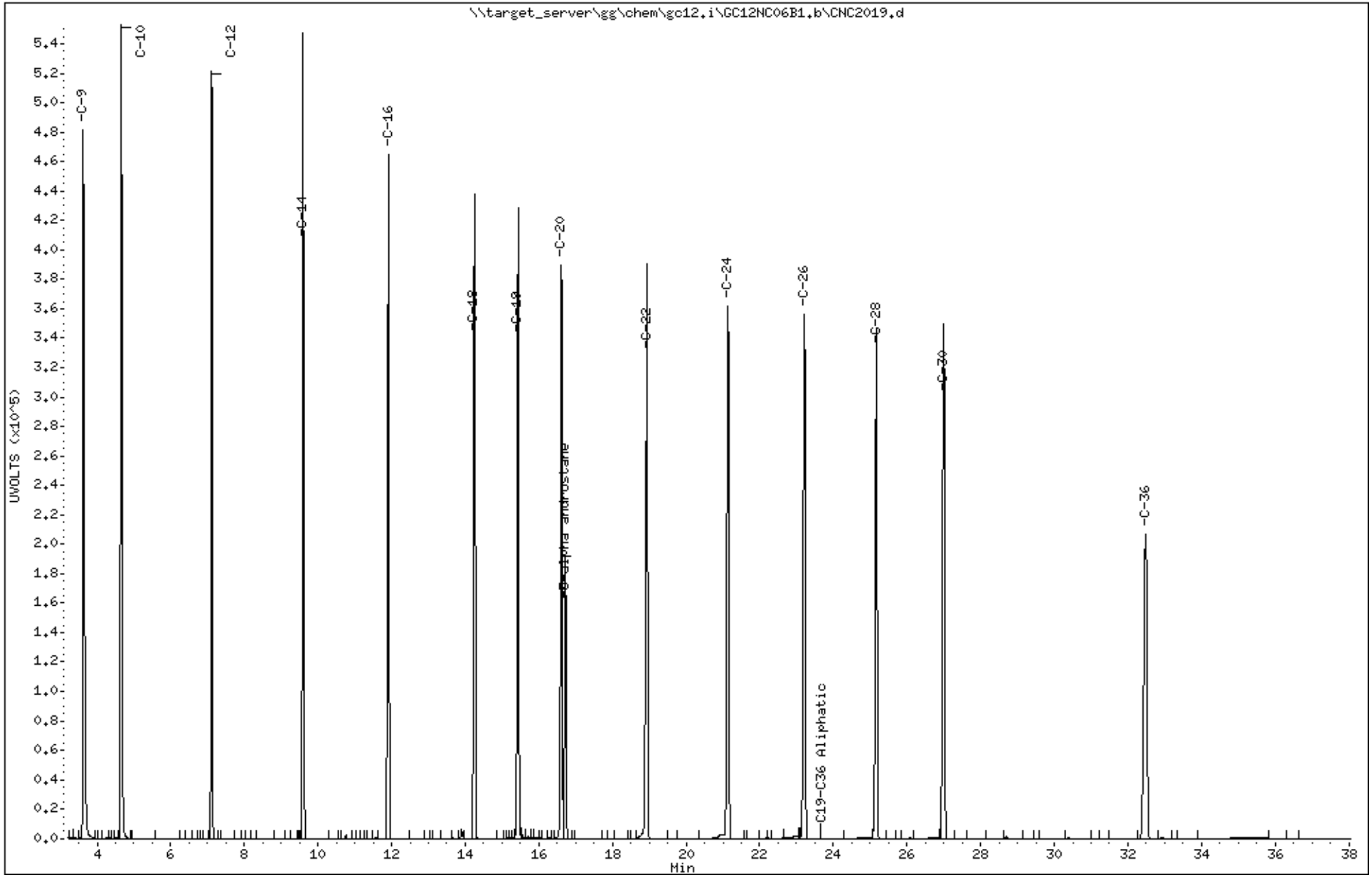
Data file : \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2019.d
Lab Smp Id: WG273574-11
Inj Date : 06-MAR-2020 11:58
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-11
Misc Info :
Comment   :
Method   : \\TARGET_SERVER\GG\chem\gc12.i\GC12NC06B1.B\ALIB070A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 11:58   Cal File: CNC2019.d
Als bottle: 1   Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: CV.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	3 C-9	3.630	3.631	-0.001	1500512	200.000	194	
	4 C-10	4.653	4.653	0.000	1496390	200.000	194	
	5 C-12	7.112	7.105	0.007	1501220	200.000	194	
	7 C-14	9.598	9.584	0.014	1478992	200.000	193	
	8 C-16	11.913	11.896	0.017	1489020	200.000	194	
	9 C-18	14.252	14.235	0.017	1468570	200.000	194	
$	44 5-alpha androstane	16.718	16.707	0.011	684232	80.0000	77.2(A)	
	10 C-19	15.439	15.422	0.017	1522160	200.000	194	
	11 C-20	16.618	16.602	0.016	1513642	200.000	194	
	13 C-22	18.931	18.918	0.013	1522596	200.000	194	
	14 C-24	21.136	21.125	0.011	1520531	200.000	193	
	15 C-26	23.214	23.202	0.012	1480376	200.000	191	
	16 C-28	25.168	25.154	0.014	1504585	200.000	192	
	18 C-30	26.999	26.984	0.015	1507245	200.000	192	
	19 C-36	32.485	32.461	0.024	1494382	200.000	194	
M	1 C9-C18 Aliphatic				8934704	1200.00	1160	
S	2 C19-C36 Aliphatic				12065517	1600.00	1540	

Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2019.d
Date : 06-MAR-2020 11:58
Client ID:
Instrument: gc12.i
Sample Info: WG273574-11
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-1
Column diameter: 0.53



Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2020.d
Report Date: 18-Mar-2020 20:26

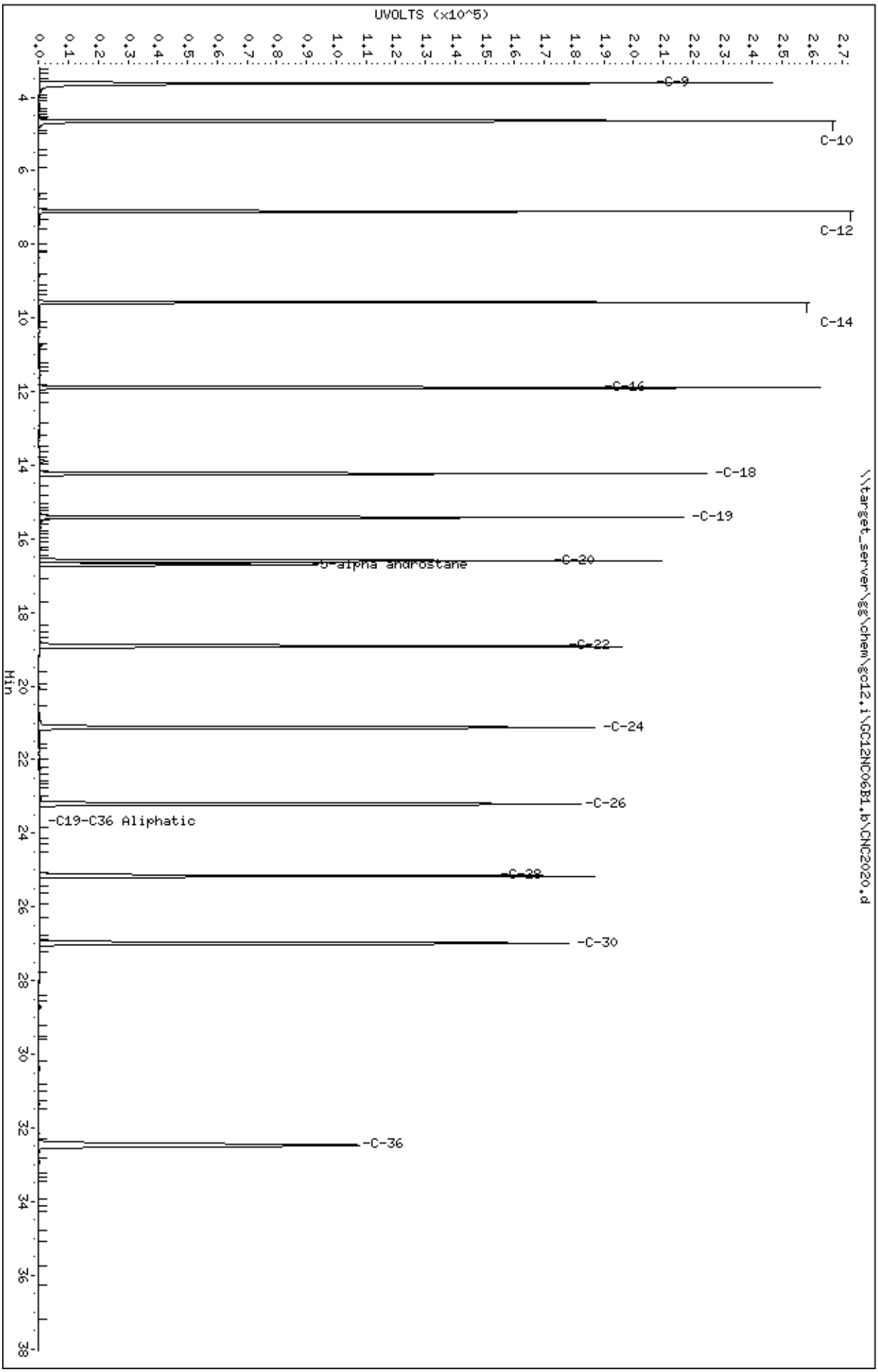
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2020.d
Lab Smp Id: WG273574-10
Inj Date : 06-MAR-2020 12:43
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-10
Misc Info :
Comment   :
Method   : \\TARGET_SERVER\GG\chem\gc12.i\GC12NC06B1.B\ALIB070A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 12:43   Cal File: CNC2020.d
Als bottle: 1   Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: CV.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	3 C-9	3.623	3.631	-0.008	759520	100.000	99.0	
	4 C-10	4.643	4.653	-0.010	760855	100.000	99.0	
	5 C-12	7.097	7.105	-0.008	759442	100.000	98.6	
	7 C-14	9.578	9.584	-0.006	745234	100.000	98.2	
	8 C-16	11.892	11.896	-0.004	748627	100.000	98.4	
	9 C-18	14.229	14.235	-0.006	735105	100.000	97.9	
$	44 5-alpha androstane	16.701	16.707	-0.006	344816	40.0000	39.3	
	10 C-19	15.416	15.422	-0.006	764939	100.000	98.4	
	11 C-20	16.598	16.602	-0.004	753429	100.000	97.8	
	13 C-22	18.916	18.918	-0.002	762179	100.000	98.2	
	14 C-24	21.125	21.125	0.000	760669	100.000	97.6	
	15 C-26	23.206	23.202	0.004	756095	100.000	98.5	
	16 C-28	25.159	25.154	0.005	758571	100.000	97.9	
	18 C-30	26.990	26.984	0.006	760783	100.000	97.8	
	19 C-36	32.474	32.461	0.013	744158	100.000	97.7	
M	1 C9-C18 Aliphatic				4508783	600.000	591	
S	2 C19-C36 Aliphatic				6060823	800.000	784	


Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2020.d
Date : 06-MAR-2020 12:43
Client ID:
Sample Info: WG273574-10
Purge Volume: 1.0
Column phase: RTX-1
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2020.d
UVOLTS (x10^5)
Min
C-9
C-10
C-12
C-14
C-16
C-18
C-19
5-alpha androstane
C-20
C-22
C-24
C-26
C-19-C36 Aliphatic
C-28
C-30
C-36

Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2021.d
Report Date: 18-Mar-2020 20:26

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2021.d
Lab Smp Id: WG273574-9
Inj Date : 06-MAR-2020 13:29
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-9
Misc Info :
Comment   :
Method   : \\TARGET_SERVER\GG\chem\gc12.i\GC12NC06B1.B\ALIB070A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 13:29   Cal File: CNC2021.d
Als bottle: 1   Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: CV.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2018.d
Target Version: 4.12
Processing Host: V200T1

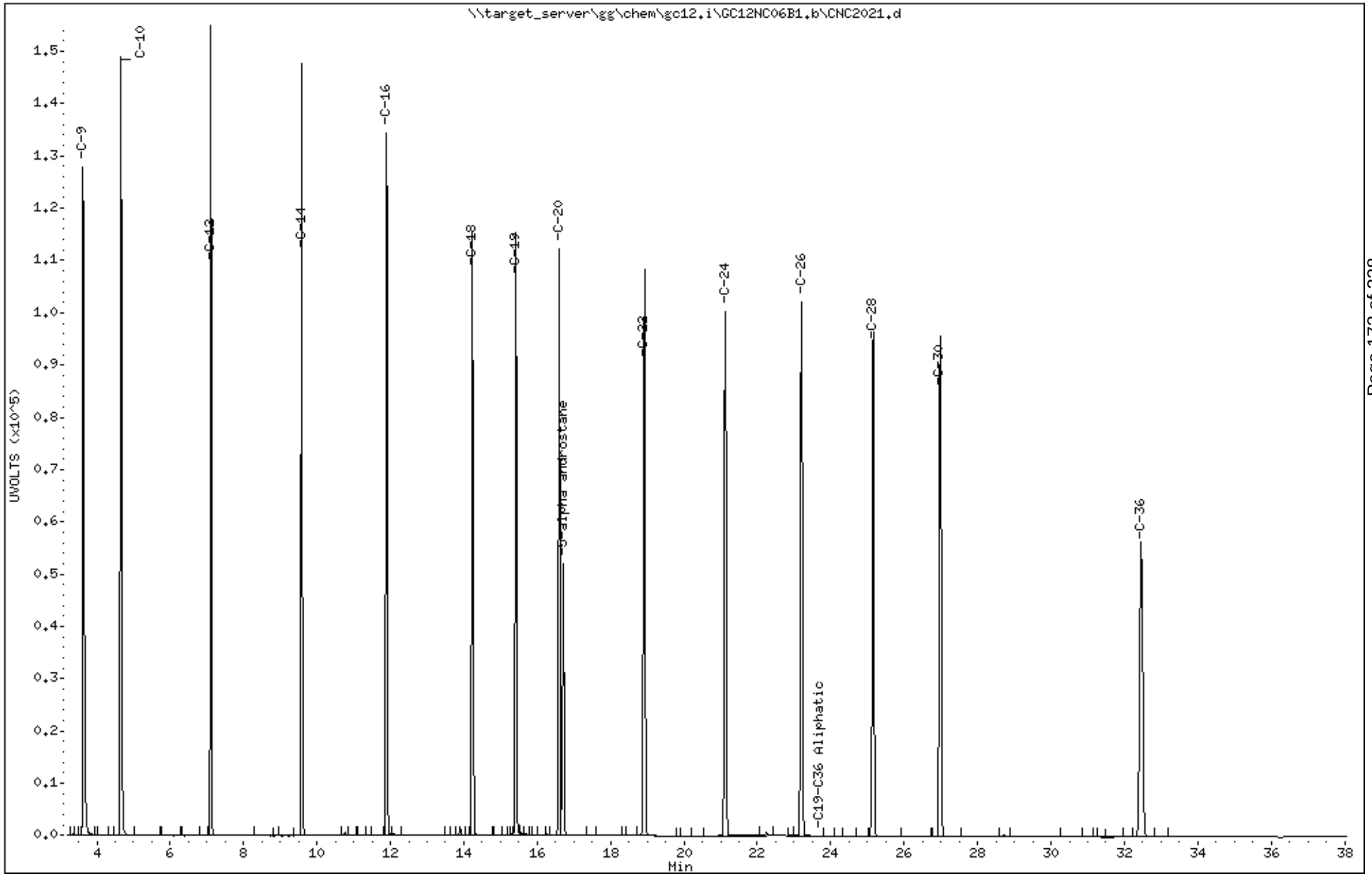
Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	3 C-9	3.631	3.631	0.000	396103	50.0000	50.0	
	4 C-10	4.653	4.653	0.000	398383	50.0000	50.0	
	5 C-12	7.105	7.105	0.000	400091	50.0000	50.0	
	7 C-14	9.584	9.584	0.000	395701	50.0000	50.0	
	8 C-16	11.896	11.896	0.000	394912	50.0000	50.0	
	9 C-18	14.235	14.235	0.000	391115	50.0000	50.0	
$	44 5-alpha androstane	16.707	16.707	0.000	183470	20.0000	20.0	
	10 C-19	15.422	15.422	0.000	402481	50.0000	50.0	
	11 C-20	16.602	16.602	0.000	400164	50.0000	50.0	
	13 C-22	18.918	18.918	0.000	402510	50.0000	50.0	
	14 C-24	21.125	21.125	0.000	408392	50.0000	50.0	
	15 C-26	23.202	23.202	0.000	403541	50.0000	50.0	
	16 C-28	25.154	25.154	0.000	406869	50.0000	50.0	
	18 C-30	26.984	26.984	0.000	409357	50.0000	50.0	
	19 C-36	32.461	32.461	0.000	397075	50.0000	50.0	
M	1 C9-C18 Aliphatic				2376305	300.000	300	
S	2 C19-C36 Aliphatic				3230389	400.000	400	

Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2021.d
Date : 06-MAR-2020 13:29
Client ID:
Sample Info: WG273574-9
Purge Volume: 1.0
Column phase: RTX-1

Instrument: gc12.i
Operator: AAB
Column diameter: 0.53



Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2022.d
Report Date: 18-Mar-2020 20:26

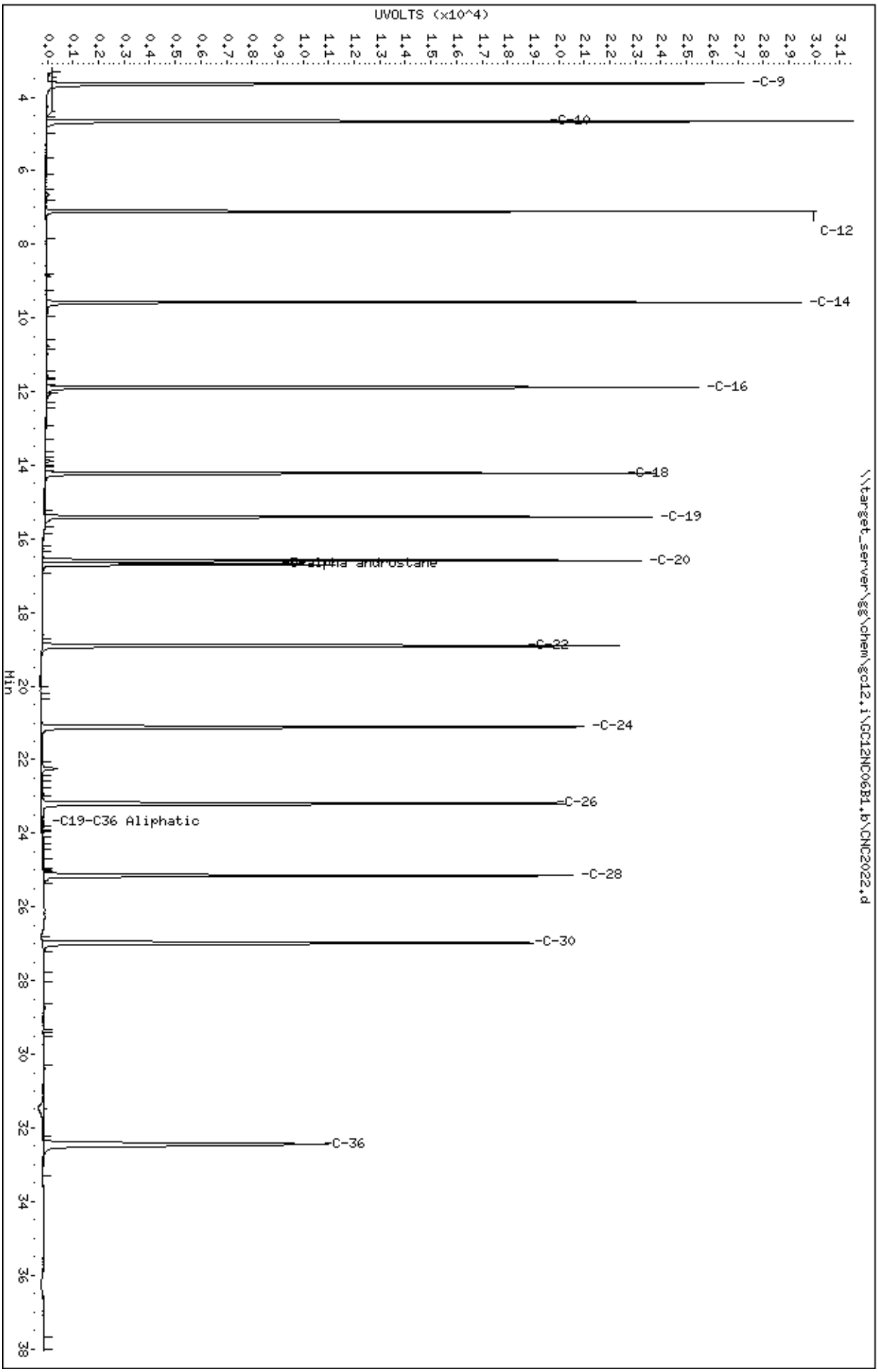
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2022.d
Lab Smp Id: WG273574-8
Inj Date : 06-MAR-2020 14:14
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-8
Misc Info :
Comment   :
Method   : \\TARGET_SERVER\GG\chem\gc12.i\GC12NC06B1.B\ALIB070A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 14:14   Cal File: CNC2022.d
Als bottle: 1   Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: CV.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
						CAL-AMT	ON-COL	
	Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/ml)	(ug/ml)	REVIEW CODE
	3 C-9	3.631	3.631	0.000	75507	10.0000	9.88	
	4 C-10	4.653	4.653	0.000	85760	10.0000	10.8	
	5 C-12	7.097	7.105	-0.008	84002	10.0000	10.7	
	7 C-14	9.574	9.584	-0.010	81772	10.0000	10.6	
	8 C-16	11.886	11.896	-0.010	82897	10.0000	10.6	
	9 C-18	14.221	14.235	-0.014	82007	10.0000	10.7	
$	44 5-alpha androstane	16.692	16.707	-0.015	40415	4.00000	4.44	
	10 C-19	15.405	15.422	-0.017	85773	10.0000	10.8	
	11 C-20	16.588	16.602	-0.014	84767	10.0000	10.7	
	13 C-22	18.905	18.918	-0.013	84854	10.0000	10.7	
	14 C-24	21.112	21.125	-0.013	93318	10.0000	11.4	
	15 C-26	23.194	23.202	-0.008	94994	10.0000	11.7	
	16 C-28	25.147	25.154	-0.007	87873	10.0000	11.0	
	18 C-30	26.980	26.984	-0.004	86805	10.0000	10.8	
	19 C-36	32.451	32.461	-0.010	78952	10.0000	10.3	
M	1 C9-C18 Aliphatic				491945	60.0000	63.3(a)	
S	2 C19-C36 Aliphatic				697336	80.0000	87.4(a)	


Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2022.d
Date : 06-MAR-2020 14:14
Client ID:
Sample Info: WG273574-8
Purge Volume: 1.0
Column phase: RTX-1
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2022.d
UVOLTS (x10^4)
Min
C-9
C-10
C-12
C-14
C-16
C-18
C-19
C-20
Alpha androstane
C-22
C-24
C-26
C-19-C36 Aliphatic
C-28
C-30
C-36

Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2023.d
Report Date: 18-Mar-2020 20:26

Katahdin Analytical Services

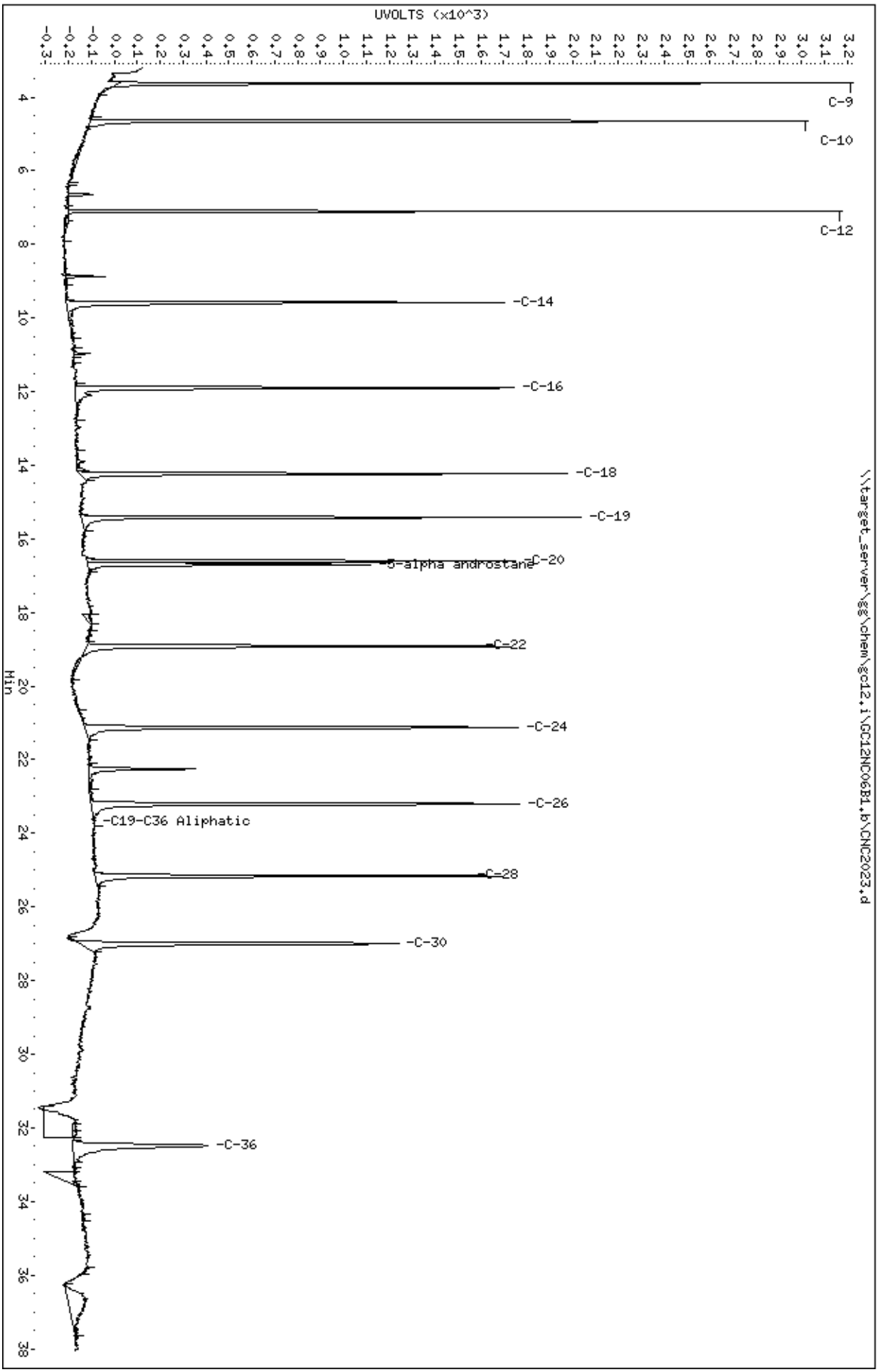
Data file : \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2023.d
Lab Smp Id: WG273574-7
Inj Date : 06-MAR-2020 15:00
Operator : AAB   Inst ID: gc12.i
Smp Info : WG273574-7
Misc Info :
Comment   :
Method   : \\TARGET_SERVER\GG\chem\gc12.i\GC12NC06B1.B\ALIB070A.m
Meth Date : 09-Mar-2020 09:28 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00   Cal File: CNC2023.d
Als bottle: 1   Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: CV.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2018.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	3 C-9	3.626	3.631	-0.005	8370	1.00000	1.07	
	4 C-10	4.646	4.653	-0.007	9415	1.00000	1.15	
	5 C-12	7.094	7.105	-0.011	8515	1.00000	1.06	
	7 C-14	9.578	9.584	-0.006	8800	1.00000	1.11	
	8 C-16	11.897	11.896	0.001	8935	1.00000	1.12	
	9 C-18	14.231	14.235	-0.004	8403	1.00000	1.07	
$	44 5-alpha androstane	16.693	16.707	-0.014	5360	0.40000	0.538(aM)	M2
	10 C-19	15.415	15.422	-0.007	8990	1.00000	1.10	
	11 C-20	16.600	16.602	-0.002	7989	1.00000	1.01(M)	M2
	13 C-22	18.916	18.918	-0.002	8213	1.00000	1.03	
	14 C-24	21.123	21.125	-0.002	9359	1.00000	1.11	
	15 C-26	23.202	23.202	0.000	9889	1.00000	1.16	
	16 C-28	25.157	25.154	0.003	8999	1.00000	1.10	
	18 C-30	26.993	26.984	0.009	8088	1.00000	1.01	
	19 C-36	32.480	32.461	0.019	6645	1.00000	0.888(M)	M2
M	1 C9-C18 Aliphatic				52438	6.00000	6.58(a)	
S	2 C19-C36 Aliphatic				68172	8.00000	8.41(a)	

AAB
8:27 pm, Mar 18, 2020


Data File: \\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2023.d
Date : 06-MAR-2020 15:00
Client ID:
Sample Info: WG273574-7
Purge Volume: 1.0
Column phase: RTX-1
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NC06B1.b\CNC2023.d
UVOLTS (x10^3)
Min
C-9
C-10
C-12
-C-14
-C-16
-C-18
-C-19
5-alpha androstane
C-20
C-22
-C-24
-C-26
-C19-C36 Aliphatic
C-28
-C-30
-C-36

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020 **SDG:** SN3819
Lab ID : WG278377-1 **Analytical Date:** 05/22/20 11:57
Lab File ID : CNE1106.d **Instrument ID:** GC12
Initial Calibration Date(s): 03/06/20 11:58 03/06/20 15:00 **Column ID:** A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
50	Naphthalene	9776	9420	0.010	-3.63848	25.00000	Averaged	
60	2-Methylnaphthalene	9640	9380	0.010	-2.69662	25.00000	Averaged	
70	Phenanthrene	9406	9368	0.010	-0.40850	25.00000	Averaged	
80	Acenaphthylene	9831	9267	0.010	-5.73255	25.00000	Averaged	
90	Acenaphthene	10039	9537	0.010	-5.00035	25.00000	Averaged	
100	Anthracene	10112	8649	0.010	-14.46942	25.00000	Averaged	
110	Benzo(a)Anthracene	9627	9418	0.010	-2.17575	25.00000	Averaged	
120	Benzo(a)Pyrene	10229	9174	0.010	-10.30990	25.00000	Averaged	
130	Benzo(b)Fluoranthene	10770	10498	0.010	-2.51908	25.00000	Averaged	
140	Benzo(g,h,i)Perylene	9842	8552	0.010	-13.11334	25.00000	Averaged	
150	Benzo(k)Fluoranthene	9854	8707	0.010	-11.64196	25.00000	Averaged	
160	Chrysene	10364	9498	0.010	-8.35763	25.00000	Averaged	
170	Dibenzo(a,h)Anthracene	9438	7018	0.010	-25.64100	25.00000	Averaged	<-
180	Fluoranthene	10055	9579	0.010	-4.72586	25.00000	Averaged	
190	Fluorene	9743	9369	0.010	-3.84222	25.00000	Averaged	
200	Indeno(1,2,3-cd)Pyrene	10280	9311	0.010	-9.43127	25.00000	Averaged	
210	Pyrene	10244	9687	0.010	-5.43500	25.00000	Averaged	
4	2-Fluorobiphenyl	8688	8556	0.010	-1.52605	25.00000	Averaged	
6	2-Bromonaphthalene	5977	5929	0.010	-0.80452	25.00000	Averaged	
11	O-Terphenyl	10346	9751	0.010	-5.75222	25.00000	Averaged	

*** = Compound out of QC criteria**

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1106.d
Report Date: 28-May-2020 19:56

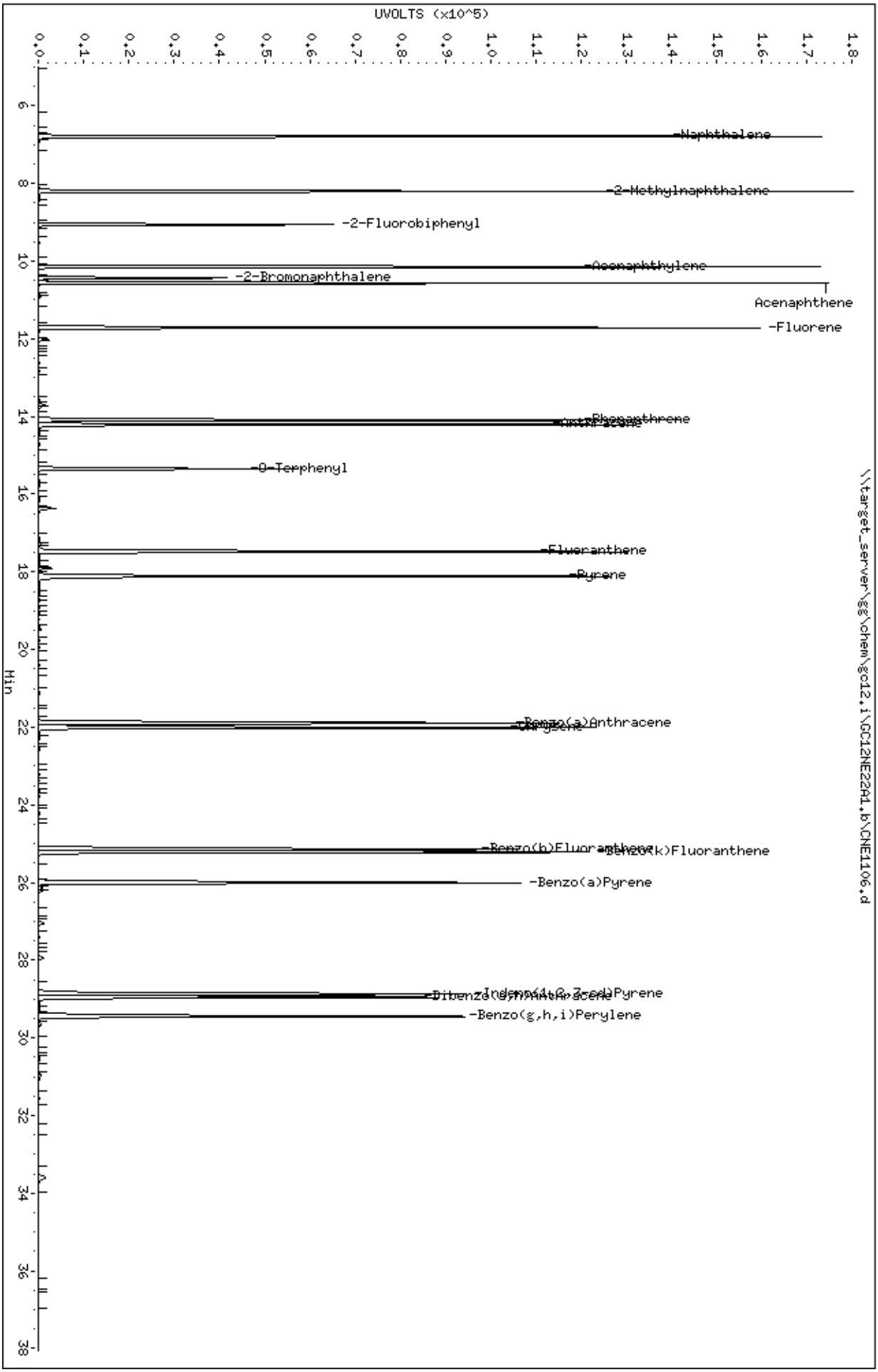
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1106.d
Lab Smp Id: WG278377-1
Inj Date : 22-MAY-2020 11:57
Operator : AAB   Inst ID: gc12.i
Smp Info : WG278377-1,SN3819
Misc Info : WG278377,WG278026,WG273574-3,SN3819-1
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00   Cal File: CNC1023.d
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: CV.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	2 Naphthalene	6.783	6.783	0.000	471023	50.0000	48.2	
	3 2-Methylnaphthalene	8.198	8.198	0.000	469010	50.0000	48.6	
$	4 2-Fluorobiphenyl	9.054	9.054	0.000	171111	20.0000	19.7	
	5 Acenaphthylene	10.145	10.145	0.000	463362	50.0000	47.1	
$	6 2-Bromonaphthalene	10.430	10.430	0.000	118588	20.0000	19.8	
	7 Acenaphthene	10.562	10.562	0.000	476864	50.0000	47.5	
	8 Fluorene	11.709	11.709	0.000	468447	50.0000	48.1	
	9 Phenanthrene	14.090	14.090	0.000	468389	50.0000	49.8	
	10 Anthracene	14.210	14.210	0.000	432444	50.0000	42.8	
$	11 O-Terphenyl	15.346	15.346	0.000	195021	20.0000	18.8	
	12 Fluoranthene	17.478	17.478	0.000	478968	50.0000	47.6	
	13 Pyrene	18.115	18.115	0.000	484356	50.0000	47.3	
	16 Benzo(a)Anthracene	21.890	21.890	0.000	470879	50.0000	48.9	
	17 Chrysene	22.012	22.012	0.000	474887	50.0000	45.8	
	18 Benzo(b)Fluoranthene	25.144	25.144	0.000	524921	50.0000	48.7	
	19 Benzo(k)Fluoranthene	25.214	25.214	0.000	435326	50.0000	44.2	
	20 Benzo(a)Pyrene	26.005	26.005	0.000	458701	50.0000	44.8	
	21 Indeno(1,2,3-cd)Pyrene	28.871	28.871	0.000	465528	50.0000	45.3	
	22 Dibenzo(a,h)Anthracene	28.955	28.955	0.000	350886	50.0000	37.2	
	23 Benzo(g,h,i)Perylene	29.446	29.446	0.000	427587	50.0000	43.4	


Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1106.d
Date : 22-MAY-2020 11:57
Client ID:
Sample Info: WG278377-1,SN3819
Purge Volume: 1.0
Column phase: RTX-5
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1106.d
UVOLTS (x10^5)
Min
-Naphthalene
-2-Methylnaphthalene
-2-Fluorobiphenyl
-Acenaphthylene
-2-Bromonaphthalene
Acenaphthene
-Fluorene
-Phenanthrene
-O-Terphenyl
-Fluoranthene
-Pyrene
-Benzo(a)Anthracene
-Benzo(b)Fluoranthene
-Benzo(k)Fluoranthene
-Benzo(a)Pyrene
-Indeno(1,2,3-cd)Pyrene
-Dibenz(a,h)Anthracene
-Benzo(g,h,i)Perylene

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020 **SDG:** SN3819
Lab ID : WG278377-2 **Analytical Date:** 05/23/20 08:11
Lab File ID : CNE1128.d **Instrument ID:** GC12
Initial Calibration Date(s): 03/06/20 11:58 03/06/20 15:00 **Column ID:** A

	Compound	$\overline{\text{RRF}}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9776	10839	0.010	10.87294	25.00000	Averaged
60	2-Methylnaphthalene	9640	10874	0.010	12.79649	25.00000	Averaged
70	Phenanthrene	9406	10951	0.010	16.42656	25.00000	Averaged
80	Acenaphthylene	9831	10708	0.010	8.92161	25.00000	Averaged
90	Acenaphthene	10039	11031	0.010	9.87841	25.00000	Averaged
100	Anthracene	10112	10115	0.010	0.03034	25.00000	Averaged
110	Benzo(a)Anthracene	9627	11070	0.010	14.98903	25.00000	Averaged
120	Benzo(a)Pyrene	10229	11045	0.010	7.98453	25.00000	Averaged
130	Benzo(b)Fluoranthene	10770	12897	0.010	19.74910	25.00000	Averaged
140	Benzo(g,h,i)Perylene	9842	10632	0.010	8.02336	25.00000	Averaged
150	Benzo(k)Fluoranthene	9854	9981	0.010	1.29249	25.00000	Averaged
160	Chrysene	10364	11139	0.010	7.47654	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	9438	9600	0.010	1.71717	25.00000	Averaged
180	Fluoranthene	10055	11159	0.010	10.98329	25.00000	Averaged
190	Fluorene	9743	10882	0.010	11.68230	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	10280	11973	0.010	16.46633	25.00000	Averaged
210	Pyrene	10244	11334	0.010	10.64153	25.00000	Averaged
4	2-Fluorobiphenyl	8688	9976	0.010	14.82384	25.00000	Averaged
6	2-Bromonaphthalene	5977	6834	0.010	14.32558	25.00000	Averaged
11	O-Terphenyl	10346	11355	0.010	9.75060	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1128.d
Report Date: 28-May-2020 19:56

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1128.d
Lab Smp Id: WG278377-2
Inj Date : 23-MAY-2020 08:11
Operator : AAB   Inst ID: gc12.i
Smp Info : WG278377-2,SN3819
Misc Info : WG278377,WG278026,WG273574-3,SN3819-1
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00   Cal File: CNC1023.d
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: CV.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	2 Naphthalene	6.849	6.783	0.066	541956	50.0000	55.4	
	3 2-Methylnaphthalene	8.263	8.198	0.065	543688	50.0000	56.4(M)	M6
$	4 2-Fluorobiphenyl	9.117	9.054	0.063	199521	20.0000	23.0	
	5 Acenaphthylene	10.208	10.145	0.063	535393	50.0000	54.5	
$	6 2-Bromonaphthalene	10.492	10.430	0.062	136676	20.0000	22.9	
	7 Acenaphthene	10.624	10.562	0.062	551550	50.0000	54.9	
	8 Fluorene	11.772	11.709	0.063	544077	50.0000	55.8(M)	
	9 Phenanthrene	14.156	14.090	0.066	547566	50.0000	58.2(M)	
	10 Anthracene	14.276	14.210	0.066	505755	50.0000	50.0(M)	
$	11 O-Terphenyl	15.408	15.346	0.062	227100	20.0000	22.0	
	12 Fluoranthene	17.544	17.478	0.066	557942	50.0000	55.5	
	13 Pyrene	18.180	18.115	0.065	566699	50.0000	55.3	
	16 Benzo(a)Anthracene	21.949	21.890	0.059	553502	50.0000	57.5	
	17 Chrysene	22.073	22.012	0.061	556939	50.0000	53.7	
	18 Benzo(b)Fluoranthene	25.199	25.144	0.055	644832	50.0000	59.9(M)	
	19 Benzo(k)Fluoranthene	25.270	25.214	0.056	499052	50.0000	50.6(M)	
	20 Benzo(a)Pyrene	26.060	26.005	0.055	552264	50.0000	54.0	
	21 Indeno(1,2,3-cd)Pyrene	28.925	28.871	0.054	598643	50.0000	58.2(M)	
	22 Dibenzo(a,h)Anthracene	29.007	28.955	0.052	479984	50.0000	50.8(M)	
	23 Benzo(g,h,i)Perylene	29.501	29.446	0.055	531605	50.0000	54.0	

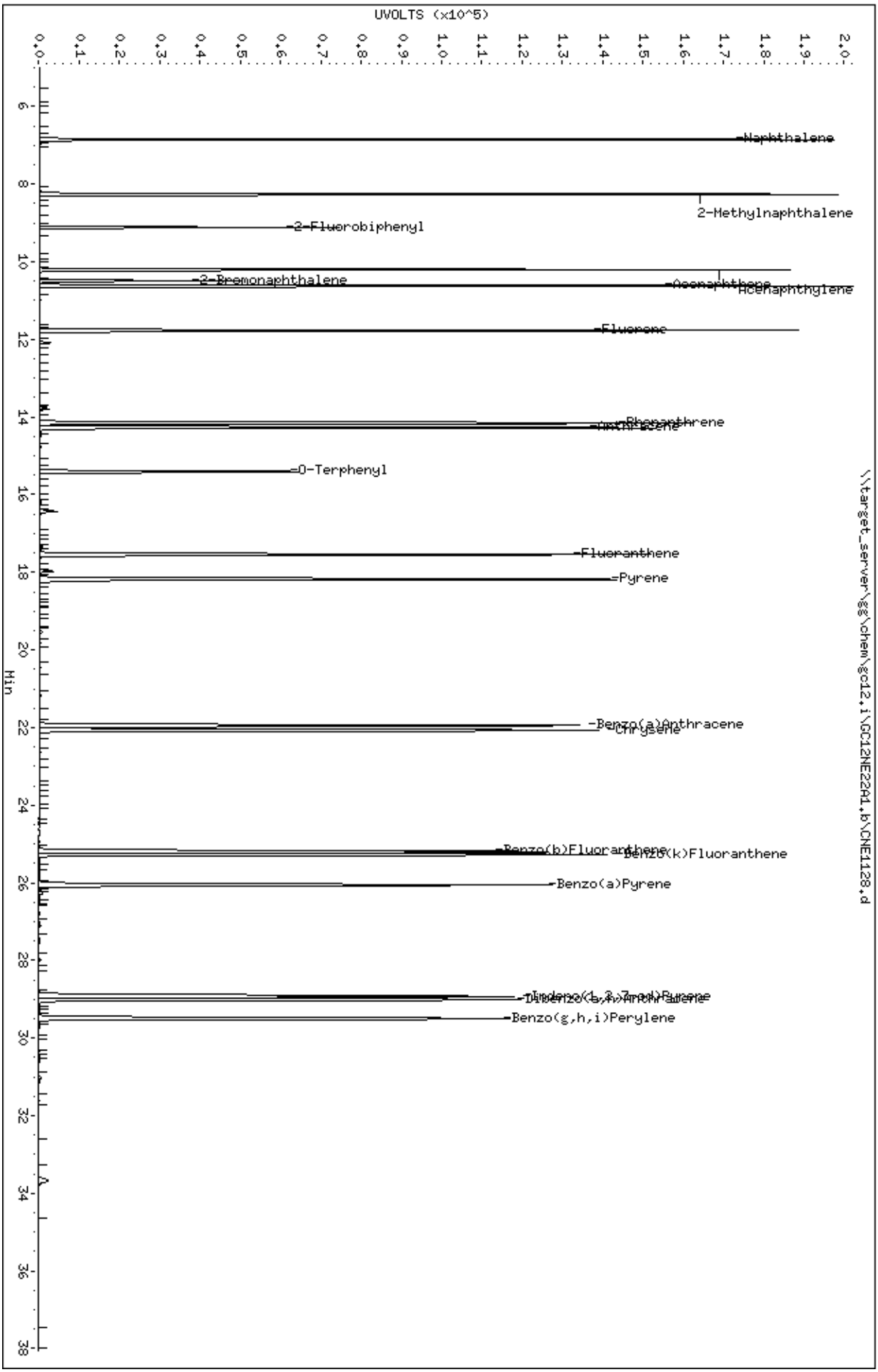


7:57 pm, May 28, 2020

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1128.d
Report Date: 28-May-2020 19:56

QC Flag Legend

M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1128.d
Date : 23-MAY-2020 08:11
Client ID:
Sample Info: WG278377-2,SN3819
Purge Volume: 1.0
Column phase: RTX-5
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1128.d
UVOLTS (x10^5)
Min
Naphthalene
2-Methylnaphthalene
2-Fluorobiphenyl
2-Bromonaphthalene
Acenaphthene
Acenaphthylene
Fluorene
Phenanthrene
Anthracene
O-Terphenyl
Fluoranthene
Pyrene
Benzo(a)Anthracene
Chrysene
Benzo(b)Fluoranthene
Benzo(k)Fluoranthene
Benzo(a)Pyrene
Indeno(1,2,3-cd)Pyrene
Dibenzo(a,h)Anthracene
Benzo(g,h,i)Perylene

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020 **SDG:** SN3819
Lab ID : WG278377-3 **Analytical Date:** 05/22/20 11:57
Lab File ID : CNE2106.d **Instrument ID:** GC12
Initial Calibration Date(s): 03/06/20 11:58 03/06/20 15:00 **Column ID:** A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7964	9067	0.010	13.85175	25.00000	Averaged
30	C19-C36 Aliphatic	8086	9248	0.010	14.36364	25.00000	Averaged
370	C-9	7788	9083	0.010	16.63147	30.00000	Averaged
380	C-10	8210	9058	0.010	10.32869	25.00000	Averaged
390	C-12	8004	9078	0.010	13.42651	25.00000	Averaged
400	C-14	7948	9047	0.010	13.82835	25.00000	Averaged
410	C-16	8011	9176	0.010	14.54073	25.00000	Averaged
420	C-18	7824	8961	0.010	14.53531	25.00000	Averaged
430	C-19	8175	9326	0.010	14.07142	25.00000	Averaged
440	C-20	7914	9263	0.010	17.04440	25.00000	Averaged
450	C-22	7997	9294	0.010	16.22332	25.00000	Averaged
460	C-24	8414	9350	0.010	11.12560	25.00000	Averaged
470	C-26	8484	9308	0.010	9.70733	25.00000	Averaged
480	C-28	8206	9414	0.010	14.71861	25.00000	Averaged
490	C-30	8020	9333	0.010	16.36971	25.00000	Averaged
500	C-36	7479	8694	0.010	16.24222	25.00000	Averaged
44	5-alpha androstane	9970	10651	0.010	6.82580	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2106.d
Report Date: 28-May-2020 20:00

Katahdin Analytical Services

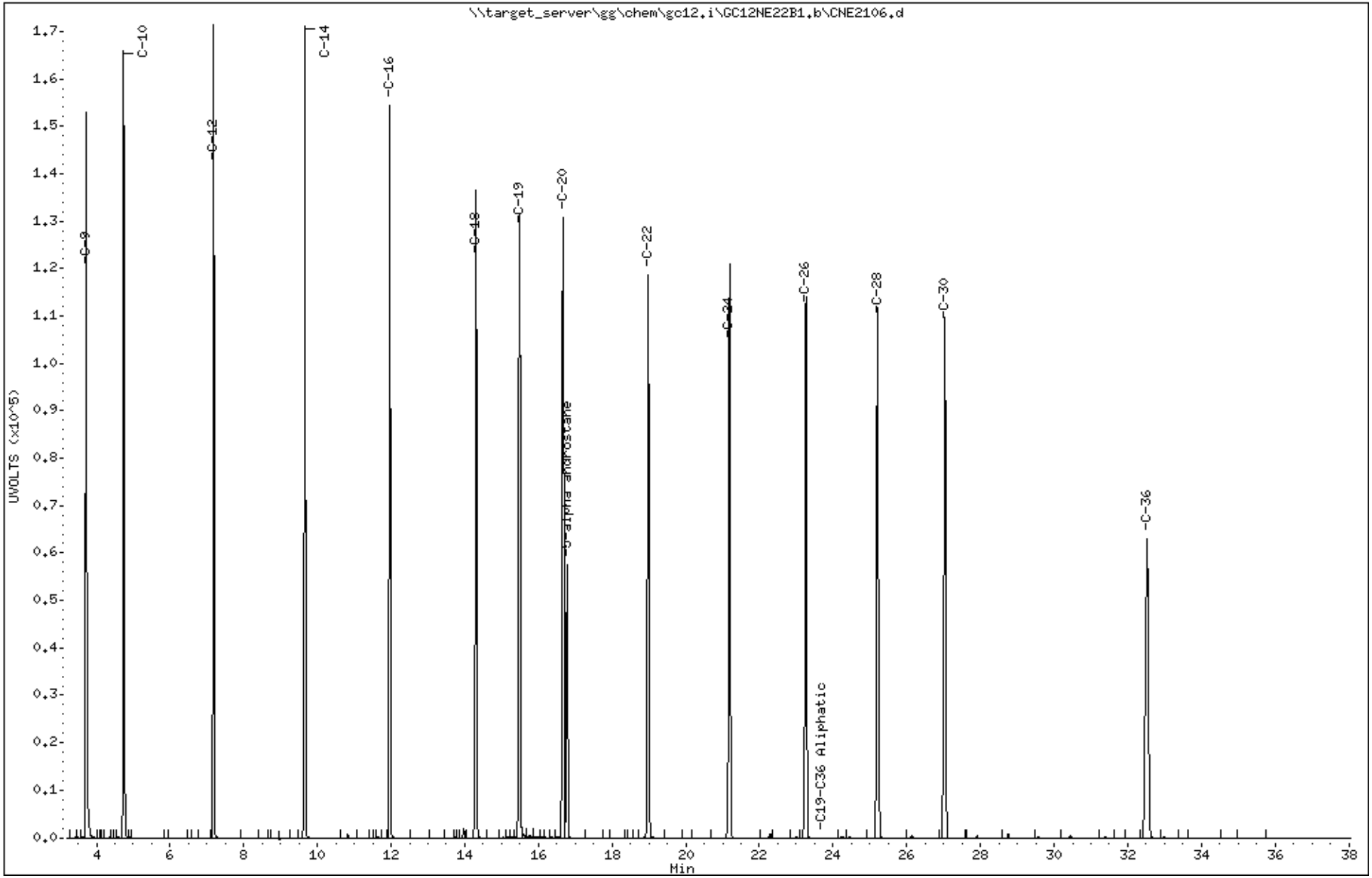
Data file : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2106.d
Lab Smp Id: WG278377-3
Inj Date : 22-MAY-2020 11:57
Operator : AAB   Inst ID: gc12.i
Smp Info : WG278377-3,SN3819
Misc Info : WG278377,WG278026,WG273574-9,SN3819-1
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\ALIB070A.m
Meth Date : 26-May-2020 10:25 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00   Cal File: CNC2023.d
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: CV.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	3 C-9	3.717	3.717	0.000	454169	50.0000	58.3	
	4 C-10	4.736	4.736	0.000	452890	50.0000	55.2	
	5 C-12	7.183	7.183	0.000	453905	50.0000	56.7	
	7 C-14	9.653	9.653	0.000	452337	50.0000	56.9	
	8 C-16	11.963	11.963	0.000	458785	50.0000	57.3	
	9 C-18	14.302	14.302	0.000	448061	50.0000	57.3	
$	44 5-alpha androstane	16.778	16.778	0.000	213013	20.0000	21.4	
	10 C-19	15.487	15.487	0.000	466291	50.0000	57.0	
	11 C-20	16.667	16.667	0.000	463162	50.0000	58.5	
	13 C-22	18.980	18.980	0.000	464700	50.0000	58.1	
	14 C-24	21.184	21.184	0.000	467483	50.0000	55.6	
	15 C-26	23.260	23.260	0.000	465401	50.0000	54.8	
	16 C-28	25.207	25.207	0.000	470717	50.0000	57.4	
	18 C-30	27.034	27.034	0.000	466639	50.0000	58.2	
	19 C-36	32.524	32.524	0.000	434690	50.0000	58.1	
M	1 C9-C18 Aliphatic				2720147	300.000	342	
S	2 C19-C36 Aliphatic				3699083	400.000	458	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2106.d
Date : 22-MAY-2020 11:57
Client ID:
Instrument: gc12.i
Sample Info: WG278377-3,SN3819
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-1
Column diameter: 0.53



Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : JV, LTM, DCI Spring 2020 **SDG:** SN3819
Lab ID : WG278377-4 **Analytical Date:** 05/23/20 08:11
Lab File ID : CNE2128.d **Instrument ID:** GC12
Initial Calibration Date(s): 03/06/20 11:58 03/06/20 15:00 **Column ID:** A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7964	9049	0.010	13.62918	25.00000	Averaged
30	C19-C36 Aliphatic	8086	9320	0.010	15.26168	25.00000	Averaged
370	C-9	7788	9133	0.010	17.26603	30.00000	Averaged
380	C-10	8210	8970	0.010	9.25632	25.00000	Averaged
390	C-12	8004	9049	0.010	13.06742	25.00000	Averaged
400	C-14	7948	9033	0.010	13.65773	25.00000	Averaged
410	C-16	8011	9130	0.010	13.97051	25.00000	Averaged
420	C-18	7824	8981	0.010	14.79426	25.00000	Averaged
430	C-19	8175	9331	0.010	14.13258	25.00000	Averaged
440	C-20	7914	9192	0.010	16.13819	25.00000	Averaged
450	C-22	7997	9357	0.010	17.01165	25.00000	Averaged
460	C-24	8414	9323	0.010	10.80659	25.00000	Averaged
470	C-26	8484	9334	0.010	10.01543	25.00000	Averaged
480	C-28	8206	9449	0.010	15.13681	25.00000	Averaged
490	C-30	8020	9405	0.010	17.27471	25.00000	Averaged
500	C-36	7479	9172	0.010	22.63903	25.00000	Averaged
44	5-alpha androstane	9970	10594	0.010	6.25560	25.00000	Averaged

*** = Compound out of QC criteria**

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2128.d
Report Date: 28-May-2020 20:00

Katahdin Analytical Services

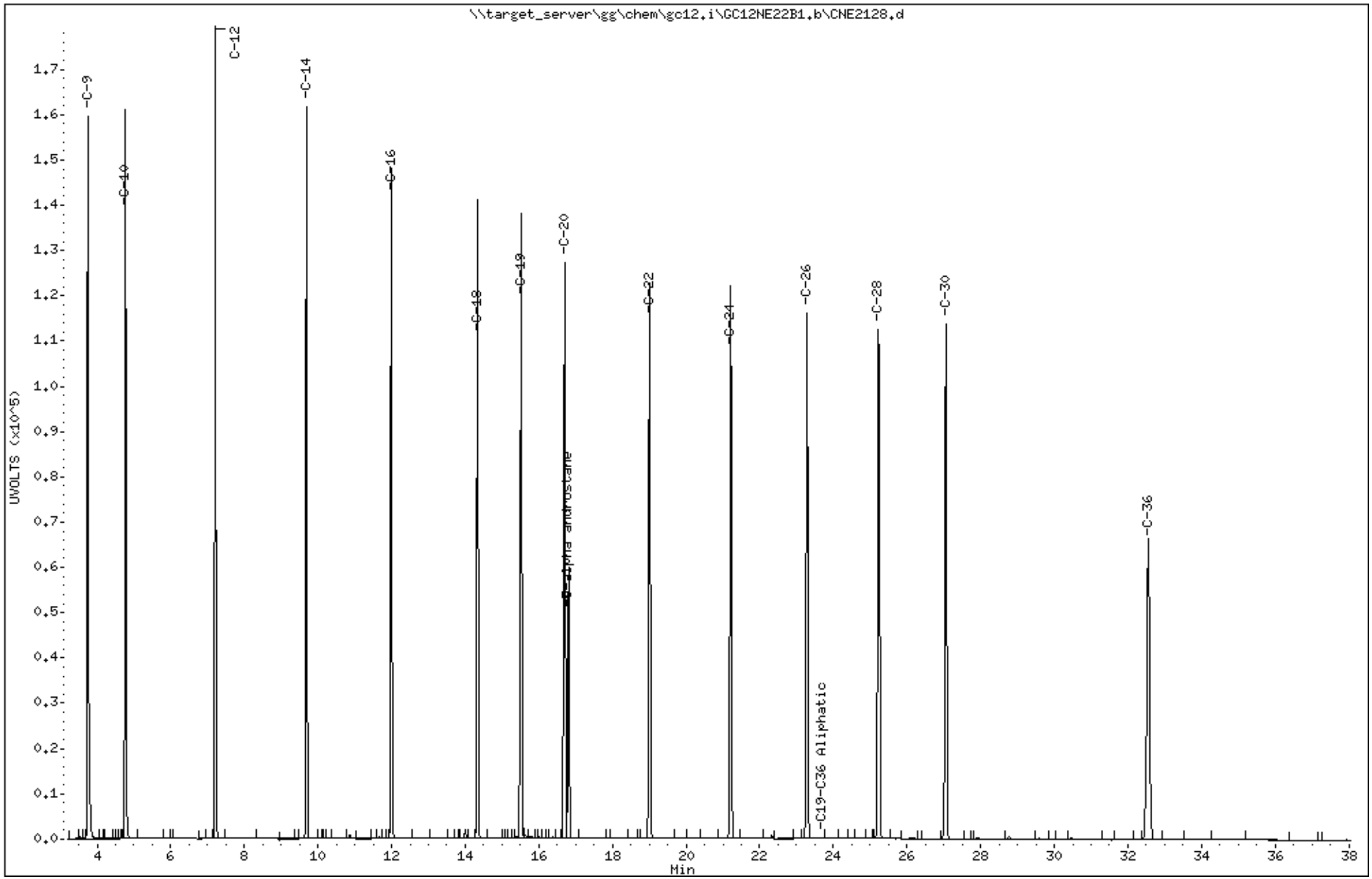
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Inj Date : 23-MAY-2020 08:11
Operator : AAB   Inst ID: gc12.i
Smp Info : WG278377-4,SN3819
Misc Info : WG278377,WG278026,WG273574-9,SN3819-1
Comment   :
Method   : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\ALIB070A.m
Meth Date : 26-May-2020 10:25 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00   Cal File: CNC2023.d
Als bottle: 1   Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP Genie   Compound Sublist: CV.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						AMOUNTS		
	Compounds	RT	EXP RT	DLT RT	RESPONSE	CAL-AMT (ug/ml)	ON-COL (ug/ml)	REVIEW CODE
	3 C-9	3.747	3.717	0.030	456640	50.0000	58.6	
	4 C-10	4.769	4.736	0.033	448488	50.0000	54.6	
	5 C-12	7.213	7.183	0.030	452468	50.0000	56.5	
	7 C-14	9.684	9.653	0.031	451659	50.0000	56.8	
	8 C-16	11.994	11.963	0.031	456501	50.0000	57.0	
	9 C-18	14.332	14.302	0.030	449074	50.0000	57.4	
$	44 5-alpha androstane	16.811	16.778	0.033	211876	20.0000	21.2	
	10 C-19	15.517	15.487	0.030	466541	50.0000	57.1	
	11 C-20	16.698	16.667	0.031	459576	50.0000	58.1	
	13 C-22	19.008	18.980	0.028	467852	50.0000	58.5	
	14 C-24	21.210	21.184	0.026	466141	50.0000	55.4	
	15 C-26	23.284	23.260	0.024	466708	50.0000	55.0	
	16 C-28	25.230	25.207	0.023	472433	50.0000	57.6	
	18 C-30	27.056	27.034	0.022	470268	50.0000	58.6	
	19 C-36	32.555	32.524	0.031	458611	50.0000	61.3	
M	1 C9-C18 Aliphatic				2714830	300.000	341	
S	2 C19-C36 Aliphatic				3728130	400.000	462	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2128.d
Date : 23-MAY-2020 08:11
Client ID:
Instrument: gc12.i
Sample Info: WG278377-4,SN3819
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-1
Column diameter: 0.53



Raw QC Data Section

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG278026-1
Client ID: Method Blank Sample
Project:
SDG: SN3819
Lab File ID: CNE2113.D

Sample Date:
Received Date:
Extract Date: 20-MAY-20
Extracted By: MR
Extraction Method: SW846 3510C
Lab Prep Batch: WG278026

Analysis Date: 22-MAY-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 28-MAY-20

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		58.0	%					
o-Terphenyl		53.7	%					
2-Fluorobiphenyl		56.7	%					
2-Bromonaphthalene		56.4	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029
http://www.katahdinlab.com

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2113.d
Report Date: 28-May-2020 20:00

Katahdin Analytical Services

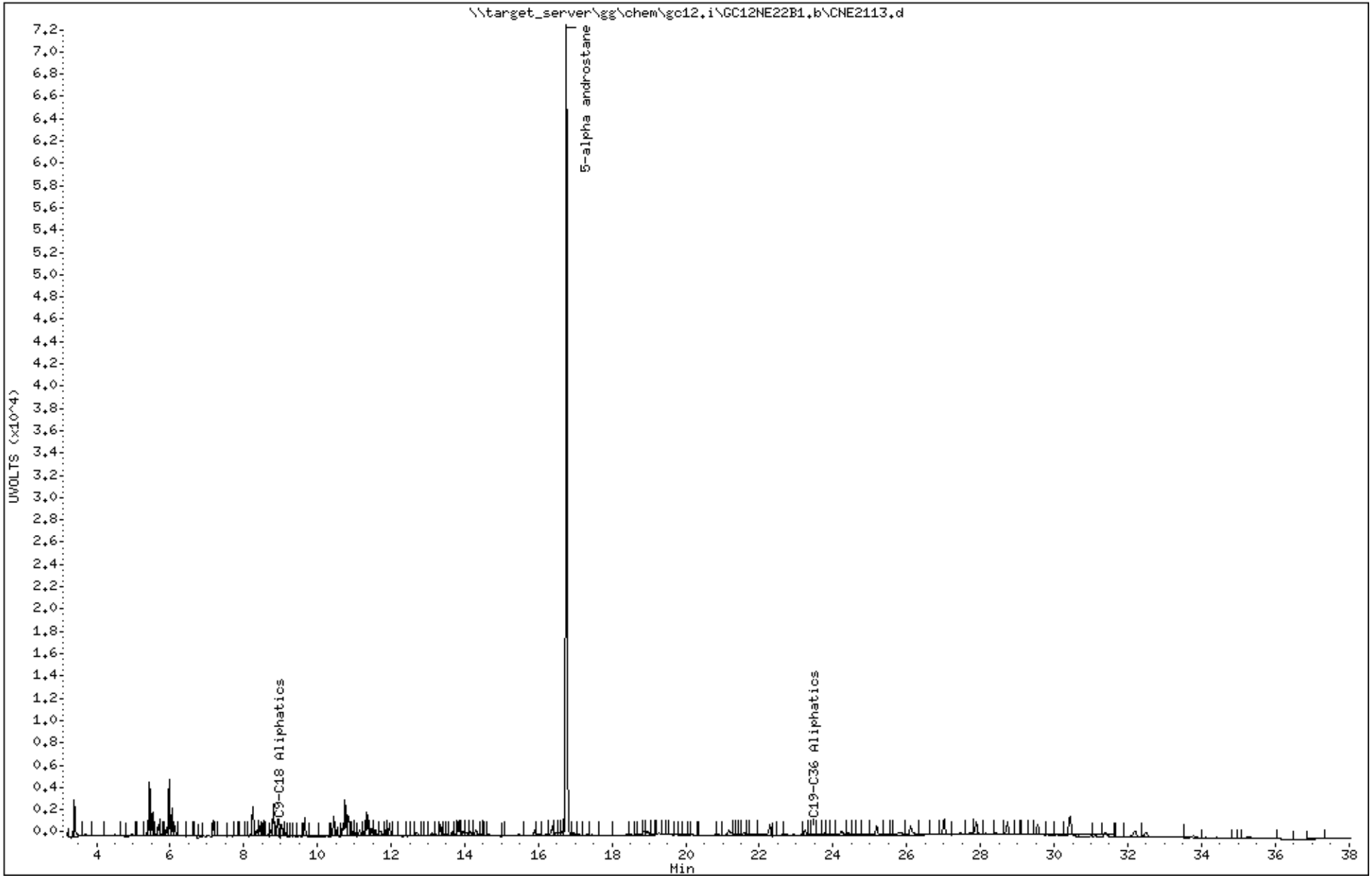
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Inj Date : 22-MAY-2020 17:16
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-1,SN3819
Misc Info : WG278377,WG278026,WG273574-9,SN3819-1
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\ALIB070A.m
Meth Date : 26-May-2020 10:25 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC2023.d
Als bottle: 1 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: ALIPHATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

					CONCENTRATIONS		
					ON-COLUMN	FINAL	
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/ml)	(ug/L)	REVIEW CODE
$ 44 5-alpha androstane	16.760	16.778	-0.018	260145	26.0925	52.2	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2113.d
Date : 22-MAY-2020 17:16
Client ID: WG278026-Blank
Instrument: gc12.i
Sample Info: WG278026-1,SN3819
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-1
Column diameter: 0.53



Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1113.d
Report Date: 28-May-2020 19:56

Katahdin Analytical Services

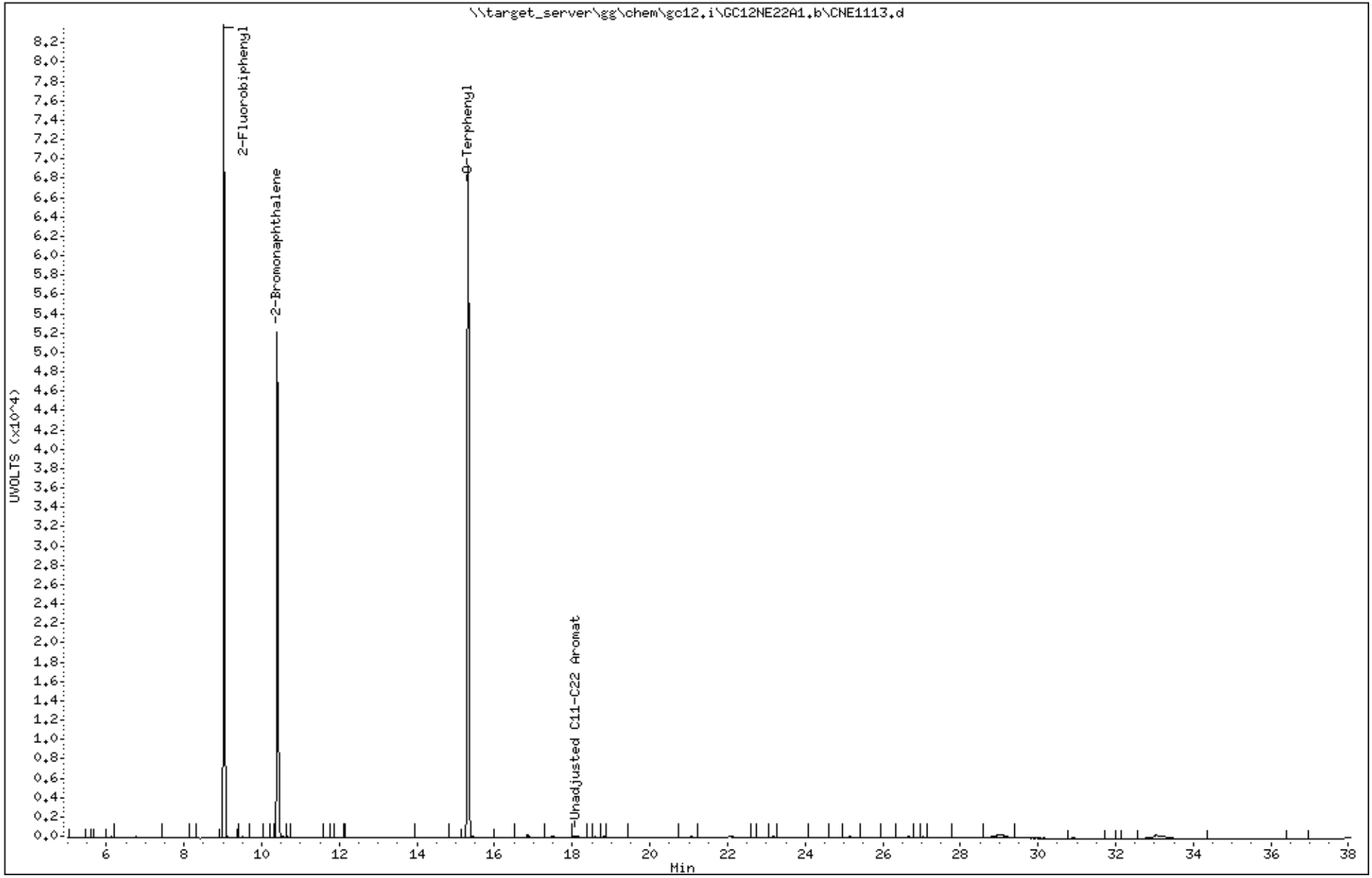
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Inj Date : 22-MAY-2020 17:16
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-1,SN3819
Misc Info : WG278377,WG278026,WG273574-3,SN3819-1
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: AROMATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 4 2-Fluorobiphenyl	9.026	9.054	-0.028	221782	25.5270	51.0	
$ 6 2-Bromonaphthalene	10.402	10.430	-0.028	151876	25.4080	50.8	
$ 11 O-Terphenyl	15.314	15.346	-0.032	249890	24.1529	48.3	

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Date : 22-MAY-2020 17:16
Client ID: WG278026-Blank
Instrument: gc12.i
Sample Info: WG278026-1,SN3819
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-5
Column diameter: 0.53



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Report Date: 28-May-2020 19:56

Katahdin Analytical Services

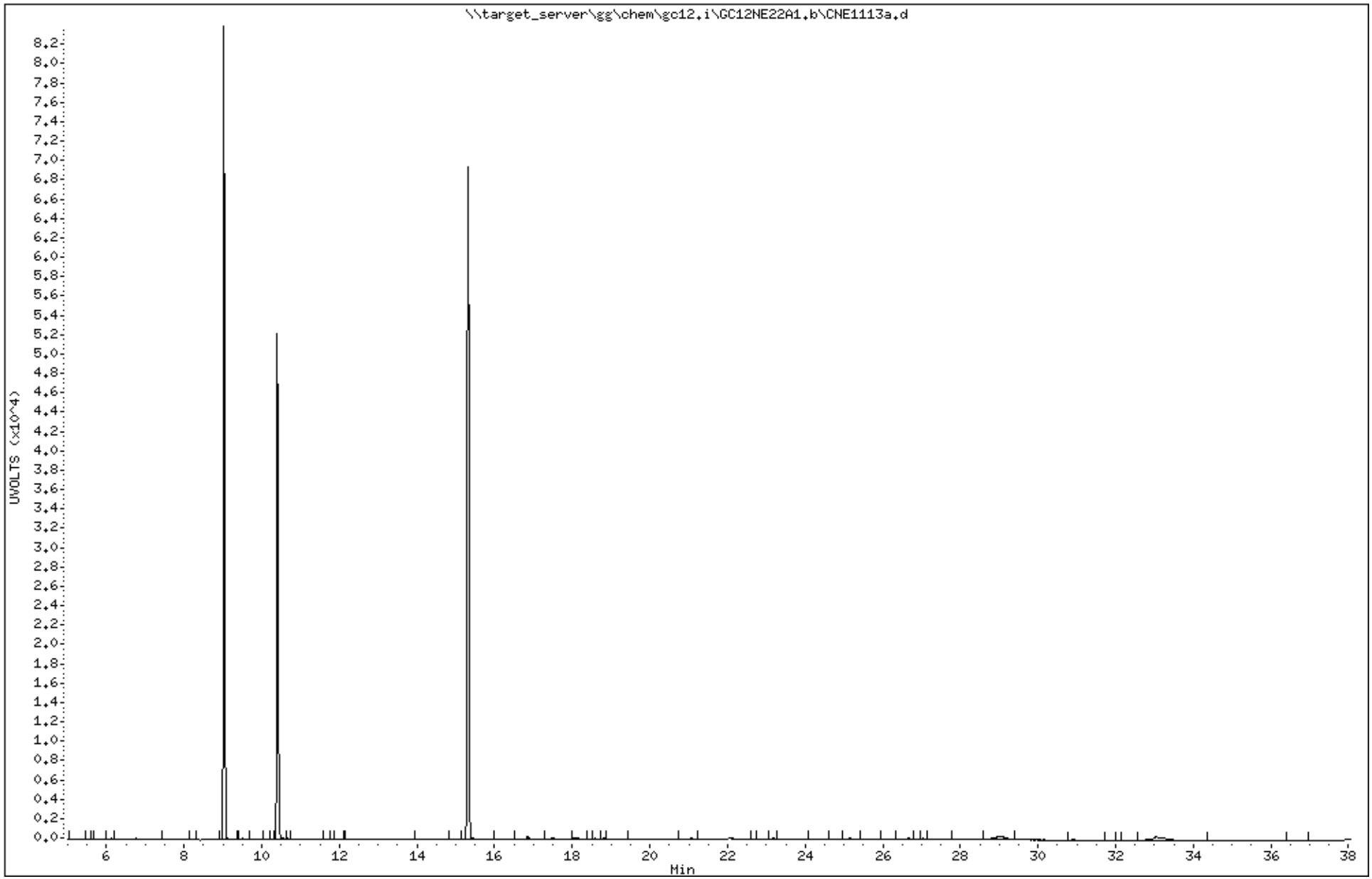
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Inj Date : 22-MAY-2020 17:16
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-1,SN3819
Misc Info : WG278377,WG278026,WG273574-3,SN3819-1
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: PAH.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1113a.d
Date : 22-MAY-2020 17:16
Client ID: WG278026-Blank
Instrument: gc12.i
Sample Info: WG278026-1,SN3819
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-5
Column diameter: 0.53



Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG278026-2
LCSD ID: WG278026-3
Project:
SDG: SN3819
Report Date: 28-MAY-20
LCS File ID: CNE2114.D

Received Date:
Extract Date: 20-MAY-20
Extracted By: MR
Extraction Method: SW846 3510C
Lab Prep Batch: WG278026
LCSD File ID: CNE1115.d

Analysis Date: 22-MAY-20
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1530	1210	79.1	899.	58.8	ug/L	29*	25	40-140
C9-C18 Aliphatics	540.	350.	64.8	330.	61.1	ug/L	6	25	40-140
C19-C36 Aliphatics	720.	617.	85.7	567.	78.8	ug/L	8	25	40-140
Naphthalene	90.0	59.3	65.9	44.5	49.4	ug/L	28*	25	40-140
2-Methylnaphthalene	90.0	65.1	72.3	48.9	54.3	ug/L	28*	25	40-140
Phenanthrene	90.0	76.4	84.9	57.2	63.6	ug/L	29*	25	40-140
Acenaphthylene	90.0	63.2	70.2	47.9	53.2	ug/L	28*	25	40-140
Acenaphthene	90.0	65.6	72.9	50.5	56.1	ug/L	26*	25	40-140
Anthracene	90.0	70.4	78.2	52.2	58.0	ug/L	30*	25	40-140
Benzo(a)anthracene	90.0	75.8	84.2	55.5	61.7	ug/L	31*	25	40-140
Benzo(a)pyrene	90.0	70.4	78.2	51.1	56.8	ug/L	32*	25	40-140
Benzo(b)fluoranthene	90.0	73.1	81.2	57.2	63.6	ug/L	24	25	40-140
Benzo(g,h,i)perylene	90.0	73.6	81.8	53.2	59.1	ug/L	32*	25	40-140
Benzo(k)fluoranthene	90.0	74.6	82.9	49.9	55.4	ug/L	40*	25	40-140
Chrysene	90.0	72.6	80.7	53.4	59.3	ug/L	30*	25	40-140
Dibenzo(a,h)anthracene	90.0	67.0	74.4	49.0	54.4	ug/L	31*	25	40-140
Fluoranthene	90.0	75.4	83.8	55.8	62.0	ug/L	30*	25	40-140
Fluorene	90.0	69.9	77.7	53.5	59.4	ug/L	26*	25	40-140
Indeno(1,2,3-cd)pyrene	90.0	73.0	81.1	51.4	57.1	ug/L	35*	25	40-140
Pyrene	90.0	73.6	81.8	53.9	59.9	ug/L	31*	25	40-140
5-Alpha Androstane			62.2		46.0				40-140
o-Terphenyl			76.1		54.8				40-140
2-Fluorobiphenyl			78.9		61.7				40-140
2-Bromonaphthalene			79.1		62.1				40-140

600 Technology Way
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Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2114.d
Report Date: 28-May-2020 20:00

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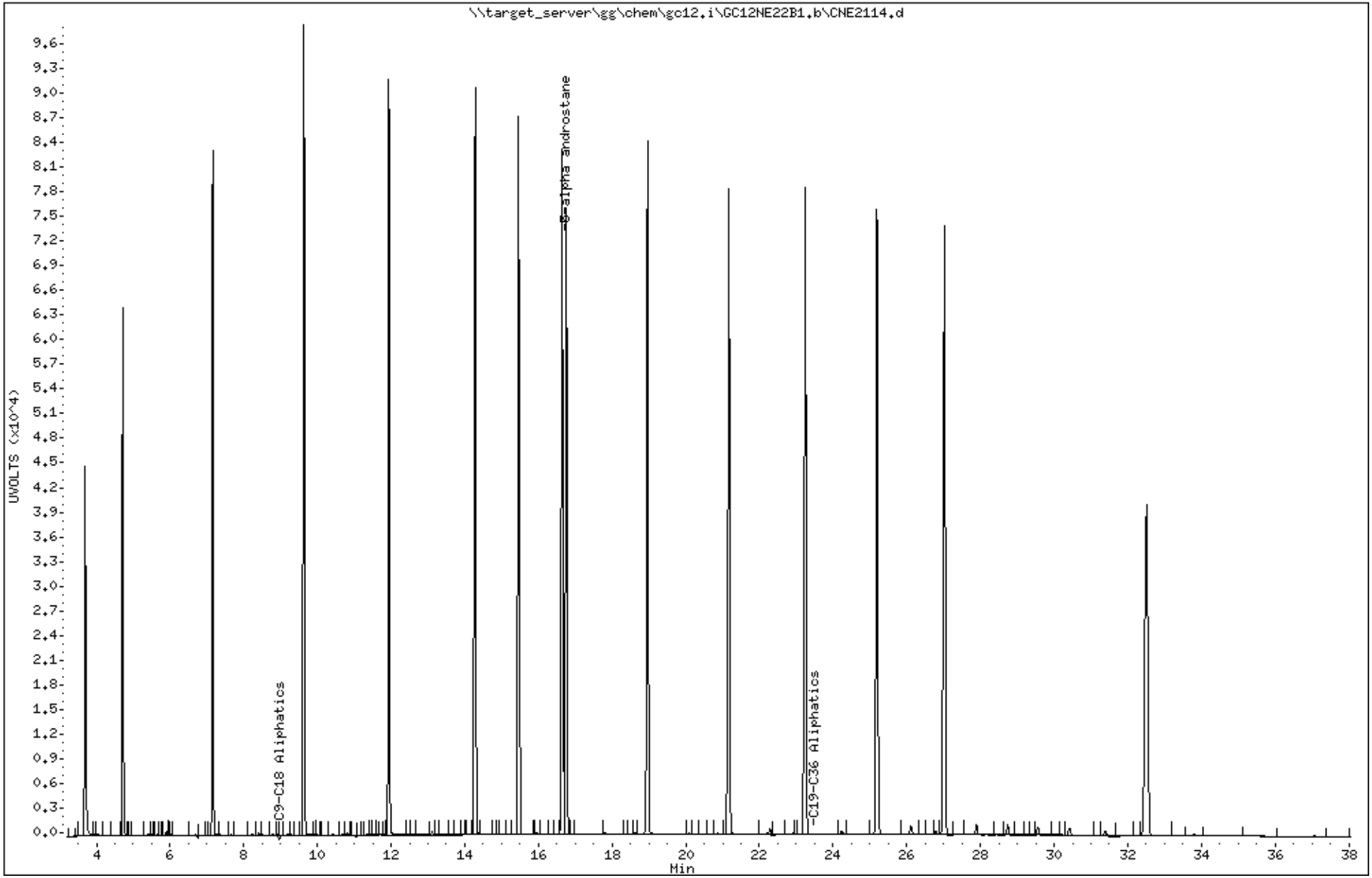
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Lab Smp Id: WG278026-2 Client Smp ID: WG278026-LCS
Inj Date : 22-MAY-2020 18:03
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-2,SN3819
Misc Info : WG278377,WG278026,WG273574-9,SN3819-1
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\ALIB070A.m
Meth Date : 26-May-2020 10:25 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC2023.d
Als bottle: 1 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: ALIPHATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$ 44 5-alpha androstane	16.754	16.778	-0.024	278963	27.9799	56.0	
S 6 C9-C18 Aliphatics	3.594-14.380			1392994	174.911	350	
S 17 C19-C36 Aliphatics	14.380-32.609			2494098	308.437	617	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2114.d
Date : 22-MAY-2020 18:03
Client ID: WG278026-LCS
Instrument: gc12.i
Sample Info: WG278026-2,SN3819
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-1
Column diameter: 0.53



06/05/2020
Katahdin Analytical Services 2000075

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1114.d
Report Date: 28-May-2020 19:56

Katahdin Analytical Services

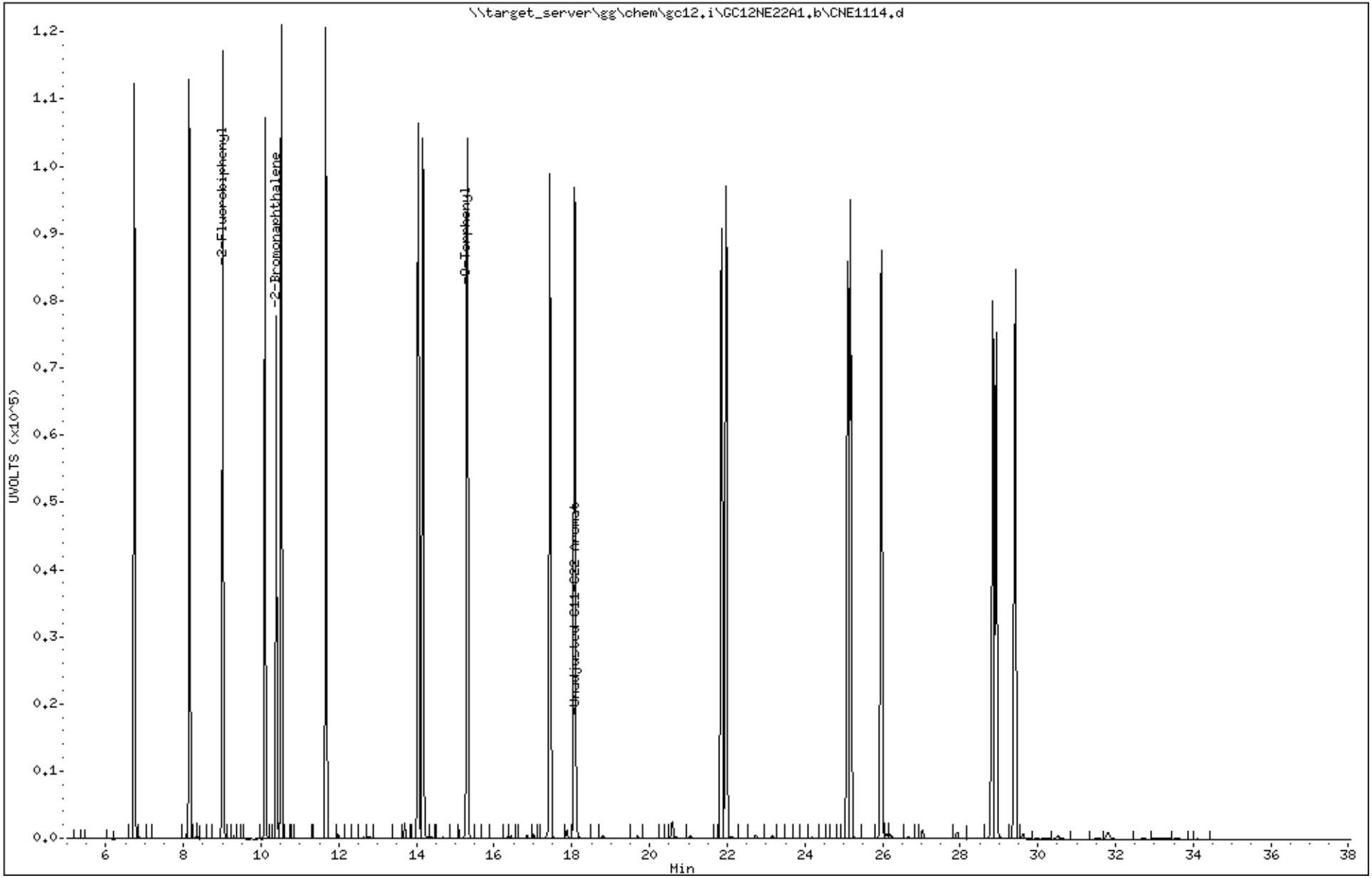
Data file : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1114.d
Lab Smp Id: WG278026-2 Client Smp ID: WG278026-LCS
Inj Date : 22-MAY-2020 18:03
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-2,SN3819
Misc Info : WG278377,WG278026,WG273574-3,SN3819-1
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: AROMATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$	4 2-Fluorobiphenyl	9.011	9.054	-0.043	308263	35.4809	71.0	
$	6 2-Bromonaphthalene	10.387	10.430	-0.043	212674	35.5791	71.2	
$	11 O-Terphenyl	15.306	15.346	-0.040	354364	34.2507	68.5	
S	15 Unadjusted C11-C22 Aromatics	6.677-29.555			6045766	607.251	1210	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1114.d
Date : 22-MAY-2020 18:03
Client ID: WG278026-LCS
Instrument: gc12.i
Sample Info: WG278026-2,SN3819
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-5
Column diameter: 0.53



Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1114a.d
Report Date: 28-May-2020 19:56

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1114a.d
Lab Smp Id: WG278026-2 Client Smp ID: WG278026-LCS
Inj Date : 22-MAY-2020 18:03
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-2,SN3819
Misc Info : WG278377,WG278026,WG273574-3,SN3819-1
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: PAH.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

					CONCENTRATIONS ON-COLUMN (ug/ml)	FINAL (ug/L)	
Compounds	RT	EXP RT	DLT RT	RESPONSE			REVIEW CODE
2 Naphthalene	6.733	6.783	-0.050	289743	29.6377	59.3	
3 2-Methylnaphthalene	8.150	8.198	-0.048	313953	32.5672	65.1	
5 Acenaphthylene	10.101	10.145	-0.044	310461	31.5805	63.2	
7 Acenaphthene	10.518	10.562	-0.044	329374	32.8085	65.6	
8 Fluorene	11.666	11.709	-0.043	340382	34.9350	69.9	
9 Phenanthrene	14.044	14.090	-0.046	359120	38.1791	76.4	
10 Anthracene	14.164	14.210	-0.046	355912	35.1969	70.4	
12 Fluoranthene	17.434	17.478	-0.044	378868	37.6813	75.4	
13 Pyrene	18.071	18.115	-0.044	376975	36.8000	73.6	
16 Benzo(a)Anthracene	21.851	21.890	-0.039	365075	37.9218	75.8	
17 Chrysene	21.973	22.012	-0.039	376460	36.3241	72.6	
18 Benzo(b)Fluoranthene	25.108	25.144	-0.036	393539	36.5413	73.1(M)	M6
19 Benzo(k)Fluoranthene	25.178	25.214	-0.036	367605	37.3064	74.6(M)	
20 Benzo(a)Pyrene	25.969	26.005	-0.036	359835	35.1794	70.4	
21 Indeno(1,2,3-cd)Pyrene	28.839	28.871	-0.032	375007	36.4789	73.0	
22 Dibenzo(a,h)Anthracene	28.925	28.955	-0.030	316020	33.4851	67.0	
23 Benzo(g,h,i)Perylene	29.414	29.446	-0.032	362207	36.8006	73.6	

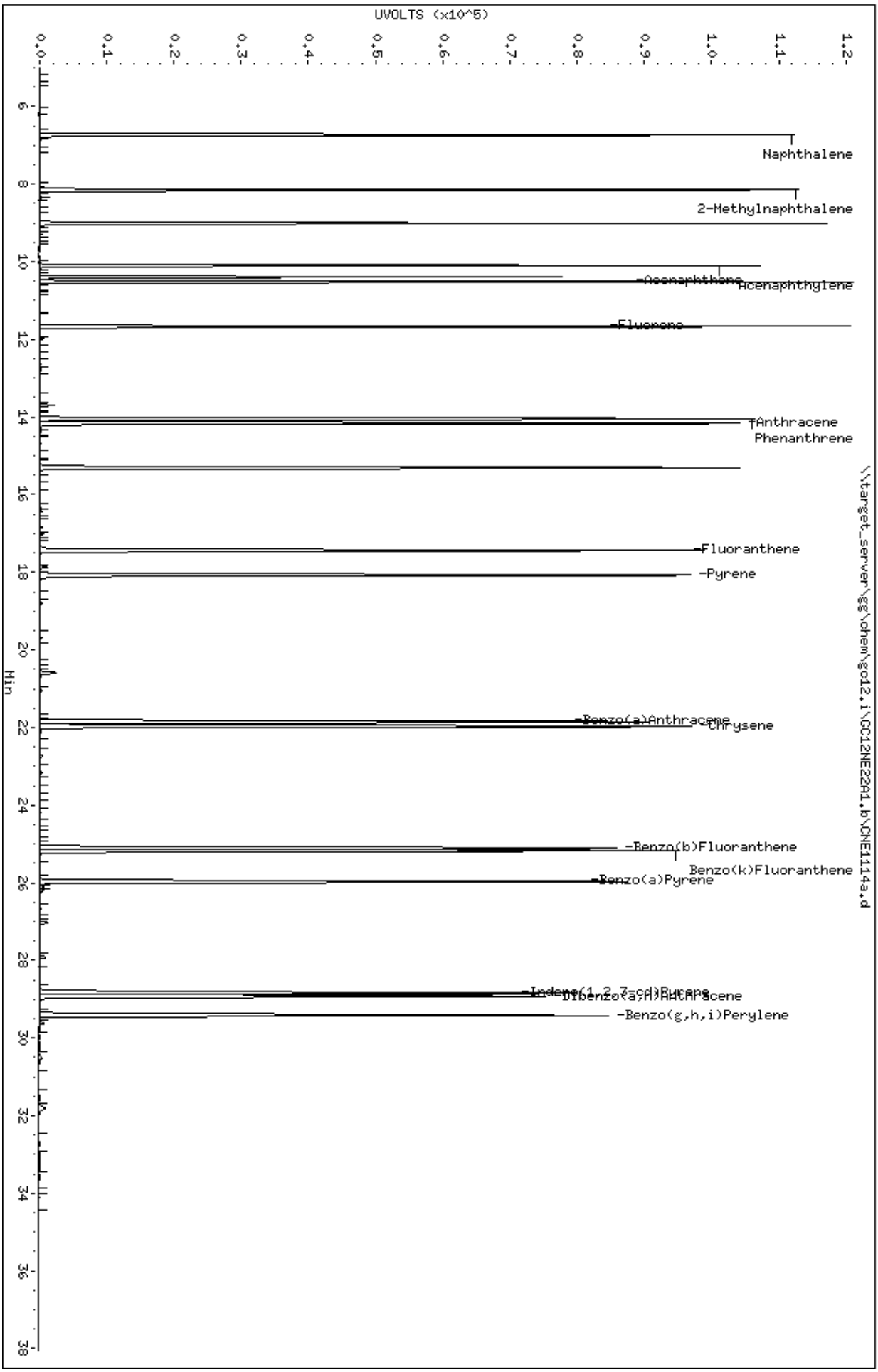


8:24 pm, May 28, 2020

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1114a.d
Report Date: 28-May-2020 19:56

QC Flag Legend

M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1114a.d
Date : 22-MAY-2020 18:03
Client ID: WG278026-LCS
Sample Info: WG278026-2,SN3819
Purge Volume: 1.0
Column phase: RTX-5
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1114a.d
UVOLTS (x10^5)
Min
Naphthalene
2-Methylnaphthalene
Acenaphthene
Acenaphthylene
Fluorene
Anthracene
Phenanthrene
Fluoranthene
Pyrene
Benzo(a)Anthracene
Chrysene
Benzo(b)Fluoranthene
Benzo(k)Fluoranthene
Benzo(a)Pyrene
Indeno(1,2,3-cd)Pyrene
Dibenzo(a,h)Anthracene
Benzo(g,h,i)Perylene

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1115.d
Report Date: 28-May-2020 19:56

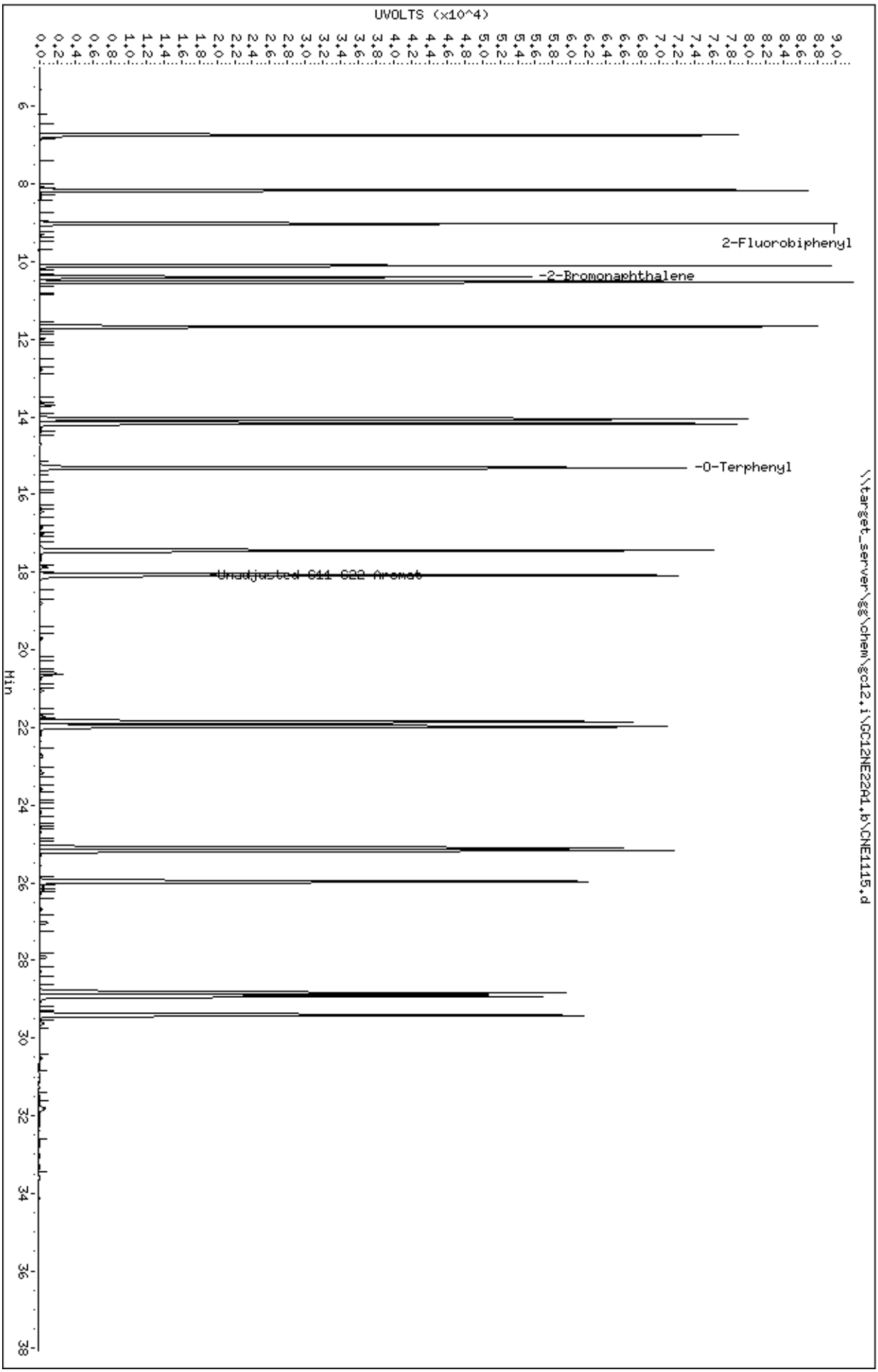
Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1115.d
Lab Smp Id: WG278026-3 Client Smp ID: WG278026-LCSD
Inj Date : 22-MAY-2020 18:49
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-3,SN3819
Misc Info : WG278377,WG278026,WG273574-3,SN3819-1
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: AROMATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

	Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
$	4 2-Fluorobiphenyl	9.015	9.054	-0.039	241294	27.7728	55.5	
$	6 2-Bromonaphthalene	10.393	10.430	-0.037	167175	27.9674	55.9	
$	11 O-Terphenyl	15.310	15.346	-0.036	255017	24.6484	49.3	
S	15 Unadjusted C11-C22 Aromatics	6.677-29.555			4477254	449.706	899	


Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1115.d
Date : 22-MAY-2020 18:49
Client ID: WG278026-LCSD
Sample Info: WG278026-3,SN3819
Purge Volume: 1.0
Column phase: RTX-5
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1115.d
UVOLTS (x10^4)
2-Fluorobiphenyl
-2-Bromonaphthalene
-O-Terphenyl
Unadjusted C11-C22 Aromat
Min

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1115a.d
Report Date: 28-May-2020 19:56

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1115a.d
Lab Smp Id: WG278026-3 Client Smp ID: WG278026-LCSD
Inj Date : 22-MAY-2020 18:49
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-3,SN3819
Misc Info : WG278377,WG278026,WG273574-3,SN3819-1
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Meth Date : 26-May-2020 09:53 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC1023.d
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: PAH.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
2 Naphthalene	6.738	6.783	-0.045	217422	22.2400	44.5	
3 2-Methylnaphthalene	8.156	8.198	-0.042	235656	24.4452	48.9	
5 Acenaphthylene	10.105	10.145	-0.040	235658	23.9714	47.9	
7 Acenaphthene	10.522	10.562	-0.040	253465	25.2473	50.5	
8 Fluorene	11.670	11.709	-0.039	260445	26.7307	53.5	
9 Phenanthrene	14.049	14.090	-0.041	268961	28.5940	57.2	
10 Anthracene	14.169	14.210	-0.041	263771	26.0849	52.2	
12 Fluoranthene	17.438	17.478	-0.040	280677	27.9155	55.8	
13 Pyrene	18.075	18.115	-0.040	276030	26.9459	53.9	
16 Benzo(a)Anthracene	21.852	21.890	-0.038	267355	27.7713	55.5	
17 Chrysene	21.974	22.012	-0.038	276501	26.6792	53.4	
18 Benzo(b)Fluoranthene	25.106	25.144	-0.038	308169	28.6144	57.2(M)	M6
19 Benzo(k)Fluoranthene	25.174	25.214	-0.040	246026	24.9679	49.9(M)	
20 Benzo(a)Pyrene	25.968	26.005	-0.037	261324	25.5484	51.1	
21 Indeno(1,2,3-cd)Pyrene	28.836	28.871	-0.035	264212	25.7013	51.4	
22 Dibenzo(a,h)Anthracene	28.921	28.955	-0.034	231052	24.4820	49.0	
23 Benzo(g,h,i)Perylene	29.409	29.446	-0.037	261962	26.6156	53.2	

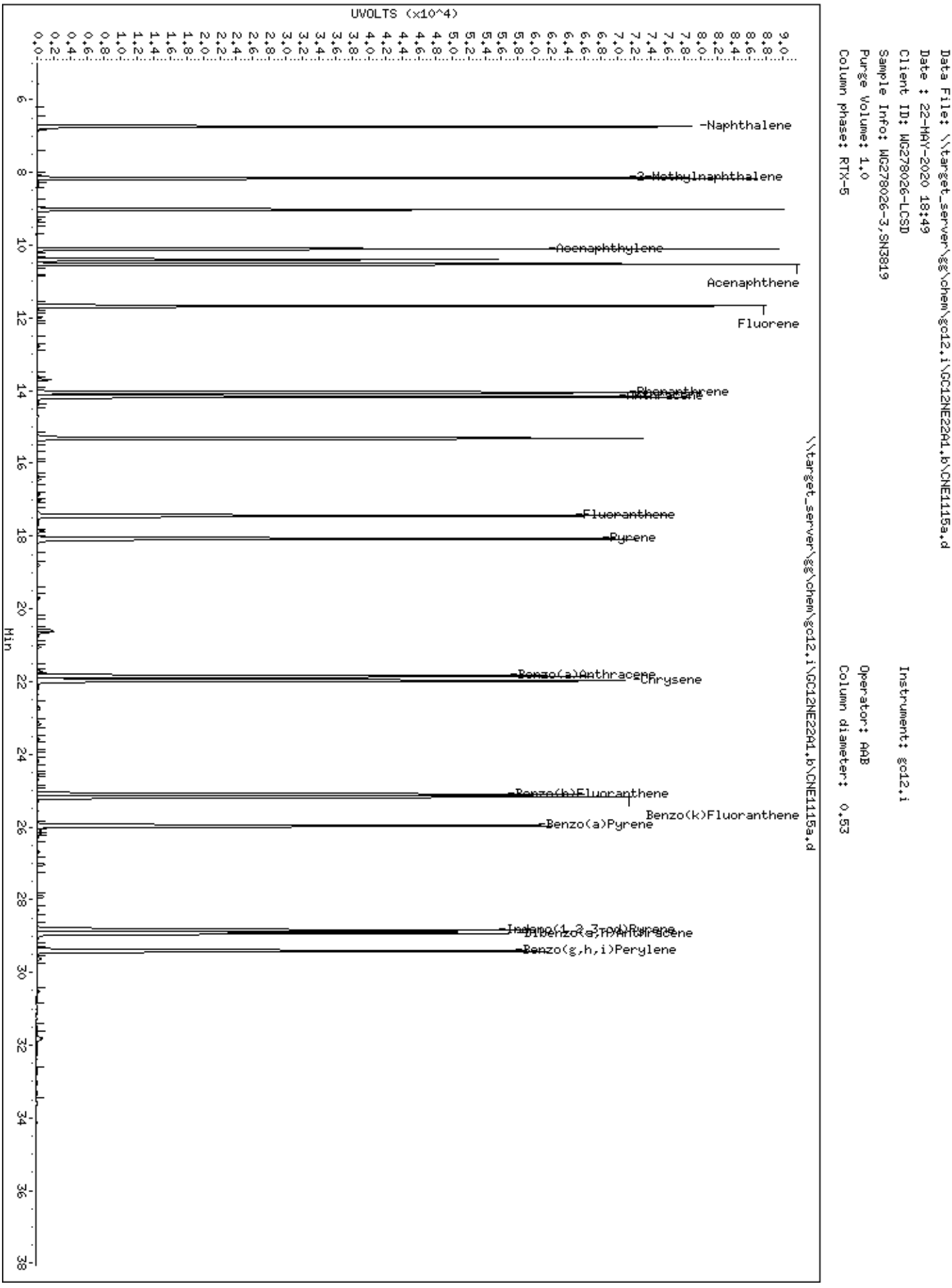


8:24 pm, May 28, 2020

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Report Date: 28-May-2020 19:56

QC Flag Legend

M - Compound response manually integrated.


Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1115a.d
Date : 22-MAY-2020 18:49
Client ID: WG278026-LCSD
Sample Info: WG278026-3,SN3819
Purge Volume: 1.0
Column phase: RTX-5
Instrument: gc12.i
Operator: AAB
Column diameter: 0.53
\\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1115a.d
UVOLTS (x10^4)
Min
-Naphthalene
2-Methylnaphthalene
-Acenaphthylene
Acenaphthene
Fluorene
Phenanthrene
Fluoranthene
Pyrene
Benzo(a)Anthracene
Chrysene
Benzo(b)Fluoranthene
Benzo(k)Fluoranthene
Benzo(a)Pyrene
Indeno(1,2,3-cd)Pyrene
Dibenzo(a,h)Anthracene
Benzo(g,h,i)Perylene

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2115.d
Report Date: 28-May-2020 20:00

Katahdin Analytical Services

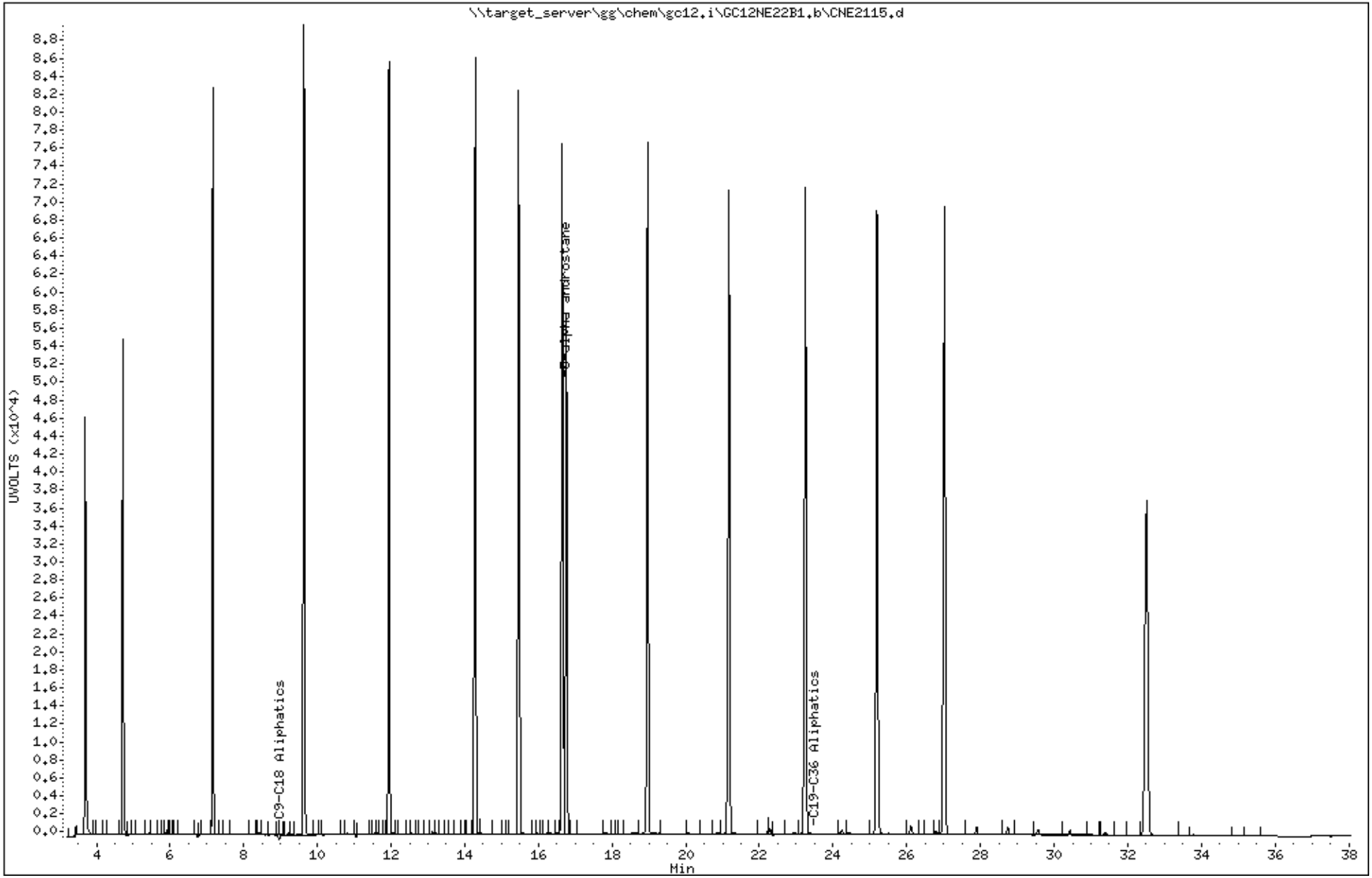
Data file : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2115.d
Lab Smp Id: WG278026-3 Client Smp ID: WG278026-LCSD
Inj Date : 22-MAY-2020 18:49
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-3,SN3819
Misc Info : WG278377,WG278026,WG273574-9,SN3819-1
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\ALIB070A.m
Meth Date : 26-May-2020 10:25 abullentin Quant Type: ESTD
Cal Date : 06-MAR-2020 15:00 Cal File: CNC2023.d
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: ALIPHATIC.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

						CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	
Compounds		RT	EXP RT	DLT RT	RESPONSE			REVIEW CODE
$	44 5-alpha androstane	16.757	16.778	-0.021	206413	20.7032	41.4	
S	6 C9-C18 Aliphatics	3.594-14.380			1313980	164.990	330	
S	17 C19-C36 Aliphatics	14.380-32.609			2292817	283.546	567	

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2115.d
Date : 22-MAY-2020 18:49
Client ID: WG278026-LCSD
Instrument: gc12.i
Sample Info: WG278026-3,SN3819
Purge Volume: 1.0
Operator: AAB
Column phase: RTX-1
Column diameter: 0.53



Logbooks and Supporting Documents

Katahdin Analytical Services
HPLC03 Logbook

Analytical Method:	MA-EPH: X	Other: —	Flow: 5.0 mL/min
MeCl2 Lot #: DY187-US | DY726-US		Hexane Lot #: 199011 / 197051	

Tray Pos. No.	Sample Identification	Date	Initials	Injection Volume	Dilution	Comments
5	WG1277644-3	5/14/20	JPS	1mL	1	
6	SW3612-1	↓	↓	↓	↓	
7	↓ -2					
8	RINSE					
9	RINSE					
1	Rinse	5/19/20	JPS	1mL	1	
2	Frack Check					
3	Rinse					
4	Blank					
5	LCS1					
6	LCS2					
7	LCS3					
8	Rinse					
9	Rinse					
1	RINSE	5-20-20	MR	1mL		
2	WG278026-1					
3	↓ -2					
4	-3					
5	SN3819-1					
6	SN3820-1					
7	-2					
8	-3					
9	-4					
10	SN3830-1					
11	↓ -2					

Reviewed by: Review Date:

EPH Sep

KATAHDIN ANALYTICAL SERVICES, LLC.
ORGANIC EXTRACTIONS LOG - AQUEOUS FUEL OILS

Extraction Method: (check one)	SW846 3510 (SEP) ✓		SW846 3520 (CLLE)			Nitrogen Water Bath Temperature: 36 °C		
Analytical Method: (√ one)	SW8015M (DRO)	SW8100M (TPH)	MADEP EPH – Methanol must be used to determine IV. ✓	ME DEP 4.1.25	FLO PRO	CT ETPH	TX 1005	Other:
Spike ID: GC2101	Surrogate ID: GC2086/GC2114		Frac. Surrogate ID: GC2111		Other:			
MeCl2 Lot #: DY594-05	Acetone Lot #: —		n-Pentane Lot #: —		Hexane Lot #:: 197051			
NaSO4 Lot # 27969001	Baked NaSO4 ID: —		Filter Paper Lot # (KD) 16957336		Vial Lot #: 123225			
Sample pH checked prior to extraction?	Yes ✓	No	Note unpreserved samples in comments section.		Boiling Chip Date: 042120			
Blank and LCSs adjusted to pH < 2?	Yes ✓	No	pH Paper Lot #: 6908003		HCl Lot # RE0484			
Prep Start Time: 9:00	Prep End Time: 9:55		CLLE Start Time: —		CLLE End Date & Time: —			

Date Extracted	Ext. Init.	Sample ID	Init. Vol. (mL)	Surr Vol. (mL)	Spike Vol. (mL)	Final Vol Pre-Frac. (mL)	Date Conc. Pre-Frac.	Conc. Init. Pre-Frac.	Tray Location PFS11	Frac. Init.	Frac. Surr Vol. (mL)	Final Vol. Post-Frac. (mL)	Date Conc Post-Frac.	Tray Location EPH5715	Conc. Init Post-Frac.	Comments R540085
5-20-20	MR	NG2780216-1	1000	1.00	NR	1mL	5/20/20	JR	E8	MR	1.00	2mL	5/21/20	E2	JR	
		-2			1.00				9					3		LCS
		-3							10					4		LCSD

MP 5/21/20

EX-015 – Revision 7 – 05/17/2019

0000136

Date Extracted	Ext. Init.	Sample ID	Init. Vol. (mL)	Surr Vol. (mL)	Spike Vol. (mL)	Final Vol Pre-Frac. (mL)	Date Conc. Pre-Frac.	Conc. Init. Pre-Frac.	Tray Location PFS12	Frac. Init.	Frac. Surr Vol. (mL)	Final Vol. Post-Frac. (mL)	Date Conc Post-Frac.	Tray Location EPH5715	Conc. Init Post-Frac.	Comments
5-20-20	MR	SN3819-1D	1070	1.00	NR	1mL	5/20/20	JR	A1	MR	1.00	2mL	5/21/20	E5	JR	
		SN3820-1D	1040						2					6		
		-2	1070						3					7		
		-3	930						4					8		
		-4	1070						5					9		
		SN3830-1	1010						6					10		
		-2	980						7					EPH5716 A1		
		-3	1010						8					2		
		-4	1010						9					3		
		-5	1010						10					4		
		-6	940						B1					5		

MP 5/21/20

Katahdin Analytical Services, Inc.

GC Laboratory Instrument Runlog

Method (circle): MADEP EPH / FL PRO / TNRCC 1005 / DRO/TPH - 8015 Mod. / MEDEP 4.1.25

Instrument: GC12 (FID)

Amount Injected: 1 uL

Column ID: 498

Standard	Standard ID
ARO 200	HZ749
↓	HZ763

Date	Init.	Result File	Sample ID	Y/N	Analytical Workgroup	Method	Comments
030320	MB	CNC1008	ARO 200	N		AROA08 1A	
		009	100				
		010	50				
		011	10				
030420		012	1				
030520	MB	CNC1013	$MeCl_2$	N		A20A08 1A	
		014	TB	Y			
		015	IND	N			↓
		016	↓	N			↓
030620	MB	CNC1017	$MeCl_2$	N		AROA08 1A	
		018	TB	Y			
		019	ARO 200 -5	Y	WL273574		HZ763
		020	100 -4				100 → 200
		021	50 -3				50 → 200
		022	10 -2				100 → 200 20 → 200
		023	1 -1				10 20 → 200
030920		024	$MeCl_2$	N			
		025	TB	Y			
		026	IND -6	Y	WL273574		HZ761
030920	MB	CNC1027	ARO 50	Y		AROA08 1A	
		028	WL272565B-1	Y	WL273287		
		029	-2				
		030 MB 030920	-3				
		031	FC	Y			
		032	SN1586-1	Y			CON
		033	-2				
		034	-4				
		035	WL272665-1	Y			
		036	-2				
		037	-3				

Katahdin Analytical Services, Inc.

GC Laboratory Instrument Runlog

Method (circle): (MADEP EPH) / FL PRO / TNRCC 1005 / DRO/TPH - 8015 Mod. / MEDEP 4.1.25

Instrument: GC12 (FID)

Amount Injected: 1 uL

Column ID: 499

Standard	Standard ID
ALI 200	H2750
"	H2764

Date	Init.	Result File	Sample ID	Y/N	Analytical Workgroup	Method	Comments
030320	MAB	CNC2008	ALI 200	N		ALIB070A	
		009	100				
		010	50				
		011	16				
030420		012	1				
030520	MAB	CNC2013	HEXANE	N		ALIB070A	
		014	TB	Y			
		015	IND	N			"
		016	"	"			"
030620	MAB	CNC2017	HEXANE	N		ALIB070A	
		018	TB	Y			
		019	ALI 200 -11	Y	WL273574		H2764
		020	100 -10				100→200
		021	50 -9				50→200
		022	10 -8				100→200 20→200
		023	1 -7				16 20→200
030920		024	HEXANE	N			
		025	TB	Y			
		026	IND	Y	WL273574		H2762
030920	MAB	CNC2027	ALI 50 -12	Y		ALIB070A	
		028	WL272588-1	Y	WL273287		
		029	-2				
		030	-3				
		031	FC	Y			
		032	SN1586-1	Y			
		033	-2				
		034	-4				
		035	WL272665-1	Y			
		036	-2				
		037	-3				

Katahdin Analytical Services

GC Laboratory Instrument Runlog

Method (circle): MADEP EPH / FL PRO / TNRCC 1005 / DRO/TPH - 8015 Mod. / MEDEP 4.1.25

Instrument: GC12 (FID)

Amount Injected: 1 uL

Column ID: 498

Standard	Standard ID
AZO 50	H2773

Date	Init.	Result File	Sample ID	Y/N	Analytical Workgroup	Method	Comments
052220	MB	CNE1106	AZO 50 -1	Y	WG278377	AZOA08IA	DIBENZO↓
		107	MeCl2	N			
		108	3546 TEST B				
		109	L1				
		110	L2				
		111	L3				
		112	FC 051920	Y			
		113	WG278026-1	Y	WG278377		
		114	-2				
		115	-3	↓			
		116	SN3819-1	Y			CON
		117	SN3820-1	Y			CON
		118	-2				
		119	-3				
		120	-4	↓			↓
↓		121	SN3850-1	Y			
052320		122	-2				
		123	-3	↓			
		124	-4				ss ↓(0)
		125	-5	Y			
		126	-6	↓			
		127	MeCl2	N			
↓	↓	128	AZO 50 -2	Y	WG278377	↓	

Katahdin Analytical Services

GC Laboratory Instrument Runlog

Method (circle): MADEP EPH / FL PRO / TNRCC 1005 / DRO/TPH - 8015 Mod. / MEDEP 4.1.25

Instrument: GC12 (FID)

Amount Injected: 1 uL

Column ID: 499

Standard	Standard ID
ALI 50	H2774

Date	Init.	Result File	Sample ID	Y/N	Analytical Workgroup	Method	Comments
052220	~~AAB~~	CNE2106	ALI 50 -3	Y	WG278377	ALI2070A	
		107	HEXANE	N			
		108	3546 TEST B				
		109	L1				
		110	L2				
		111	L3				
		112	FC051920	Y			
		113	WL278026-1	Y	WG278377		
		114	-2				
		115	-3				
		116	SN3819-1	Y			
		117	SN3820-1	Y			
		118	-2				
		119	-3				
		120	-4				
		121	SN3830-1				∝ 1
052320		122	-2				∝ 1
		123	-3	Y			
		124	-4				∝ 1
		125	-5				∝ 1
		126	-6	Y			
		127	HEXANE	N			
		128	ALI 50 -4	Y	WG278377		

Data File: \\target_server\gg\chem\gcms-n.i\N052620.b\N8194.D
Report Date: 28-May-2020 19:30

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gcms-n.i\N052620.b\N8194.D
Lab Smp Id: SN3819-1
Inj Date : 27-MAY-2020 02:05
Operator : JCG Inst ID: gcms-n.i
Smp Info : SN3819-1
Misc Info : EPH
Comment :
Method : \\target_server\gg\chem\gcms-n.i\N052620.b\NSPSIM77.m
Meth Date : 27-May-2020 11:47 cgomez Quant Type: ISTD
Cal Date : 19-MAY-2020 18:10 Cal File: N8082.D
Als bottle: 26
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: eph_confirm.sub
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * Uf*(Vt/Vo*Vi)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	Correction Factor
Vt	0.00200	Final Volume (L)
Vo	1.070	Sample Volume (L)
Vi	1.000	Volume injected (uL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE
* 10 1,4-Dichlorobenzene-D4	152	7.535	7.525	(1.000)	38828	0.80000	(aQ)	
* 26 Naphthalene-D8	136	9.165	9.165	(1.000)	142520	0.80000	(a)	
27 Naphthalene	128	9.185	9.185	(1.002)	37998	0.21873	0.409	
33 2-Methylnaphthalene	142	10.110	10.110	(1.103)	9529	0.08574	0.160(a)	
* 47 Acenaphthene-D10	164	11.495	11.495	(1.000)	57181	0.80000	(a)	
* 65 Phenanthrene-D10	188	13.483	13.483	(1.000)	83144	0.80000	(a)	
$ 71 Pyrene-D10	212	15.405	15.394	(0.889)	995	0.01779	0.0332(aR)	
72 Pyrene	202	15.427	15.427	(0.890)	6875	0.07364	0.138(a)	
75 Benzo(a)anthracene	228	17.315	17.304	(0.999)	2474	0.05542	0.104(a)	
* 76 Chrysene-D12	240	17.326	17.315	(1.000)	27455	0.80000	(a)	
77 Chrysene	228	17.370	17.370	(1.003)	7704	0.14511	0.271(aQ)	
* 84 Perylene-D12	264	20.369	20.346	(1.000)	19083	0.80000	(a)	
86 Indeno(1,2,3-cd)pyrene	276	22.558	22.502	(1.302)	1455	0.07098	0.133(a)	

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
Q - Qualifier signal failed the ratio test.
R - Spike/Surrogate failed recovery limits.

Data File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\CNE1112.d
Report Date: 25-May-2020 12:27

Katahdin Analytical Services

RECOVERY REPORT

Client Name:
Client SDG: SDGa02536
Sample Matrix: LIQUID
Fraction: DRO
Lab Smp Id: FC
Level: LOW
Operator: AAB
Data Type: GC DATA
SampleType: FRACCHECK
SpikeList File: ARO-PAH.spk
Quant Type: ESTD
Sublist File: ind.sub
Method File: \\target_server\gg\chem\gc12.i\GC12NE22A1.b\AROA081A.m
Misc Info: WG277937,WG277644,WG273574-3

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
2 Naphthalene	90.0	65.6	72.91	40-140
3 2-Methylnaphthalen	90.0	68.3	75.89	40-140
5 Acenaphthylene	90.0	62.9	69.92	40-140
7 Acenaphthene	90.0	64.9	72.14	40-140
8 Fluorene	90.0	66.4	73.80	40-140
9 Phenanthrene	90.0	70.2	77.96	40-140
10 Anthracene	90.0	64.8	72.06	40-140
12 Fluoranthene	90.0	68.6	76.21	40-140
13 Pyrene	90.0	67.1	74.56	40-140
16 Benzo(a)Anthracene	90.0	70.1	77.87	40-140
17 Chrysene	90.0	66.5	73.93	40-140
18 Benzo(b)Fluoranthe	90.0	67.4	74.85	40-140
19 Benzo(k)Fluoranthe	90.0	66.1	73.49	40-140
20 Benzo(a)Pyrene	90.0	66.4	73.82	40-140
21 Indeno(1,2,3-cd)Py	90.0	66.3	73.70	40-140
22 Dibenzo(a,h)Anthra	90.0	59.7	66.32	40-140
23 Benzo(g,h,i)Peryle	90.0	66.2	73.51	40-140

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2112.d
Report Date: 25-May-2020 12:26

Katahdin Analytical Services

RECOVERY REPORT

Client Name:
Client SDG: SDGa02536
Sample Matrix: LIQUID
Fraction: DRO
Lab Smp Id: FC
Level: LOW
Operator: AAB
Data Type: GC DATA
SampleType: FRACCHECK
SpikeList File: FRACCHECK.spk
Quant Type: ESTD
Sublist File: IND.sub
Method File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\ALIB070A.m
Misc Info: WG277937,WG277644,WG273574-9

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
3 C-9	90.0	61.2	68.05	30-140
4 C-10	90.0	61.8	68.72	40-140
5 C-12	90.0	65.9	73.26	40-140
7 C-14	90.0	66.4	73.73	40-140
8 C-16	90.0	68.8	76.44	40-140
9 C-18	90.0	74.2	82.40	40-140
10 C-19	90.0	72.9	80.99	40-140
11 C-20	90.0	74.6	82.93	40-140
13 C-22	90.0	75.1	83.49	40-140
14 C-24	90.0	71.9	79.92	40-140
15 C-26	90.0	70.8	78.69	40-140
16 C-28	90.0	73.7	81.90	40-140
18 C-30	90.0	75.2	83.54	40-140
19 C-36	90.0	43.4	48.17	40-140

KATAHDIN ANALYTICAL SERVICES

% Breakthrough

Lab ID: WG278026-2
Data Files: CNE1114A and CNE2114A

	Naphthalene	2-Methylnaphthalene
Aromatic Conc.	59.3	65.1
Aliphatic Conc.	0.00	0.05
Total	59.3	65.2
% Breakthrough	0	0
% Limits	5	5

Lab ID: WG278026-3
Data Files: CNE1115A and CNE2115A

	Naphthalene	2-Methylnaphthalene
Aromatic Conc.	44.5	48.9
Aliphatic Conc.	0.00	0.00
Total	44.5	48.9
% Breakthrough	0	0
% Limits	5	5

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2114a.d
Report Date: 28-May-2020 19:37

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2114a.d
Lab Smp Id: WG278026-2 Client Smp ID: WG278026-LCS
Inj Date : 22-MAY-2020 18:03
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-2
Misc Info : WG278377,WG278026,WG273574-9
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\AROB044A.m
Meth Date : 15-Apr-2020 07:46 Quant Type: ESTD
Cal Date : 18-JUL-2019 04:45 Cal File: CMG2151.d
Als bottle: 1 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: breakthrough.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE

Data File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2115a.d
Report Date: 28-May-2020 19:37

Katahdin Analytical Services

Data file : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2115a.d
Lab Smp Id: WG278026-3 Client Smp ID: WG278026-LCSD
Inj Date : 22-MAY-2020 18:49
Operator : AAB Inst ID: gc12.i
Smp Info : WG278026-3
Misc Info : WG278377,WG278026,WG273574-9
Comment :
Method : \\target_server\gg\chem\gc12.i\GC12NE22B1.b\AROB044A.m
Meth Date : 15-Apr-2020 07:46 Quant Type: ESTD
Cal Date : 18-JUL-2019 04:45 Cal File: CMG2151.d
Als bottle: 1 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: breakthrough.sub
Subtraction File: \\target_server\gg\chem\gc12.i\GC12NE22B1.b\CNE2105.d
Target Version: 4.12
Processing Host: V200T1

Concentration Formula: Amt * DF * (Vt/Vo)*1000 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	0.00200	Final Volume (L)
Vo	1.000	Sample Volume (L)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/ml)	CONCENTRATIONS FINAL (ug/L)	REVIEW CODE

Shipping and Receiving Documents

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

8N3819

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lawhon, Jon K	Carrier Tracking No(s):	COC No: 680-611416.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jon.lawhon@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Katahdin Analytical Services		Accreditations Required (See note): Dept. of Defense ELAP - A2LA; DoD - ANAB		Job #: 680-183925-2
Address: 600 Technology Way, ,	Due Date Requested: 6/1/2020			
City: Scarborough	TAT Requested (days):			
State, Zip: ME, 04074				
Phone:	PO #:			
Email:	WO #:			
Project Name: JV,LTM, DCI Spring 2020	Project #: 68023801			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (MA VPH + BTEX)/ MA VPH	SUB (MA EPH + PAHs)/ MA EPH	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
LFM-99-O2B-SPR20 (680-183925-1)	5/15/20	11:10 Eastern		Water			X	X	5	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	5/18/2020 1709		[signature]	5.19.20 1020	KATS
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

06/05/2020

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: T.A. Savannah	KAS PM: MM	Sampled By: Client	
Project:	KIMS Entry By: JCB	Delivered By:	
KAS Work Order#: 320-38318-3520	KIMS Review By: MM	Received By: JCB	
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 5.19.20 1020	

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 4.1 — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?				✓	
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	
11. Bottleware Prepped on: n/a					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

Appendix C

Data Validation Reports

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ARCADIS U.S., Inc.
3109 West Martin Luther King Jr. Blvd, Suite 350
Tampa, FL 33607
ATTN: Mr. Nathan Mullens
nrmullens@seres-es.com

March 16, 2021

SUBJECT: Fort Devens, Data Validation

Dear Mr. Mullens,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on June 10, 2020. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #48291:

SDG #	Fraction
680-183899-1, 680-183912-1 680-183912-2/SN3820 680-183916-2/SN3818, 680-183925-1 680-183925-2/SN3819, 680-183926-1 680-183965-1, 680-184026-1 680-184098-1, 680-184215-1 680-184220-1, 680-183916-1	Volatiles, Chlorinated Pesticides, Metals, Wet Chemistry, Volatile Petroleum Hydrocarbons, Extractable Petroleum Hydrocarbons

The data validation was performed under Level II guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Former Fort Devens Army Installation – BRAC Legacy Sites, Devens, MA; October 2020
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

518 pages-ADV R1 (added M) Attachment 1

Stage 2B EQUIS EDD

LDC #48291 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		Pest. (8081B)		Metals (6010C /6020A /7470A)		(3) Metals (6010C/ 6020A)		(3)Diss Metals (6010C/ 6020A)		VPH (MADEP -VPH)		EPH (MADEP -EPH)		Alk. (2320B)		COD (410.4)		Cl,SO_4 (9056A)		CN- (9012B)		DOC (9060A)		NO_3 /NO_2-N (353.2)		TDS (2540C)							
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-183899-1	06/10/20	07/01/20	-	-	-	-	-	-	4	0	4	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
B	680-183912-1	06/10/20	07/01/20	-	-	4	0	4	0	-	-	-	-	-	-	-	-	4	0	4	0	4	0	4	0	-	-	4	0	4	0						
C	680-183912-2/SN3820	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	5	0	4	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
D	680-183916-2/SN3818	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	8	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
E	680-183925-1	06/10/20	07/01/20	-	-	1	0	1	0	-	-	-	-	-	-	-	-	1	0	1	0	1	0	1	0	-	-	1	0	1	0						
F	680-183925-2/SN3819	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	1	0	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
G	680-183926-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	7	0	-	-	-	-	7	0	-	-	7	0	-	-	7	0	-	-	-	-						
H	680-183965-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	10	0	-	-	-	-	10	0	-	-	10	0	-	-	10	0	-	-	-	-						
I	680-184026-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	17	0	-	-	-	-	17	0	-	-	17	0	-	-	17	0	-	-	-	-						
J	680-184098-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	12	0	-	-	-	-	12	0	-	-	12	0	-	-	12	0	-	-	-	-						
K	680-184215-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	15	0	-	-	-	-	15	0	-	-	15	0	-	-	15	0	-	-	-	-						
L	680-184220-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	8	0	-	-	-	-	8	0	-	-	8	0	-	-	8	0	-	-	-	-						
M	680-183916-1	06/17/20	07/09/20	6	0	-	-	-	-	5	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Total	T/PG			6	0	5	0	5	0	9	0	73	0	14	0	5	0	74	0	5	0	74	0	5	0	69	0	5	0	5	0	0	0	0	0	0	354

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

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Data Validation Report for SN3818

Facility:	Former Fort Devens, Long Term Monitoring
Event:	Seres-Arcadis JV, Long Term Monitoring, AOC 32/43A, Spring 2020
SDG:	SN3818
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020
Prime Contractor:	Seres-Arcadis JV
Project Manager:	Jennifer Singer
Contract Laboratory(ies):	Katahdin Analytical Services, Westbrook, ME
Data Review Contractor:	Laboratory Data Consultants, Inc.
Data Review Level:	2B
Primary Data Reviewer:	Kevin Kha, Environmental Scientist
Second Reviewer:	Pei Geng, Senior Scientist
Date Submitted:	June 29, 2020

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	MADEPVP
32M-01-13XBR-SPR20	SN3818-1	Water	Field Sample/N	X
32M-01-14XOB-SPR20	SN3818-2	Water	Field Sample/N	X
32M-01-17XBR-SPR20	SN3818-3	Water	Field Sample/N	X
32M-01-18XBR-SPR20	SN3818-4	Water	Field Sample/N	X
32M-01-18XBR-SPR20	SN3818-4DL	Water	Field Sample/N	X
AOC32-DUP01-SPR20	SN3818-5	Water	Field Duplicate/FD	X
AOC32-DUP01-SPR20	SN3818-5DL	Water	Field Duplicate/FD	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by Seres-Arcadis JV; analyses were performed by Katahdin Analytical Services, Westbrook, ME and were reported under sample delivery group (SDG) SN3818. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Extracted Internal Standard
- Field Duplicate RPD
- Lab Blank
- LCS Recovery
- LCS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 24 results (48.00%) out of the 50 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Data Reviewer Comment
MADEPVP	No additional comments; see Checklist for detail.

[redacted] June 29, 2020

[redacted]nmental Scientist, Laboratory Data Consultants, Inc.

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.



[redacted]Scientist, Laboratory Data Consultants, Inc. March 16, 2021

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method MADEPVP, Surrogate

Method performance for individual samples is demonstrated through spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. The sample itself may produce effects due to such factors as interferences and high concentrations of analytes. Summary forms were evaluated and compared to electronic data deliverables. Surrogate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
32M-01-14XOB-SPR20 (N)/ SN3818-2	2,5-Dibromotoluene	52.60	70 - 130	10 - 130	percent	J/UJ	I	
32M-01-17XBR-SPR20 (N)/ SN3818-3	2,5-Dibromotoluene	53.40	70 - 130	10 - 130	percent	J/UJ	I	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Surrogate for MADEPVP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-14XOB-SPR20	N	Benzene	3.00	2.00 U	2.00 UJ		ug/l	I
32M-01-14XOB-SPR20	N	C5-C8 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
32M-01-14XOB-SPR20	N	C9-C10 Volatile Petroleum Hydrocarbons, Aromatic	100	75.0 U	75.0 UJ		ug/l	I
32M-01-14XOB-SPR20	N	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
32M-01-14XOB-SPR20	N	Ethylbenzene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-14XOB-SPR20	N	m,p-Xylene	10.0	7.50 U	7.50 UJ		ug/l	I
32M-01-14XOB-SPR20	N	Methyl tert-butyl ether (MTBE)	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-14XOB-SPR20	N	Naphthalene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-14XOB-SPR20	N	o-Xylene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-14XOB-SPR20	N	Toluene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR-SPR20	N	Benzene	3.00	2.00 U	2.00 UJ		ug/l	I
32M-01-17XBR-SPR20	N	C5-C8 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
32M-01-17XBR-SPR20	N	C9-C10 Volatile Petroleum Hydrocarbons, Aromatic	100	75.0 U	75.0 UJ		ug/l	I
32M-01-17XBR-SPR20	N	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
32M-01-17XBR-SPR20	N	Ethylbenzene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR-SPR20	N	m,p-Xylene	10.0	7.50 U	7.50 UJ		ug/l	I
32M-01-17XBR-SPR20	N	Methyl tert-butyl ether (MTBE)	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR-SPR20	N	Naphthalene	5.00	3.80 U	3.80 UJ		ug/l	I

Qualified Results associated with the Surrogate for MADEPVP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-17XBR-SPR20	N	o-Xylene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR-SPR20	N	Toluene	5.00	3.80 U	3.80 UJ		ug/l	I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method MADEPVP, Surrogate

Method performance for individual samples is demonstrated through spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. The sample itself may produce effects due to such factors as interferences and high concentrations of analytes. Summary forms were evaluated and compared to electronic data deliverables. Surrogate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
32M-01-18XBR-SPR20 (STD)	2,5-Dibromotoluene	56.60	70 - 130	10 - 130	percent	J/UJ	I	
AOC32-DUP01-SPR20 (STD)	2,5-Dibromotoluene	64.60	70 - 130	10 - 130	percent	J/UJ	I	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Table of All Qualified Results

Test Method: MADEPVP	**Extraction Method: METHOD**							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-14XOB-SPR20	N	Benzene	3.00	2.00 U	2.00 UJ		ug/l	I
32M-01-14XOB-SPR20	N	C5-C8 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
32M-01-14XOB-SPR20	N	C9-C10 Volatile Petroleum Hydrocarbons, Aromatic	100	75.0 U	75.0 UJ		ug/l	I
32M-01-14XOB-SPR20	N	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
32M-01-14XOB-SPR20	N	Ethylbenzene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-14XOB-SPR20	N	m,p-Xylene	10.0	7.50 U	7.50 UJ		ug/l	I
32M-01-14XOB-SPR20	N	Methyl tert-butyl ether (MTBE)	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-14XOB-SPR20	N	Naphthalene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-14XOB-SPR20	N	o-Xylene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-14XOB-SPR20	N	Toluene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR-SPR20	N	Benzene	3.00	2.00 U	2.00 UJ		ug/l	I
32M-01-17XBR-SPR20	N	C5-C8 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
32M-01-17XBR-SPR20	N	C9-C10 Volatile Petroleum Hydrocarbons, Aromatic	100	75.0 U	75.0 UJ		ug/l	I
32M-01-17XBR-SPR20	N	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
32M-01-17XBR-SPR20	N	Ethylbenzene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR-SPR20	N	m,p-Xylene	10.0	7.50 U	7.50 UJ		ug/l	I
32M-01-17XBR-SPR20	N	Methyl tert-butyl ether (MTBE)	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR-SPR20	N	Naphthalene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR-SPR20	N	o-Xylene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR-SPR20	N	Toluene	5.00	3.80 U	3.80 UJ		ug/l	I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method MADEPVP

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
32M-01-18XBR-SPR20	N	C9-C10 Volatile Petroleum Hydrocarbons, Aromatic	400	1000	1000	1000 J	I
32M-01-18XBR-SPR20	N	Ethylbenzene	20.0	800	800	800 J	I
AOC32-DUP01-SPR20	FD	C9-C10 Volatile Petroleum Hydrocarbons, Aromatic	400	1000	1000	1000 J	I
AOC32-DUP01-SPR20	FD	Ethylbenzene	20.0	810	810	810 J	I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
I	Surrogate recovery outside project limits.
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
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.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: MADEPVP (Method for the Determination of Volatile Petroleum Hydrocarbons (VPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?		•		Due to surrogate %R, data in 4 samples were qualified as estimated (UJ). Surrogate recoveries were outside project acceptance limits in diluted samples 32M-01-18XBR-SPR20 and AOC32-DUP01-SPR20. The diluted C9-C10 aromatics and ethylbenzene results were qualified as estimated (J).
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		The C9-C10 Aromatics and Ethylbenzene results in samples 32M-01-18XBR-SPR20 and AOC32-DUP01-SPR20 were over the calibration range and the samples were subsequently diluted to be within calibration range. All reportable results were within calibration range. All data is acceptable as reported or as qualified during data validation.

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, AOC 32/43A, Spring 2020
Field Duplicates for SDG: SN3818

Location	Analysis
32M-01-18XBR	MADEPVP

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	SN3818-4 / SN3818-5	Benzene	1.30	1.20	3.00	8.00	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	SN3818-4 / SN3818-5	C5-C8 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	ND	ND	100	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	SN3818-4DL / SN3818-5DL	C9-C10 Volatile Petroleum Hydrocarbons, Aromatic	1000	1000	400	0.00	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	SN3818-4 / SN3818-5	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	700	700	100	0.00	30	OK	NA
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	SN3818-4DL / SN3818-5DL	Ethylbenzene	800	810	20.0	1.24	30	OK	NA
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	SN3818-4 / SN3818-5	m,p-Xylene	ND	ND	10.0	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	SN3818-4 / SN3818-5	Methyl tert-butyl ether (MTBE)	ND	ND	5.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	SN3818-4 / SN3818-5	Naphthalene	ND	ND	5.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	SN3818-4 / SN3818-5	o-Xylene	ND	ND	5.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	SN3818-4 / SN3818-5	Toluene	ND	ND	5.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ARCADIS U.S., Inc.
3109 West Martin Luther King Jr. Blvd, Suite 350
Tampa, FL 33607
ATTN: Mr. Nathan Mullens
nrmullens@seres-es.com

March 16, 2021

SUBJECT: Fort Devens, Data Validation

Dear Mr. Mullens,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on June 10, 2020. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #48291:

SDG #	Fraction
680-183899-1, 680-183912-1 680-183912-2/SN3820 680-183916-2/SN3818, 680-183925-1 680-183925-2/SN3819, 680-183926-1 680-183965-1, 680-184026-1 680-184098-1, 680-184215-1 680-184220-1, 680-183916-1	Volatiles, Chlorinated Pesticides, Metals, Wet Chemistry, Volatile Petroleum Hydrocarbons, Extractable Petroleum Hydrocarbons

The data validation was performed under Level II guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Former Fort Devens Army Installation – BRAC Legacy Sites, Devens, MA; October 2020
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

518 pages-ADV R1 (added M) Attachment 1

Stage 2B EQUIS EDD

LDC #48291 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		Pest. (8081B)		Metals (6010C /6020A /7470A)		(3) Metals (6010C/ 6020A)		(3)Diss Metals (6010C/ 6020A)		VPH (MADEP -VPH)		EPH (MADEP -EPH)		Alk. (2320B)		COD (410.4)		Cl,SO_4 (9056A)		CN- (9012B)		DOC (9060A)		NO_3 /NO_2-N (353.2)		TDS (2540C)							
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-183899-1	06/10/20	07/01/20	-	-	-	-	-	-	4	0	4	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
B	680-183912-1	06/10/20	07/01/20	-	-	4	0	4	0	-	-	-	-	-	-	-	-	4	0	4	0	4	0	4	0	-	-	4	0	4	0						
C	680-183912-2/SN3820	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	5	0	4	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
D	680-183916-2/SN3818	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	8	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
E	680-183925-1	06/10/20	07/01/20	-	-	1	0	1	0	-	-	-	-	-	-	-	-	1	0	1	0	1	0	1	0	-	-	1	0	1	0						
F	680-183925-2/SN3819	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	1	0	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
G	680-183926-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	7	0	-	-	-	-	7	0	-	-	7	0	-	-	7	0	-	-	-	-						
H	680-183965-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	10	0	-	-	-	-	10	0	-	-	10	0	-	-	10	0	-	-	-	-						
I	680-184026-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	17	0	-	-	-	-	17	0	-	-	17	0	-	-	17	0	-	-	-	-						
J	680-184098-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	12	0	-	-	-	-	12	0	-	-	12	0	-	-	12	0	-	-	-	-						
K	680-184215-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	15	0	-	-	-	-	15	0	-	-	15	0	-	-	15	0	-	-	-	-						
L	680-184220-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	8	0	-	-	-	-	8	0	-	-	8	0	-	-	8	0	-	-	-	-						
M	680-183916-1	06/17/20	07/09/20	6	0	-	-	-	-	5	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Total	T/PG			6	0	5	0	5	0	9	0	73	0	14	0	5	0	74	0	5	0	74	0	5	0	69	0	5	0	5	0	0	0	0	0	0	354

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

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Data Validation Report for 6801839161

Facility:	Former Fort Devens, Long Term Monitoring
Event:	Seres-Arcadis JV, Long Term Monitoring, AOC 32/43A, Spring 2020
SDG:	6801839161
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020
Prime Contractor:	Seres-Arcadis JV
Project Manager:	Jennifer Singer
Contract Laboratory(ies):	Eurofins Environment Testing TestAmerica, Savannah, GA
Data Review Contractor:	Laboratory Data Consultants, Inc.
Data Review Level:	2B
Primary Data Reviewer:	Kevin Kha, Environmental Scientist
Second Reviewer:	Pei Geng, Senior Scientist
Date Submitted:	July 01, 2020

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW6010C	SW6020A	SW8260B
32M-01-13XBR-SPR20	680-183916-1	Water	Field Sample/N	X	X	X
32M-01-14XOB-SPR20	680-183916-2	Water	Field Sample/N	X	X	X
32M-01-17XBR-SPR20	680-183916-3	Water	Field Sample/N	X	X	X
32M-01-18XBR-SPR20	680-183916-4	Water	Field Sample/N	X	X	X
AOC3243A-TB01-051420	680-183916-6	Water	Trip Blank/TB			X
AOC32-DUP01-SPR20	680-183916-5	Water	Field Duplicate/FD	X	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by Seres-Arcadis JV; analyses were performed by Eurofins Environment Testing TestAmerica, Savannah, GA and were reported under sample delivery group (SDG) 6801839161. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Calibration Blank
- Calibration Blank - Negative
- Continuing Calibration Verification
- Extracted Internal Standard
- Field Duplicate RPD
- Interference Check Sample A
- Interference Check Sample A - Negative
- Interference Check Sample AB
- Lab Blank
- LCS Recovery
- LCS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time
- Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 340 results (80.38%) out of the 423 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Data Reviewer Comment
SW6010C	No additional comments; see Checklist for detail.
SW6020A	No additional comments; see Checklist for detail.
SW8260B	No additional comments; see Checklist for detail.

[redacted] July 01, 2020

[redacted]mmental Scientist, Laboratory Data Consultants, Inc.

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

[redacted]Scientist, Laboratory Data Consultants, Inc. March 16, 2021

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method SW8260B, Continuing Calibration Verification

Compliance requirements for satisfactory continuing calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. Continuing calibration is performed to verify and evaluate instrument performance during sample analysis. Summary forms were evaluated against project acceptance criteria, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
CCV 680-620228/2 (CV)/ CCV 680-620228/2	Chloroethane	120.4	80 - 120	80 - 120	percent	J/None	V2	
CCV 680-620228/2 (CV)/ CCV 680-620228/2	1,1,1,2-Tetrachloroethane	120.6	80 - 120	80 - 120	percent	J/None	V2	
CCV 680-620228/2 (CV)/ CCV 680-620228/2	Vinyl acetate	133.0	80 - 120	80 - 120	percent	J/None	V2	
CCV 680-620228/2 (CV)/ CCV 680-620228/2	Bromomethane	498.0	80 - 120	80 - 120	percent	J/None	V2	
CCV 680-620330/3 (CV)/ CCV 680-620330/3	Bromomethane	410.0	80 - 120	80 - 120	percent	J/None	V2	
CCVC 680-620228/30 (CV)/ CCVC 680-620228/30	Bromomethane	350.0	50 - 150	50 - 150	percent	J/None	V2	
CCVC 680-620330/30 (CV)/ CCVC 680-620330/30	Bromomethane	432.0	50 - 150	50 - 150	percent	J/None	V2	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW8260B, Initial Calibration Verification

Compliance requirements for satisfactory continuing calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. Continuing calibration is performed to verify and evaluate instrument performance during sample analysis. Summary forms were evaluated against project acceptance criteria, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
ICV 680-619678/15 (IV)	Vinyl acetate	127.7	80 - 120	80 - 120	percent	J/None	V1	
ICV 680-619678/15 (IV)	Bromomethane	470.1	80 - 120	80 - 120	percent	J/None	V1	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW8260B, Lab Blank

The purpose of laboratory blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in laboratory blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
MB 680-620228/9 (LB)/ MB 680-620228/9	Bromomethane	3.830	< 2.5	< 5	ug/l	U/None	L	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW8260B, LCS Recovery

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCS 680-620228/3 (BS)/ LCS 680-620228/3	Bromomethane	460.0	53 - 141	10 - 141	percent	J/None	C	
LCS 680-620330/4 (BS)/ LCS 680-620330/4	Bromomethane	448.0	53 - 141	10 - 141	percent	J/None	C	
LCS 680-620372/3 (BS)/ LCS 680-620372/3	Bromomethane	556.0	53 - 141	10 - 141	percent	J/None	C	
LCSD 680-620228/4 (BD)/ LCSD 680-620228/4	Bromomethane	476.0	53 - 141	10 - 141	percent	J/None	C	
LCSD 680-620330/5 (BD)/ LCSD 680-620330/5	Bromomethane	468.0	53 - 141	10 - 141	percent	J/None	C	
LCSD 680-620372/4 (BD)/ LCSD 680-620372/4	Bromomethane	584.0	53 - 141	10 - 141	percent	J/None	C	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW8260B, Test Hold Time

Hold times are ascertained based on project requirements. Holding times were determined by comparing the chain of custody records with the dates of analysis found in the electronic data deliverable and laboratory summary forms. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
32M-01-13XBR-SPR20 (N)/ 680-183916-1		14.62	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL
32M-01-14XOB-SPR20 (N)/ 680-183916-2		14.53	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL
32M-01-17XBR-SPR20 (N)/ 680-183916-3		14.66	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL
32M-01-18XBR-SPR20 (N)/ 680-183916-4		14.70	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL
AOC3243A-TB01-051420 (TB)/ 680-183916-6		14.81	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL
AOC32-DUP01-SPR20 (FD)/ 680-183916-5		14.82	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-13XBR-SPR20	N	1,1,1,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,1,1-Trichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,1,2,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,1,2-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,1-Dichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,1-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,1-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,2,3-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,2,3-Trichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,2,4-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,2,4-Trimethylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,2-Dibromo-3-chloropropane	5.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,2-Dibromoethane (EDB)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,2-Dichlorobenzene	1.00	1.20 H	1.20 J	-	ug/l	H1
32M-01-13XBR-SPR20	N	1,2-Dichloroethane	1.00	1.00 U H M	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,2-Dichloroethene	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,3,5-Trimethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,3-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,3-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,4-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	2-Butanone (MEK)	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	2-Chlorotoluene	1.00	0.500 U H	0.500 UJ		ug/l	H1

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-13XBR-SPR20	N	2-Hexanone	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	4-Chlorotoluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Acetone	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Benzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Bromobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Bromochloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Bromodichloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Bromoform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Bromomethane	5.00	5.00 U Q H	5.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Carbon disulfide	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Carbon tetrachloride	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Chlorobenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Chloroethane	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Chloroform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Chloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	cis-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	cis-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Dibromochloromethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Dibromomethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Dichlorodifluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Ethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Hexachlorobutadiene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Isopropylbenzene (Cumene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	m,p-Xylene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Methyl tert-butyl ether (MTBE)	10.0	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Methylene chloride	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Naphthalene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	n-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	n-Propylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	o-Xylene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	sec-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Styrene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	tert-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Tetrachloroethene (PCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Toluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	trans-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	trans-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Trichloroethene (TCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-13XBR-SPR20	N	Trichlorofluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Vinyl acetate	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Vinyl chloride	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Xylenes, Total	2.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,1,1,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,1,1-Trichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,1,2,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,1,2-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,1-Dichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,1-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,1-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2,3-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2,3-Trichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2,4-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2,4-Trimethylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2-Dibromo-3-chloropropane	5.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2-Dibromoethane (EDB)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2-Dichloroethane	1.00	1.00 U H M	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2-Dichloroethene	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,3,5-Trimethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,3-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,3-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,4-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	2-Butanone (MEK)	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	2-Chlorotoluene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	2-Hexanone	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	4-Chlorotoluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Acetone	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Benzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Bromobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Bromochloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Bromodichloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Bromoform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Bromomethane	5.00	5.00 U Q H	5.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Carbon disulfide	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Carbon tetrachloride	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Chlorobenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-14XOB-SPR20	N	Chloroethane	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Chloroform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Chloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	cis-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	cis-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Dibromochloromethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Dibromomethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Dichlorodifluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Ethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Hexachlorobutadiene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Isopropylbenzene (Cumene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	m,p-Xylene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Methyl tert-butyl ether (MTBE)	10.0	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Methylene chloride	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Naphthalene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	n-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	n-Propylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	o-Xylene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	sec-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Styrene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	tert-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Tetrachloroethene (PCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Toluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	trans-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	trans-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Trichloroethene (TCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Trichlorofluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Vinyl acetate	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Vinyl chloride	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Xylenes, Total	2.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,1,1,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,1,1-Trichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,1,2,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,1,2-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,1-Dichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,1-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,1-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2,3-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2,3-Trichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2,4-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-17XBR-SPR20	N	1,2,4-Trimethylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2-Dibromo-3-chloropropane	5.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2-Dibromoethane (EDB)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2-Dichloroethane	1.00	1.00 U H M	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2-Dichloroethene	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,3,5-Trimethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,3-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,3-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,4-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	2-Butanone (MEK)	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	2-Chlorotoluene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	2-Hexanone	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	4-Chlorotoluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Acetone	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Benzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Bromobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Bromochloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Bromodichloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Bromoform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Bromomethane	5.00	5.00 U Q H	5.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Carbon disulfide	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Carbon tetrachloride	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Chlorobenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Chloroethane	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Chloroform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Chloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	cis-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	cis-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Dibromochloromethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Dibromomethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Dichlorodifluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Ethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Hexachlorobutadiene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Isopropylbenzene (Cumene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	m,p-Xylene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Methyl tert-butyl ether (MTBE)	10.0	0.500 U H	0.500 UJ		ug/l	H1

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-17XBR-SPR20	N	Methylene chloride	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Naphthalene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	n-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	n-Propylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	o-Xylene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	sec-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Styrene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	tert-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Tetrachloroethene (PCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Toluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	trans-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	trans-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Trichloroethene (TCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Trichlorofluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Vinyl acetate	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Vinyl chloride	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Xylenes, Total	2.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,1,1,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,1,1-Trichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,1,2,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,1,2-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,1-Dichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,1-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,1-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,2,3-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,2,3-Trichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,2,4-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,2,4-Trimethylbenzene	1.00	1.00 U M H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,2-Dibromo-3-chloropropane	5.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,2-Dibromoethane (EDB)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,2-Dichlorobenzene	1.00	1500 J H	1500 J	-	ug/l	H1
32M-01-18XBR-SPR20	N	1,2-Dichloroethane	1.00	1.00 U M H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,2-Dichloroethene	2.00	1.10 J H	1.10 J	-	ug/l	H1/TR
32M-01-18XBR-SPR20	N	1,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,3,5-Trimethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,3-Dichlorobenzene	1.00	250 J H	250 J	-	ug/l	H1
32M-01-18XBR-SPR20	N	1,3-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,4-Dichlorobenzene	1.00	170 H	170 J	-	ug/l	H1
32M-01-18XBR-SPR20	N	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	2-Butanone (MEK)	10.0	10.0 U H	10.0 UJ		ug/l	H1

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-18XBR-SPR20	N	2-Chlorotoluene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	2-Hexanone	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	4-Chlorotoluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Acetone	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Benzene	1.00	1.40 H	1.40 J	-	ug/l	H1
32M-01-18XBR-SPR20	N	Bromobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Bromochloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Bromodichloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Bromoform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Bromomethane	5.00	5.00 U H Q	5.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Carbon disulfide	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Carbon tetrachloride	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Chlorobenzene	1.00	970 J H	970 J	-	ug/l	H1
32M-01-18XBR-SPR20	N	Chloroethane	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Chloroform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Chloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	cis-1,2-Dichloroethene	1.00	1.10 H	1.10 J	-	ug/l	H1
32M-01-18XBR-SPR20	N	cis-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Dibromochloromethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Dibromomethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Dichlorodifluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Ethylbenzene	1.00	0.740 J H	0.740 J	-	ug/l	H1/TR
32M-01-18XBR-SPR20	N	Hexachlorobutadiene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Isopropylbenzene (Cumene)	1.00	1.70 H	1.70 J	-	ug/l	H1
32M-01-18XBR-SPR20	N	m,p-Xylene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Methyl tert-butyl ether (MTBE)	10.0	0.500 U H	0.500 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Methylene chloride	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Naphthalene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	n-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	n-Propylbenzene	1.00	1.60 H	1.60 J	-	ug/l	H1
32M-01-18XBR-SPR20	N	o-Xylene	1.00	0.390 J H	0.390 J	-	ug/l	H1/TR
32M-01-18XBR-SPR20	N	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	sec-Butylbenzene	1.00	0.820 J H	0.820 J	-	ug/l	H1/TR
32M-01-18XBR-SPR20	N	Styrene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	tert-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Tetrachloroethene (PCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Toluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	trans-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	trans-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-18XBR-SPR20	N	Trichloroethene (TCE)	1.00	1.10 H	1.10 J	-	ug/l	H1
32M-01-18XBR-SPR20	N	Trichlorofluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Vinyl acetate	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Vinyl chloride	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Xylenes, Total	2.00	0.390 J H	0.390 J	-	ug/l	H1/TR
AOC32-DUP01-SPR20	FD	1,1,1,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,1,1-Trichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,1,2,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,1,2-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,1-Dichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,1-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,1-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,2,3-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,2,3-Trichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,2,4-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,2,4-Trimethylbenzene	1.00	1.00 U M H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,2-Dibromo-3-chloropropane	5.00	2.00 U H	2.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,2-Dibromoethane (EDB)	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,2-Dichlorobenzene	1.00	1500 J H	1500 J	-	ug/l	H1
AOC32-DUP01-SPR20	FD	1,2-Dichloroethane	1.00	1.00 U M H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,2-Dichloroethene	2.00	1.20 J H	1.20 J	-	ug/l	H1/TR
AOC32-DUP01-SPR20	FD	1,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,3,5-Trimethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,3-Dichlorobenzene	1.00	250 J H	250 J	-	ug/l	H1
AOC32-DUP01-SPR20	FD	1,3-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,4-Dichlorobenzene	1.00	180 H	180 J	-	ug/l	H1
AOC32-DUP01-SPR20	FD	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	2-Butanone (MEK)	10.0	10.0 U H	10.0 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	2-Chlorotoluene	1.00	0.500 U H	0.500 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	2-Hexanone	10.0	5.00 U H	5.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	4-Chlorotoluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U H	5.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Acetone	10.0	10.0 U H	10.0 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Benzene	1.00	1.40 H	1.40 J	-	ug/l	H1
AOC32-DUP01-SPR20	FD	Bromobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Bromochloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Bromodichloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Bromoform	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Bromomethane	5.00	5.00 U H Q	5.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Carbon disulfide	2.00	2.00 U H	2.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Carbon tetrachloride	1.00	0.500 U H	0.500 UJ		ug/l	H1

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
AOC32-DUP01-SPR20	FD	Chlorobenzene	1.00	980 J H	980 J	-	ug/l	H1
AOC32-DUP01-SPR20	FD	Chloroethane	5.00	5.00 U H	5.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Chloroform	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Chloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	cis-1,2-Dichloroethene	1.00	1.20 H	1.20 J	-	ug/l	H1
AOC32-DUP01-SPR20	FD	cis-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Dibromochloromethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Dibromomethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Dichlorodifluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Ethylbenzene	1.00	0.770 J H	0.770 J	-	ug/l	H1/TR
AOC32-DUP01-SPR20	FD	Hexachlorobutadiene	5.00	5.00 U H	5.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Isopropylbenzene (Cumene)	1.00	1.70 H	1.70 J	-	ug/l	H1
AOC32-DUP01-SPR20	FD	m,p-Xylene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Methyl tert-butyl ether (MTBE)	10.0	0.500 U H	0.500 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Methylene chloride	5.00	5.00 U H	5.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Naphthalene	5.00	5.00 U H	5.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	n-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	n-Propylbenzene	1.00	1.60 H	1.60 J	-	ug/l	H1
AOC32-DUP01-SPR20	FD	o-Xylene	1.00	0.420 J H	0.420 J	-	ug/l	H1/TR
AOC32-DUP01-SPR20	FD	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	sec-Butylbenzene	1.00	0.860 J H	0.860 J	-	ug/l	H1/TR
AOC32-DUP01-SPR20	FD	Styrene	1.00	0.500 U H	0.500 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	tert-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Tetrachloroethene (PCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Toluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	trans-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	trans-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Trichloroethene (TCE)	1.00	1.20 H	1.20 J	-	ug/l	H1
AOC32-DUP01-SPR20	FD	Trichlorofluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Vinyl acetate	2.00	2.00 U H	2.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Vinyl chloride	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Xylenes, Total	2.00	0.420 J H	0.420 J	-	ug/l	H1/TR

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Table of All Qualified Results

Test Method: SW8260B	Extraction Method: SW5030B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-13XBR-SPR20	N	1,1,1,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,1,1-Trichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,1,2,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,1,2-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,1-Dichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,1-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,1-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,2,3-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,2,3-Trichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,2,4-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,2,4-Trimethylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,2-Dibromo-3-chloropropane	5.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,2-Dibromoethane (EDB)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,2-Dichlorobenzene	1.00	1.20 H	1.20 J	-	ug/l	H1
32M-01-13XBR-SPR20	N	1,2-Dichloroethane	1.00	1.00 U H M	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,2-Dichloroethene	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,3,5-Trimethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,3-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,3-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	1,4-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	2-Butanone (MEK)	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	2-Chlorotoluene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	2-Hexanone	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	4-Chlorotoluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Acetone	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Benzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Bromobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Bromochloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Bromodichloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Bromoform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Bromomethane	5.00	5.00 U Q H	5.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Carbon disulfide	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Carbon tetrachloride	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Chlorobenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Chloroethane	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Chloroform	1.00	1.00 U H	1.00 UJ		ug/l	H1

Table of All Qualified Results

Test Method: SW8260B	Extraction Method: SW5030B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-13XBR-SPR20	N	Chloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	cis-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	cis-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Dibromochloromethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Dibromomethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Dichlorodifluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Ethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Hexachlorobutadiene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Isopropylbenzene (Cumene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	m,p-Xylene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Methyl tert-butyl ether (MTBE)	10.0	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Methylene chloride	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Naphthalene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	n-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	n-Propylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	o-Xylene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	sec-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Styrene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	tert-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Tetrachloroethene (PCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Toluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	trans-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	trans-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Trichloroethene (TCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Trichlorofluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Vinyl acetate	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Vinyl chloride	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR-SPR20	N	Xylenes, Total	2.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,1,1,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,1,1-Trichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,1,2,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,1,2-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,1-Dichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,1-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,1-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2,3-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2,3-Trichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2,4-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2,4-Trimethylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1

Table of All Qualified Results

Test Method: SW8260B	Extraction Method: SW5030B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-14XOB-SPR20	N	1,2-Dibromo-3-chloropropane	5.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2-Dibromoethane (EDB)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2-Dichloroethane	1.00	1.00 U H M	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2-Dichloroethene	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,3,5-Trimethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,3-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,3-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	1,4-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	2-Butanone (MEK)	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	2-Chlorotoluene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	2-Hexanone	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	4-Chlorotoluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Acetone	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Benzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Bromobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Bromochloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Bromodichloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Bromoform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Bromomethane	5.00	5.00 U Q H	5.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Carbon disulfide	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Carbon tetrachloride	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Chlorobenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Chloroethane	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Chloroform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Chloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	cis-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	cis-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Dibromochloromethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Dibromomethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Dichlorodifluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Ethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Hexachlorobutadiene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Isopropylbenzene (Cumene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	m,p-Xylene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Methyl tert-butyl ether (MTBE)	10.0	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Methylene chloride	5.00	5.00 U H	5.00 UJ		ug/l	H1

Table of All Qualified Results

Test Method: SW8260B	Extraction Method: SW5030B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-14XOB-SPR20	N	Naphthalene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	n-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	n-Propylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	o-Xylene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	sec-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Styrene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	tert-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Tetrachloroethene (PCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Toluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	trans-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	trans-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Trichloroethene (TCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Trichlorofluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Vinyl acetate	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Vinyl chloride	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB-SPR20	N	Xylenes, Total	2.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,1,1,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,1,1-Trichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,1,2,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,1,2-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,1-Dichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,1-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,1-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2,3-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2,3-Trichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2,4-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2,4-Trimethylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2-Dibromo-3-chloropropane	5.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2-Dibromoethane (EDB)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2-Dichloroethane	1.00	1.00 U H M	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2-Dichloroethene	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,3,5-Trimethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,3-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,3-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	1,4-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	2-Butanone (MEK)	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	2-Chlorotoluene	1.00	0.500 U H	0.500 UJ		ug/l	H1

Table of All Qualified Results

Test Method: SW8260B	Extraction Method: SW5030B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-17XBR-SPR20	N	2-Hexanone	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	4-Chlorotoluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Acetone	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Benzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Bromobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Bromochloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Bromodichloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Bromoform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Bromomethane	5.00	5.00 U Q H	5.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Carbon disulfide	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Carbon tetrachloride	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Chlorobenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Chloroethane	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Chloroform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Chloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	cis-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	cis-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Dibromochloromethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Dibromomethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Dichlorodifluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Ethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Hexachlorobutadiene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Isopropylbenzene (Cumene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	m,p-Xylene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Methyl tert-butyl ether (MTBE)	10.0	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Methylene chloride	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Naphthalene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	n-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	n-Propylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	o-Xylene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	sec-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Styrene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	tert-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Tetrachloroethene (PCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Toluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	trans-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	trans-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Trichloroethene (TCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1

Table of All Qualified Results

Test Method: SW8260B	Extraction Method: SW5030B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-17XBR-SPR20	N	Trichlorofluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Vinyl acetate	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Vinyl chloride	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-17XBR-SPR20	N	Xylenes, Total	2.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,1,1,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,1,1-Trichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,1,2,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,1,2-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,1-Dichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,1-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,1-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,2,3-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,2,3-Trichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,2,4-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,2,4-Trimethylbenzene	1.00	1.00 U M H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,2-Dibromo-3-chloropropane	5.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,2-Dibromoethane (EDB)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,2-Dichlorobenzene	1.00	1500 J H	1500 J	-	ug/l	H1
32M-01-18XBR-SPR20	N	1,2-Dichloroethane	1.00	1.00 U M H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,2-Dichloroethene	2.00	1.10 J H	1.10 J	-	ug/l	H1/TR
32M-01-18XBR-SPR20	N	1,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,3,5-Trimethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,3-Dichlorobenzene	1.00	250 J H	250 J	-	ug/l	H1
32M-01-18XBR-SPR20	N	1,3-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	1,4-Dichlorobenzene	1.00	170 H	170 J	-	ug/l	H1
32M-01-18XBR-SPR20	N	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	2-Butanone (MEK)	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	2-Chlorotoluene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	2-Hexanone	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	4-Chlorotoluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Acetone	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Benzene	1.00	1.40 H	1.40 J	-	ug/l	H1
32M-01-18XBR-SPR20	N	Bromobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Bromochloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Bromodichloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Bromoform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Bromomethane	5.00	5.00 U H Q	5.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Carbon disulfide	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Carbon tetrachloride	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Chlorobenzene	1.00	970 J H	970 J	-	ug/l	H1

Table of All Qualified Results

Test Method: SW8260B	Extraction Method: SW5030B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-18XBR-SPR20	N	Chloroethane	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Chloroform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Chloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	cis-1,2-Dichloroethene	1.00	1.10 H	1.10 J	-	ug/l	H1
32M-01-18XBR-SPR20	N	cis-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Dibromochloromethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Dibromomethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Dichlorodifluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Ethylbenzene	1.00	0.740 J H	0.740 J	-	ug/l	H1/TR
32M-01-18XBR-SPR20	N	Hexachlorobutadiene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Isopropylbenzene (Cumene)	1.00	1.70 H	1.70 J	-	ug/l	H1
32M-01-18XBR-SPR20	N	m,p-Xylene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Methyl tert-butyl ether (MTBE)	10.0	0.500 U H	0.500 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Methylene chloride	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Naphthalene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	n-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	n-Propylbenzene	1.00	1.60 H	1.60 J	-	ug/l	H1
32M-01-18XBR-SPR20	N	o-Xylene	1.00	0.390 J H	0.390 J	-	ug/l	H1/TR
32M-01-18XBR-SPR20	N	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	sec-Butylbenzene	1.00	0.820 J H	0.820 J	-	ug/l	H1/TR
32M-01-18XBR-SPR20	N	Styrene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	tert-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Tetrachloroethene (PCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Toluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	trans-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	trans-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Trichloroethene (TCE)	1.00	1.10 H	1.10 J	-	ug/l	H1
32M-01-18XBR-SPR20	N	Trichlorofluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Vinyl acetate	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Vinyl chloride	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR-SPR20	N	Xylenes, Total	2.00	0.390 J H	0.390 J	-	ug/l	H1/TR
AOC32-DUP01-SPR20	FD	1,1,1,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,1,1-Trichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,1,2,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,1,2-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,1-Dichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,1-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,1-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,2,3-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,2,3-Trichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1

Table of All Qualified Results

Test Method: SW8260B	Extraction Method: SW5030B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
AOC32-DUP01-SPR20	FD	1,2,4-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,2,4-Trimethylbenzene	1.00	1.00 U M H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,2-Dibromo-3-chloropropane	5.00	2.00 U H	2.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,2-Dibromoethane (EDB)	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,2-Dichlorobenzene	1.00	1500 J H	1500 J	-	ug/l	H1
AOC32-DUP01-SPR20	FD	1,2-Dichloroethane	1.00	1.00 U M H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,2-Dichloroethene	2.00	1.20 J H	1.20 J	-	ug/l	H1/TR
AOC32-DUP01-SPR20	FD	1,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,3,5-Trimethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,3-Dichlorobenzene	1.00	250 J H	250 J	-	ug/l	H1
AOC32-DUP01-SPR20	FD	1,3-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	1,4-Dichlorobenzene	1.00	180 H	180 J	-	ug/l	H1
AOC32-DUP01-SPR20	FD	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	2-Butanone (MEK)	10.0	10.0 U H	10.0 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	2-Chlorotoluene	1.00	0.500 U H	0.500 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	2-Hexanone	10.0	5.00 U H	5.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	4-Chlorotoluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U H	5.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Acetone	10.0	10.0 U H	10.0 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Benzene	1.00	1.40 H	1.40 J	-	ug/l	H1
AOC32-DUP01-SPR20	FD	Bromobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Bromochloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Bromodichloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Bromoform	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Bromomethane	5.00	5.00 U H Q	5.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Carbon disulfide	2.00	2.00 U H	2.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Carbon tetrachloride	1.00	0.500 U H	0.500 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Chlorobenzene	1.00	980 J H	980 J	-	ug/l	H1
AOC32-DUP01-SPR20	FD	Chloroethane	5.00	5.00 U H	5.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Chloroform	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Chloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	cis-1,2-Dichloroethene	1.00	1.20 H	1.20 J	-	ug/l	H1
AOC32-DUP01-SPR20	FD	cis-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Dibromochloromethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Dibromomethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Dichlorodifluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Ethylbenzene	1.00	0.770 J H	0.770 J	-	ug/l	H1/TR
AOC32-DUP01-SPR20	FD	Hexachlorobutadiene	5.00	5.00 U H	5.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Isopropylbenzene (Cumene)	1.00	1.70 H	1.70 J	-	ug/l	H1
AOC32-DUP01-SPR20	FD	m,p-Xylene	1.00	1.00 U H	1.00 UJ		ug/l	H1

Table of All Qualified Results

Test Method: SW8260B	Extraction Method: SW5030B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
AOC32-DUP01-SPR20	FD	Methyl tert-butyl ether (MTBE)	10.0	0.500 U H	0.500 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Methylene chloride	5.00	5.00 U H	5.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Naphthalene	5.00	5.00 U H	5.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	n-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	n-Propylbenzene	1.00	1.60 H	1.60 J	-	ug/l	H1
AOC32-DUP01-SPR20	FD	o-Xylene	1.00	0.420 J H	0.420 J	-	ug/l	H1/TR
AOC32-DUP01-SPR20	FD	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	sec-Butylbenzene	1.00	0.860 J H	0.860 J	-	ug/l	H1/TR
AOC32-DUP01-SPR20	FD	Styrene	1.00	0.500 U H	0.500 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	tert-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Tetrachloroethene (PCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Toluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	trans-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	trans-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Trichloroethene (TCE)	1.00	1.20 H	1.20 J	-	ug/l	H1
AOC32-DUP01-SPR20	FD	Trichlorofluoromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Vinyl acetate	2.00	2.00 U H	2.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Vinyl chloride	1.00	1.00 U H	1.00 UJ		ug/l	H1
AOC32-DUP01-SPR20	FD	Xylenes, Total	2.00	0.420 J H	0.420 J	-	ug/l	H1/TR

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
32M-01-13XBR-SPR20	N	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-13XBR-SPR20	N	Vinyl acetate	2.00	2.00 U H	2.00 UJ	2.00 UJ	H1
32M-01-14XOB-SPR20	N	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-14XOB-SPR20	N	Vinyl acetate	2.00	2.00 U H	2.00 UJ	2.00 UJ	H1
32M-01-17XBR-SPR20	N	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-17XBR-SPR20	N	Vinyl acetate	2.00	2.00 U H	2.00 UJ	2.00 UJ	H1
32M-01-18XBR-SPR20	N	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-18XBR-SPR20	N	Vinyl acetate	2.00	2.00 U H	2.00 UJ	2.00 UJ	H1
AOC3243A-TB01-051420	TB	1,1,1,2-Tetrachloroethane	1.00	1.00 U Q	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	1,1,1-Trichloroethane	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	1,1,2,2-Tetrachloroethane	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	1,1,2-Trichloroethane	1.00	0.500 U	0.500 UJ	0.500 U	
AOC3243A-TB01-051420	TB	1,1-Dichloroethane	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	1,1-Dichloroethene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	1,1-Dichloropropene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	1,2,3-Trichlorobenzene	5.00	5.00 U	5.00 UJ	5.00 U	
AOC3243A-TB01-051420	TB	1,2,3-Trichloropropane	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	1,2,4-Trichlorobenzene	5.00	5.00 U	5.00 UJ	5.00 U	
AOC3243A-TB01-051420	TB	1,2,4-Trimethylbenzene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	1,2-Dibromo-3-chloropropane	5.00	2.00 U	2.00 UJ	2.00 U	
AOC3243A-TB01-051420	TB	1,2-Dibromoethane (EDB)	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	1,2-Dichlorobenzene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	1,2-Dichloroethane	1.00	1.00 U M	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	1,2-Dichloroethene	2.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	1,2-Dichloropropane	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	1,3,5-Trimethylbenzene	1.00	0.500 U	0.500 UJ	0.500 U	
AOC3243A-TB01-051420	TB	1,3-Dichlorobenzene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	1,3-Dichloropropane	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	1,4-Dichlorobenzene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	2,2-Dichloropropane	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	2-Butanone (MEK)	10.0	10.0 U	10.0 UJ	10.0 U	
AOC3243A-TB01-051420	TB	2-Chlorotoluene	1.00	0.500 U	0.500 UJ	0.500 U	
AOC3243A-TB01-051420	TB	2-Hexanone	10.0	5.00 U	5.00 UJ	5.00 U	
AOC3243A-TB01-051420	TB	4-Chlorotoluene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U	5.00 UJ	5.00 U	
AOC3243A-TB01-051420	TB	Acetone	10.0	10.0 U	10.0 UJ	10.0 U	
AOC3243A-TB01-051420	TB	Benzene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	Bromobenzene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	Bromochloromethane	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	Bromodichloromethane	1.00	1.00 U	1.00 UJ	1.00 U	

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
AOC3243A-TB01-051420	TB	Bromoform	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	Bromomethane	5.00	5.00 U Q	5.00 UJ	5.00 U	
AOC3243A-TB01-051420	TB	Carbon disulfide	2.00	2.00 U	2.00 UJ	2.00 U	
AOC3243A-TB01-051420	TB	Carbon tetrachloride	1.00	0.500 U	0.500 UJ	0.500 U	
AOC3243A-TB01-051420	TB	Chlorobenzene	1.00	0.500 U	0.500 UJ	0.500 U	
AOC3243A-TB01-051420	TB	Chloroethane	5.00	5.00 U	5.00 UJ	5.00 U	
AOC3243A-TB01-051420	TB	Chloroform	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	Chloromethane	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	cis-1,2-Dichloroethene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	cis-1,3-Dichloropropene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	Dibromochloromethane	1.00	0.500 U	0.500 UJ	0.500 U	
AOC3243A-TB01-051420	TB	Dibromomethane	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	Dichlorodifluoromethane	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	Ethylbenzene	1.00	0.500 U	0.500 UJ	0.500 U	
AOC3243A-TB01-051420	TB	Hexachlorobutadiene	5.00	5.00 U	5.00 UJ	5.00 U	
AOC3243A-TB01-051420	TB	Isopropylbenzene (Cumene)	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	m,p-Xylene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	Methyl tert-butyl ether (MTBE)	10.0	0.500 U	0.500 UJ	0.500 U	
AOC3243A-TB01-051420	TB	Methylene chloride	5.00	5.00 U	5.00 UJ	5.00 U	
AOC3243A-TB01-051420	TB	Naphthalene	5.00	5.00 U	5.00 UJ	5.00 U	
AOC3243A-TB01-051420	TB	n-Butylbenzene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	n-Propylbenzene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	o-Xylene	1.00	0.500 U	0.500 UJ	0.500 U	
AOC3243A-TB01-051420	TB	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	sec-Butylbenzene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	Styrene	1.00	0.500 U	0.500 UJ	0.500 U	
AOC3243A-TB01-051420	TB	tert-Butylbenzene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	Tetrachloroethene (PCE)	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	Toluene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	trans-1,2-Dichloroethene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	trans-1,3-Dichloropropene	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	Trichloroethene (TCE)	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	Trichlorofluoromethane	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	Vinyl acetate	2.00	2.00 U Q	2.00 UJ	2.00 U	
AOC3243A-TB01-051420	TB	Vinyl chloride	1.00	1.00 U	1.00 UJ	1.00 U	
AOC3243A-TB01-051420	TB	Xylenes, Total	2.00	0.500 U	0.500 UJ	0.500 U	
AOC32-DUP01-SPR20	FD	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
AOC32-DUP01-SPR20	FD	Vinyl acetate	2.00	2.00 U H	2.00 UJ	2.00 UJ	H1

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
C	LCS Recovery
H1	Test Hold Time
L	Lab Blank
TR	Trace Level Detect
V1	ICV
V2	CCV

Flag Code and Definitions

Flag	Definition
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.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW8260B (Volatile Organic Compounds by Capillary GC/MS)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?		•		Due to holding time, data in five samples were qualified as estimated detected (J) or estimated non-detected (UJ). Although ADR flagged sample AOC3243A-TB-01-051420 as outside of holding time, the sample is a trip blank and qualification was deemed unnecessary.
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?		•		Bromomethane and vinyl acetate were above the required criteria. The associated sample results were non-detected, therefore no qualification was required.
Were CCVs run at the required frequency and within acceptance criteria?		•		Several VOCs were above the required criteria. The associated sample results were non-detected, therefore no qualification was required.
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were field blanks (EBs or FBs) submitted with these samples?	•			
Were target analytes reported in the field blank(s) less than MDL?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?		•		Several bromomethane recoveries were above the project acceptance limits. The associated sample results were non-detected, therefore no qualification was required.
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported or as qualified during data validation.

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, AOC 32/43A, Spring 2020
Field Duplicates for SDG: 6801839161

Location	Analysis
32M-01-18XBR	SW6010C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Iron (TOTAL)	490	500	50.0	2.02	30	OK	NA
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Manganese (TOTAL)	25000	25000	10.0	0.00	30	OK	NA

Location	Analysis
32M-01-18XBR	SW6020A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Arsenic (TOTAL)	8.80	8.20	3.00	7.06	30	NA	OK

Location	Analysis
32M-01-18XBR	SW8260B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,1,1,2-Tetrachloroethane	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,1,1-Trichloroethane	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,1,2,2-Tetrachloroethane	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,1,2-Trichloroethane	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,1-Dichloroethane	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,1-Dichloroethene	ND	ND	1.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, AOC 32/43A, Spring 2020
Field Duplicates for SDG: 6801839161

Location	Analysis
32M-01-18XBR	SW8260B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,1-Dichloropropene	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,2,3-Trichlorobenzene	ND	ND	5.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,2,3-Trichloropropane	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,2,4-Trichlorobenzene	ND	ND	5.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,2,4-Trimethylbenzene	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,2-Dibromo-3-chloropropane	ND	ND	5.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,2-Dibromoethane (EDB)	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,2-Dichlorobenzene	1500	1500	1.00	0.00	30	OK	NA
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,2-Dichloroethane	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,2-Dichloroethene	1.10	1.20	2.00	8.70	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,2-Dichloropropane	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,3,5-Trimethylbenzene	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,3-Dichlorobenzene	250	250	1.00	0.00	30	OK	NA
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,3-Dichloropropane	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	1,4-Dichlorobenzene	170	180	1.00	5.71	30	OK	NA

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RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, AOC 32/43A, Spring 2020
Field Duplicates for SDG: 6801839161

Location	Analysis
32M-01-18XBR	SW8260B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	2,2-Dichloropropane	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	2-Butanone (MEK)	ND	ND	10.0	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	2-Chlorotoluene	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	2-Hexanone	ND	ND	10.0	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	4-Chlorotoluene	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	4-Methyl-2-pentanone (MIBK)	ND	ND	10.0	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Acetone	ND	ND	10.0	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Benzene	1.40	1.40	1.00	0.00	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Bromobenzene	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Bromochloromethane	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Bromodichloromethane	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Bromoform	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Bromomethane	ND	ND	5.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Carbon disulfide	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Carbon tetrachloride	ND	ND	1.00	NA	30	NA	OK

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RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, AOC 32/43A, Spring 2020
Field Duplicates for SDG: 6801839161

Location	Analysis
32M-01-18XBR	SW8260B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Chlorobenzene	970	980	1.00	1.03	30	OK	NA
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Chloroethane	ND	ND	5.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Chloroform	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Chloromethane	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	cis-1,2-Dichloroethene	1.10	1.20	1.00	8.70	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	cis-1,3-Dichloropropene	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Dibromochloromethane	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Dibromomethane	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Dichlorodifluoromethane	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Ethylbenzene	0.740	0.770	1.00	3.97	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Hexachlorobutadiene	ND	ND	5.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Isopropylbenzene (Cumene)	1.70	1.70	1.00	0.00	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	m,p-Xylene	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Methyl tert-butyl ether (MTBE)	ND	ND	10.0	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Methylene chloride	ND	ND	5.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, AOC 32/43A, Spring 2020
Field Duplicates for SDG: 6801839161

Location	Analysis
32M-01-18XBR	SW8260B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	n-Butylbenzene	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	n-Propylbenzene	1.60	1.60	1.00	0.00	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Naphthalene	ND	ND	5.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	o-Xylene	0.390	0.420	1.00	7.41	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	p-Cymene (p-Isopropyltoluene)	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	sec-Butylbenzene	0.820	0.860	1.00	4.76	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Styrene	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	tert-Butylbenzene	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Tetrachloroethene (PCE)	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Toluene	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	trans-1,2-Dichloroethene	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	trans-1,3-Dichloropropene	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Trichloroethene (TCE)	1.10	1.20	1.00	8.70	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Trichlorofluoromethane	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Vinyl acetate	ND	ND	2.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, AOC 32/43A, Spring 2020
Field Duplicates for SDG: 6801839161

Location	Analysis
32M-01-18XBR	SW8260B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Vinyl chloride	ND	ND	1.00	NA	30	NA	OK
32M-01-18XBR-SPR20 / AOC32-DUP01-SPR20	680-183916-4 / 680-183916-5	Xylenes, Total	0.390	0.420	2.00	7.41	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ARCADIS U.S., Inc.
3109 West Martin Luther King Jr. Blvd, Suite 350
Tampa, FL 33607
ATTN: Mr. Nathan Mullens
nrmullens@seres-es.com

February 19, 2021

SUBJECT: Fort Devens, Data Validation

Dear Mr. Mullens,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on November 20, 2020. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #49749:

SDG #	Fraction
680-190731-1/SN9121 680-190888-1/SN9122	Metals, Alkalinity, Volatile Petroleum Hydrocarbons

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Former Fort Devens Army Installation – BRAC Legacy Sites, Devens, MA; October 2020
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

340 pages-ADV 2 WEEK TAT R1 (added VPH) Attachment 1

Stage 2B EQUIS EDD

LDC #49749 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Metals (6010C/ 6020A)		VPH (MADEP VPH)		Alk. (2320B)																													
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-190731-1/SN9121	11/20/20	12/8/20	6	0	8	0	6	0																												
B	680-190888-1/SN9122	11/20/20	12/8/20	3	0	3	0	3	0																												
Total	J/PG			9	0	11	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

L:\Arcadis\Fort Devens\49749ST.wpd

Data Validation Report for 6801907311

Facility:	Former Fort Devens, Long Term Monitoring
Event:	Seres-Arcadis JV, Long Term Monitoring, AOC 43G, Fall 2020
SDG:	6801907311
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020
Prime Contractor:	Seres-Arcadis JV
Project Manager:	Jennifer Singer
Contract Laboratory(ies):	Eurofins Environment Testing TestAmerica, Arvada, CO
Data Review Contractor:	Laboratory Data Consultants, Inc.
Data Review Level:	2B
Primary Data Reviewer:	Kevin Kha, Environmental Scientist
Second Reviewer:	Pei Geng, Senior Scientist
Date Submitted:	December 07, 2020

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	A2320B	SW6010C	SW6020A
AAFES-2-FAL20	680-190731-1	Water	Field Sample/N	X	X	X
AAFES-7-FAL20	680-190731-2	Water	Field Sample/N	X	X	X
AOC43G-DUP01-FAL20	680-190731-3	Water	Field Duplicate/FD	X	X	X
XGM-93-02X-FAL20	680-190731-4	Water	Field Sample/N	X	X	X
XGM-94-04X-FAL20	680-190731-5	Water	Field Sample/N	X	X	X
XGM-94-06X-FAL20	680-190731-6	Water	Field Sample/N	X	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by Seres-Arcadis JV; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 6801907311. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Calibration Blank
- Calibration Blank - Negative
- Continuing Calibration Verification
- Field Duplicate RPD
- Interference Check Sample A
- Interference Check Sample A - Negative
- Interference Check Sample AB
- Lab Blank
- Lab Replicate RPD
- LCS Recovery
- Prep Hold Time
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 1 results (4.17%) out of the 24 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Data Reviewer Comment
A2320B	No additional comments; see Checklist for detail.
SW6020A	No additional comments; see Checklist for detail.
SW6010C	No additional comments; see Checklist for detail.

[redacted]

December 07, 2020

[redacted]mmental Scientist, Laboratory Data Consultants, Inc.

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

[redacted]Scientist, Laboratory Data Consultants, Inc.

March 16, 2021

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method SW6010C, Total, Calibration Blank

The purpose of calibration blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in calibration blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
CCB680642970114 (CB)/ CCB680642970114	Iron	25.90	< 17	< 50	ug/l	U/None	B2	
CCB680642970126 (CB)/ CCB680642970126	Iron	17.00	< 17	< 50	ug/l	U/None	B2	
CCB680642970138 (CB)/ CCB680642970138	Iron	23.30	< 17	< 50	ug/l	U/None	B2	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Calibration Blank for SW6010C, Total

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
XGM-94-04X-FAL20	N	Iron	50.0	41.0 J	50.0 U		ug/l	B2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Table of All Qualified Results

Test Method: SW6010C	**Extraction Method: Total**							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
XGM-94-04X-FAL20	N	Iron	50.0	41.0 J	50.0 U		ug/l	B2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Results with Modified Qualifiers

No qualifiers associated with this sample delivery group were modified manually.

Reason Code Definitions

Code	Definition
B2	CCB
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
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.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: A2320B (Alkalinity by Titrimetric Method)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were target analytes reported in the field blank(s) less than MDL?			•	A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		Due to calibration blank contamination, one iron result was qualified as non-detected (U).
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS/LCSD was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported or as qualified during data validation.

Data Validation Report for 6801907311

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were target analytes reported in the field blank(s) less than MDL?			•	A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, AOC 43G, Fall 2020
Field Duplicates for SDG: 6801907311

Location	Analysis
XGM-94-06X	A2320B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
XGM-94-06X-FAL20 / AOC43G-DUP01-FAL20	680-190731-6 / 680-190731-3	Alkalinity, Total (as CaCO3)	130	130	10.0	0.00	30	OK	NA

Location	Analysis
XGM-94-06X	SW6010C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
XGM-94-06X-FAL20 / AOC43G-DUP01-FAL20	680-190731-6 / 680-190731-3	Iron (TOTAL)	1600	2000	50.0	22.2	30	OK	NA
XGM-94-06X-FAL20 / AOC43G-DUP01-FAL20	680-190731-6 / 680-190731-3	Manganese (TOTAL)	1800	2200	10.0	20.0	30	OK	NA

Location	Analysis
XGM-94-06X	SW6020A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
XGM-94-06X-FAL20 / AOC43G-DUP01-FAL20	680-190731-6 / 680-190731-3	Arsenic (TOTAL)	2.60	4.70	3.00	57.5	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ARCADIS U.S., Inc.
3109 West Martin Luther King Jr. Blvd, Suite 350
Tampa, FL 33607
ATTN: Mr. Nathan Mullens
nrmullens@seres-es.com

February 19, 2021

SUBJECT: Fort Devens, Data Validation

Dear Mr. Mullens,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on November 20, 2020. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #49749:

SDG #	Fraction
680-190731-1/SN9121 680-190888-1/SN9122	Metals, Alkalinity, Volatile Petroleum Hydrocarbons

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Former Fort Devens Army Installation – BRAC Legacy Sites, Devens, MA; October 2020
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

340 pages-ADV 2 WEEK TAT R1 (added VPH) Attachment 1

Stage 2B EQUIS EDD

LDC #49749 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Metals (6010C/ 6020A)		VPH (MADEP VPH)		Alk. (2320B)																													
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-190731-1/SN9121	11/20/20	12/8/20	6	0	8	0	6	0																												
B	680-190888-1/SN9122	11/20/20	12/8/20	3	0	3	0	3	0																												
Total	J/PG			9	0	11	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

L:\Arcadis\Fort Devens\49749ST.wpd

Data Validation Report for SN9121

Facility:	Former Fort Devens, Long Term Monitoring
Event:	Seres-Arcadis JV, Long Term Monitoring, AOC 43G, Fall 2020
SDG:	SN9121
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020
Prime Contractor:	Seres-Arcadis JV
Project Manager:	Jennifer Singer
Contract Laboratory(ies):	Katahdin Analytical Services, Westbrook, ME
Data Review Contractor:	Laboratory Data Consultants, Inc.
Data Review Level:	2B
Primary Data Reviewer:	Kevin Kha, Environmental Scientist
Second Reviewer:	Pei Geng, Senior Scientist
Date Submitted:	December 07, 2020

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	MADEPVP
AAFES-2-FAL20	SN9121-1	Water	Field Sample/N	X
AAFES-2-FAL20	SN9121-1DL	Water	Field Sample/N	X
AAFES-7-FAL20	SN9121-2	Water	Field Sample/N	X
AOC43G-DUP01-FAL20	SN9121-3	Water	Field Duplicate/FD	X
AOC43G-TB1-FAL20	SN9121-7	Water	Trip Blank/TB	X
XGM-93-02X-FAL20	SN9121-4	Water	Field Sample/N	X
XGM-94-04X-FAL20	SN9121-5	Water	Field Sample/N	X
XGM-94-06X-FAL20	SN9121-6	Water	Field Sample/N	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by Seres-Arcadis JV; analyses were performed by Katahdin Analytical Services, Westbrook, ME and were reported under sample delivery group (SDG) SN9121. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Extracted Internal Standard
- Field Duplicate RPD
- Lab Blank
- LCS Recovery
- LCS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time
- Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 5 results (7.14%) out of the 70 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Data Reviewer Comment
MADEPVP	No additional comments; see Checklist for detail.

[redacted] December 07, 2020

[redacted]nmental Scientist, Laboratory Data Consultants, Inc.

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

[redacted]Scientist, Laboratory Data Consultants, Inc. March 16, 2021

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method MADEPVP, Initial Calibration Verification

Compliance requirements for satisfactory continuing calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. Continuing calibration is performed to verify and evaluate instrument performance during sample analysis. Summary forms were evaluated against project acceptance criteria, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
2NK10066 (IV)	Naphthalene	124.3	80 - 120	80 - 120	percent	J/None	V1	
2NK10066 (IV)	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	134.2	80 - 120	80 - 120	percent	J/None	V1	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Initial Calibration Verification for MADEPVP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
AAFES-2-FAL20	N	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	400	450	450 J	+	ug/l	V1
AAFES-2-FAL20	N	Naphthalene	5.00	8.60	8.60 J	+	ug/l	V1
XGM-93-02X-FAL20	N	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	64.0 J	64.0 J	+	ug/l	TR/V1

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method MADEPVP, Trip Blank

The purpose of trip blanks is to determine the existence and magnitude of cross-contamination problems resulting from the shipping of samples. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in trip blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
AOC43G-TB1-FAL20 (TB)/ SN9121-7	Methyl tert-butyl ether (MTBE)	0.7100	< 0.31	< 5	ug/l	U/None	T	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Trip Blank for MADEPVP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
AOC43G-DUP01-FAL20	FD	Methyl tert-butyl ether (MTBE)	5.00	0.900 J	5.00 U		ug/l	T
XGM-94-06X-FAL20	N	Methyl tert-butyl ether (MTBE)	5.00	0.950 J	5.00 U		ug/l	T

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Table of All Qualified Results

Test Method: MADEPVP	**Extraction Method: METHOD**							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
AAFES-2-FAL20	N	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	400	450	450 J	+	ug/l	V1
AAFES-2-FAL20	N	Naphthalene	5.00	8.60	8.60 J	+	ug/l	V1
AOC43G-DUP01-FAL20	FD	Methyl tert-butyl ether (MTBE)	5.00	0.900 J	5.00 U		ug/l	T
XGM-93-02X-FAL20	N	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	64.0 J	64.0 J	+	ug/l	TR/V1
XGM-94-06X-FAL20	N	Methyl tert-butyl ether (MTBE)	5.00	0.950 J	5.00 U		ug/l	T

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method MADEPVP

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
AAFES-2-FAL20	N	Naphthalene	5.00	8.60	8.60	8.60 J	V1
AAFES-2-FAL20	N	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	400	450	450	450 J	V1
XGM-93-02X-FAL20	N	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	64.0 J	64.0 J	64.0 J	TR/V1

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
T	Trip Blank
TR	Trace Level Detect
V1	ICV

Flag Code and Definitions

Flag	Definition
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.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: MADEPVP (Method for the Determination of Volatile Petroleum Hydrocarbons (VPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?		•		Due to ICV %R above criteria, several naphthalene and C9-C12 aliphatics results were qualified as detected estimated (J) with a high bias (+).
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?	•			
Were target analytes reported in the field blank(s) less than MDL?	•			Due to trip blank contamination, two MTBE results were qualified as non-detected (U).
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD was not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported or as qualified during data validation. Sample AAFES-2-FAL20 initially reported C5-C8 aliphatics, C9-C12 aliphatics, and C9-C10 aromatics above the calibration range but was subsequently diluted. The diluted result was within the calibration range and should be considered the reportable result.

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, AOC 43G, Fall 2020
Field Duplicates for SDG: SN9121

Location	Analysis
XGM-94-06X	MADEPVP

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
XGM-94-06X-FAL20 / AOC43G-DUP01-FAL20	SN9121-6 / SN9121-3	Benzene	ND	ND	3.00	NA	30	NA	OK
XGM-94-06X-FAL20 / AOC43G-DUP01-FAL20	SN9121-6 / SN9121-3	C5-C8 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	ND	ND	100	NA	30	NA	OK
XGM-94-06X-FAL20 / AOC43G-DUP01-FAL20	SN9121-6 / SN9121-3	C9-C10 Volatile Petroleum Hydrocarbons, Aromatic	ND	ND	100	NA	30	NA	OK
XGM-94-06X-FAL20 / AOC43G-DUP01-FAL20	SN9121-6 / SN9121-3	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	ND	ND	100	NA	30	NA	OK
XGM-94-06X-FAL20 / AOC43G-DUP01-FAL20	SN9121-6 / SN9121-3	Ethylbenzene	ND	ND	5.00	NA	30	NA	OK
XGM-94-06X-FAL20 / AOC43G-DUP01-FAL20	SN9121-6 / SN9121-3	m,p-Xylene	ND	ND	10.0	NA	30	NA	OK
XGM-94-06X-FAL20 / AOC43G-DUP01-FAL20	SN9121-6 / SN9121-3	Methyl tert-butyl ether (MTBE)	ND	ND	5.00	NA	30	NA	OK
XGM-94-06X-FAL20 / AOC43G-DUP01-FAL20	SN9121-6 / SN9121-3	Naphthalene	ND	ND	5.00	NA	30	NA	OK
XGM-94-06X-FAL20 / AOC43G-DUP01-FAL20	SN9121-6 / SN9121-3	o-Xylene	ND	ND	5.00	NA	30	NA	OK
XGM-94-06X-FAL20 / AOC43G-DUP01-FAL20	SN9121-6 / SN9121-3	Toluene	ND	0.360	5.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

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ARCADIS U.S., Inc.
3109 West Martin Luther King Jr. Blvd, Suite 350
Tampa, FL 33607
ATTN: Mr. Nathan Mullens
nrmullens@seres-es.com

February 19, 2021

SUBJECT: Fort Devens, Data Validation

Dear Mr. Mullens,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on November 20, 2020. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #49749:

SDG #	Fraction
680-190731-1/SN9121 680-190888-1/SN9122	Metals, Alkalinity, Volatile Petroleum Hydrocarbons

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Former Fort Devens Army Installation – BRAC Legacy Sites, Devens, MA; October 2020
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

340 pages-ADV 2 WEEK TAT R1 (added VPH) Attachment 1

Stage 2B EQUIS EDD

LDC #49749 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Metals (6010C/ 6020A)		VPH (MADEP VPH)		Alk. (2320B)																													
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-190731-1/SN9121	11/20/20	12/8/20	6	0	8	0	6	0																												
B	680-190888-1/SN9122	11/20/20	12/8/20	3	0	3	0	3	0																												
Total	J/PG			9	0	11	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

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Data Validation Report for 6801908881

Facility:	Former Fort Devens, Long Term Monitoring
Event:	Seres-Arcadis JV, Long Term Monitoring, AOC 43G, Fall 2020
SDG:	6801908881
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020
Prime Contractor:	Seres-Arcadis JV
Project Manager:	Jennifer Singer
Contract Laboratory(ies):	Eurofins Environment Testing TestAmerica, Arvada, CO
Data Review Contractor:	Laboratory Data Consultants, Inc.
Data Review Level:	2B
Primary Data Reviewer:	Kevin Kha, Environmental Scientist
Second Reviewer:	Pei Geng, Senior Scientist
Date Submitted:	December 07, 2020

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	A2320B	SW6010C	SW6020A
XGM-94-07X-FAL20	680-190888-1	Water	Field Sample/N	X	X	X
XGM-94-08X-FAL20	680-190888-2	Water	Field Sample/N	X	X	X
XGM-97-12X-FAL20	680-190888-3	Water	Field Sample/N	X	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by Seres-Arcadis JV; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 6801908881. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Calibration Blank
- Calibration Blank - Negative
- Continuing Calibration Verification
- Interference Check Sample A
- Interference Check Sample A - Negative
- Interference Check Sample AB
- Lab Blank
- LCS Recovery
- MS Recovery
- MS RPD
- Prep Hold Time
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 0 results (0.00%) out of the 12 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Data Reviewer Comment
SW6020A	No additional comments; see Checklist for detail.
SW6010C	No additional comments; see Checklist for detail.
A2320B	No additional comments; see Checklist for detail.

[redacted] December 07, 2020

[redacted]mmental Scientist, Laboratory Data Consultants, Inc.

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

[redacted]Scientist, Laboratory Data Consultants, Inc. March 16, 2021

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method SW6010C, Total, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
XGM-94-07X-FAL20 (MS)/ 680-190888-1	Manganese	132.5	90 - 114	10 - 125	percent	J/None	M	Spike amount Insignificant
XGM-94-07X-FAL20 (SD)/ 680-190888-1	Manganese	82.50	90 - 114	10 - 125	percent	J/UJ	M	Spike amount Insignificant

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Qualified Results

No results associated with this sample delivery group required qualification.

Results with Modified Qualifiers

No qualifiers associated with this sample delivery group were modified manually.

Reason Code Definitions

Code	Definition
M	MS Recovery
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
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.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: A2320B (Alkalinity by Titrimetric Method)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were target analytes reported in the field blank(s) less than MDL?			•	A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed,
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Data Validation Report for 6801908881

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?	•			
Were MS/MSD recoveries within project acceptance limits?		•		Although manganese was not within criteria, no data were qualified since sample concentrations were significantly greater (>4x) than the spike amount.
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Data Validation Report for 6801908881

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were target analytes reported in the field blank(s) less than MDL?			•	A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?	•			
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

LABORATORY DATA CONSULTANTS, INC.
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ARCADIS U.S., Inc.
3109 West Martin Luther King Jr. Blvd, Suite 350
Tampa, FL 33607
ATTN: Mr. Nathan Mullens
nrmullens@seres-es.com

February 19, 2021

SUBJECT: Fort Devens, Data Validation

Dear Mr. Mullens,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on November 20, 2020. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #49749:

SDG #	Fraction
680-190731-1/SN9121 680-190888-1/SN9122	Metals, Alkalinity, Volatile Petroleum Hydrocarbons

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Former Fort Devens Army Installation – BRAC Legacy Sites, Devens, MA; October 2020
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

340 pages-ADV 2 WEEK TAT R1 (added VPH) Attachment 1

Stage 2B EQUIS EDD

LDC #49749 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Metals (6010C/ 6020A)		VPH (MADEP VPH)		Alk. (2320B)																													
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-190731-1/SN9121	11/20/20	12/8/20	6	0	8	0	6	0																												
B	680-190888-1/SN9122	11/20/20	12/8/20	3	0	3	0	3	0																												
Total	J/PG			9	0	11	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

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Data Validation Report for SN9122

Facility:	Former Fort Devens, Long Term Monitoring
Event:	Seres-Arcadis JV, Long Term Monitoring, AOC 43G, Fall 2020
SDG:	SN9122
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020
Prime Contractor:	Seres-Arcadis JV
Project Manager:	Jennifer Singer
Contract Laboratory(ies):	Katahdin Analytical Services, Westbrook, ME
Data Review Contractor:	Laboratory Data Consultants, Inc.
Data Review Level:	2B
Primary Data Reviewer:	Kevin Kha, Environmental Scientist
Second Reviewer:	Pei Geng, Senior Scientist
Date Submitted:	December 07, 2020

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	MADEPVP
XGM-94-07X-FAL20	SN9122-1	Water	Field Sample/N	X
XGM-94-08X-FAL20	SN9122-2	Water	Field Sample/N	X
XGM-97-12X-FAL20	SN9122-3	Water	Field Sample/N	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by Seres-Arcadis JV; analyses were performed by Katahdin Analytical Services, Westbrook, ME and were reported under sample delivery group (SDG) SN9122. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Extracted Internal Standard
- Lab Blank
- LCS Recovery
- LCS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 2 results (6.67%) out of the 30 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Data Reviewer Comment
MADEPVP	No additional comments; see Checklist for detail.

[redacted] December 07, 2020

[redacted]mmental Scientist, Laboratory Data Consultants, Inc.

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

[redacted]Scientist, Laboratory Data Consultants, Inc. March 16, 2021

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method MADEPVP, Initial Calibration Verification

Compliance requirements for satisfactory continuing calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. Continuing calibration is performed to verify and evaluate instrument performance during sample analysis. Summary forms were evaluated against project acceptance criteria, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
2NK10066 (IV)	Naphthalene	124.3	80 - 120	80 - 120	percent	J/None	V1	
2NK10066 (IV)	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	134.2	80 - 120	80 - 120	percent	J/None	V1	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Initial Calibration Verification for MADEPVP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
XGM-97-12X-FAL20	N	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	210	210 J	+	ug/l	V1
XGM-97-12X-FAL20	N	Naphthalene	5.00	2.40 J	2.40 J	+	ug/l	TR/V1

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Table of All Qualified Results

Test Method: MADEPVP	**Extraction Method: METHOD**							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
XGM-97-12X-FAL20	N	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	210	210 J	+	ug/l	V1
XGM-97-12X-FAL20	N	Naphthalene	5.00	2.40 J	2.40 J	+	ug/l	TR/V1

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method MADEPVP

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
XGM-97-12X-FAL20	N	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	210	210	210 J	V1
XGM-97-12X-FAL20	N	Naphthalene	5.00	2.40 J	2.40 J	2.40 J	TR/V1

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
TR	Trace Level Detect
V1	ICV

Flag Code and Definitions

Flag	Definition
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.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: MADEPVP (Method for the Determination of Volatile Petroleum Hydrocarbons (VPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?		•		Due to ICV %R above criteria, several naphthalene and C9-C12 aliphatics results were qualified as detected estimated (J) with a high bias (+).
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Were target analytes reported in the field blank(s) less than MDL?			•	A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported or as qualified during data validation.

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ARCADIS U.S., Inc.
3109 West Martin Luther King Jr. Blvd, Suite 350
Tampa, FL 33607
ATTN: Mr. Nathan Mullens
nrmullens@seres-es.com

March 16, 2021

SUBJECT: Fort Devens, Data Validation

Dear Mr. Mullens,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on June 10, 2020. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #48291:

SDG #	Fraction
680-183899-1, 680-183912-1 680-183912-2/SN3820 680-183916-2/SN3818, 680-183925-1 680-183925-2/SN3819, 680-183926-1 680-183965-1, 680-184026-1 680-184098-1, 680-184215-1 680-184220-1, 680-183916-1	Volatiles, Chlorinated Pesticides, Metals, Wet Chemistry, Volatile Petroleum Hydrocarbons, Extractable Petroleum Hydrocarbons

The data validation was performed under Level II guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Former Fort Devens Army Installation – BRAC Legacy Sites, Devens, MA; October 2020
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

518 pages-ADV R1 (added M) Attachment 1

Stage 2B EQUIS EDD

LDC #48291 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		Pest. (8081B)		Metals (6010C /6020A /7470A)		(3) Metals (6010C/ 6020A)		(3)Diss Metals (6010C/ 6020A)		VPH (MADEP -VPH)		EPH (MADEP -EPH)		Alk. (2320B)		COD (410.4)		Cl,SO_4 (9056A)		CN- (9012B)		DOC (9060A)		NO_3 /NO_2-N (353.2)		TDS (2540C)							
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-183899-1	06/10/20	07/01/20	-	-	-	-	-	-	4	0	4	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
B	680-183912-1	06/10/20	07/01/20	-	-	4	0	4	0	-	-	-	-	-	-	-	-	4	0	4	0	4	0	4	0	-	-	4	0	4	0						
C	680-183912-2/SN3820	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	5	0	4	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
D	680-183916-2/SN3818	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	8	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
E	680-183925-1	06/10/20	07/01/20	-	-	1	0	1	0	-	-	-	-	-	-	-	-	1	0	1	0	1	0	1	0	-	-	1	0	1	0						
F	680-183925-2/SN3819	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	1	0	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
G	680-183926-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	7	0	-	-	-	-	7	0	-	-	7	0	-	-	7	0	-	-	-	-						
H	680-183965-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	10	0	-	-	-	-	10	0	-	-	10	0	-	-	10	0	-	-	-	-						
I	680-184026-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	17	0	-	-	-	-	17	0	-	-	17	0	-	-	17	0	-	-	-	-						
J	680-184098-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	12	0	-	-	-	-	12	0	-	-	12	0	-	-	12	0	-	-	-	-						
K	680-184215-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	15	0	-	-	-	-	15	0	-	-	15	0	-	-	15	0	-	-	-	-						
L	680-184220-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	8	0	-	-	-	-	8	0	-	-	8	0	-	-	8	0	-	-	-	-						
M	680-183916-1	06/17/20	07/09/20	6	0	-	-	-	-	5	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Total	T/PG			6	0	5	0	5	0	9	0	73	0	14	0	5	0	74	0	5	0	74	0	5	0	69	0	5	0	5	0	0	0	0	0	0	354

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

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Data Validation Report for 6801838991

Facility:	Former Fort Devens, Long Term Monitoring
Event:	Seres-Arcadis JV, Long Term Monitoring, AOC 57, Spring 2020
SDG:	6801838991
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020
Prime Contractor:	Seres-Arcadis JV
Project Manager:	Jennifer Singer
Contract Laboratory(ies):	Eurofins Environment Testing TestAmerica, Savannah, GA
Data Review Contractor:	Laboratory Data Consultants, Inc.
Data Review Level:	2B
Primary Data Reviewer:	Kevin Kha, Environmental Scientist
Second Reviewer:	Pei Geng, Senior Scientist
Date Submitted:	June 23, 2020

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW6010C	SW6010C - Dissolved	SW6020A	SW6020A - Dissolved
57M-95-03X-SPR20	680-183899-2	Water	Field Sample/N	X	X	X	X
57M-96-11X-SPR20	680-183899-3	Water	Field Sample/N	X	X	X	X
57-SW1-SPR20	680-183899-1	Water	Field Sample/N	X	X	X	X
AOC57-DUP01-SPR20	680-183899-4	Water	Field Duplicate/FD	X	X	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by Seres-Arcadis JV; analyses were performed by Eurofins Environment Testing TestAmerica, Savannah, GA and were reported under sample delivery group (SDG) 6801838991. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Calibration Blank
- Calibration Blank - Negative
- Continuing Calibration Verification
- Field Duplicate RPD
- Interference Check Sample A
- Interference Check Sample A - Negative
- Interference Check Sample AB
- Lab Blank
- LCS Recovery
- Prep Hold Time
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 2 results (8.33%) out of the 24 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Data Reviewer Comment
SW6010C	No additional comments; see Checklist for detail.
SW6020A	No additional comments; see Checklist for detail.



June 23, 2020

nmental Scientist, Laboratory Data Consultants, Inc.

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.



Scientist, Laboratory Data Consultants, Inc.

March 16, 2021

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method SW6010C, Dissolved, Calibration Blank

The purpose of calibration blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in calibration blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
CCB 680-619358/130 (CB)/ CCB 680-619358/130	Manganese	2.080	< 1	< 10	ug/l	U/None	B2	
CCB 680-619358/130 (CB)/ CCB 680-619358/130	Iron	29.10	< 17	< 50	ug/l	U/None	B2	
CCB 680-619358/142 (CB)/ CCB 680-619358/142	Manganese	1.380	< 1	< 10	ug/l	U/None	B2	
CCB 680-619358/154 (CB)/ CCB 680-619358/154	Manganese	1.270	< 1	< 10	ug/l	U/None	B2	
CCB 680-619358/166 (CB)/ CCB 680-619358/166	Manganese	1.300	< 1	< 10	ug/l	U/None	B2	
CCB 680-619358/166 (CB)/ CCB 680-619358/166	Iron	40.00	< 17	< 50	ug/l	U/None	B2	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW6020A, Total, Field Duplicate RPD

Field duplicate analyses are performed in order to assess sample collection/laboratory precision for each sample matrix. Summary forms were evaluated and compared to electronic data deliverables. Field duplicate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
57M-96-11X-SPR20 (N)/ 680-183899-4	Arsenic	35.62	< 30	< 30	rpd	J/None	D3	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Field Duplicate RPD for SW6020A, Total

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
57M-96-11X-SPR20	N	Arsenic	3.00	300	300 J		ug/l	D3
AOC57-DUP01-SPR20	FD	Arsenic	3.00	430	430 J		ug/l	D3

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Table of All Qualified Results

Test Method: SW6020A	**Extraction Method: Total**							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
57M-96-11X-SPR20	N	Arsenic	3.00	300	300 J		ug/l	D3
AOC57-DUP01-SPR20	FD	Arsenic	3.00	430	430 J		ug/l	D3

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Results with Modified Qualifiers

No qualifiers associated with this sample delivery group were modified manually.

Reason Code Definitions

Code	Definition
B2	CCB
D3	Field Duplicate RPD
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
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.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		Iron and manganese were detected in the calibration blanks. The associated sample results were either non-detected or were significantly greater than the contamination, therefore no data were qualified.
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?		•		Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Data Validation Report for 6801838991

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not collected in this data set.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?		•		Due to high RPD, two arsenic results were qualified as estimated (J).
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported or as qualified during data validation.

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, AOC 57, Spring 2020
Field Duplicates for SDG: 6801838991

Location	Analysis
57M-96-11X	SW6010C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
57M-96-11X-SPR20 / AOC57-DUP01-SPR20	680-183899-3 / 680-183899-4	Iron (FLDFLT)	30000	29000	50.0	3.39	30	OK	NA
57M-96-11X-SPR20 / AOC57-DUP01-SPR20	680-183899-3 / 680-183899-4	Iron (TOTAL)	42000	48000	50.0	13.3	30	OK	NA
57M-96-11X-SPR20 / AOC57-DUP01-SPR20	680-183899-3 / 680-183899-4	Manganese (FLDFLT)	3300	3100	10.0	6.25	30	OK	NA
57M-96-11X-SPR20 / AOC57-DUP01-SPR20	680-183899-3 / 680-183899-4	Manganese (TOTAL)	3300	3300	10.0	0.00	30	OK	NA

Location	Analysis
57M-96-11X	SW6020A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
57M-96-11X-SPR20 / AOC57-DUP01-SPR20	680-183899-3 / 680-183899-4	Arsenic (FLDFLT)	110	120	3.00	8.70	30	OK	NA
57M-96-11X-SPR20 / AOC57-DUP01-SPR20	680-183899-3 / 680-183899-4	Arsenic (TOTAL)	300	430	3.00	35.6	30	Out	NA

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ARCADIS U.S., Inc.
3109 West Martin Luther King Jr. Blvd, Suite 350
Tampa, FL 33607
ATTN: Mr. Nathan Mullens
nrmullens@seres-es.com

March 16, 2021

SUBJECT: Fort Devens, Data Validation

Dear Mr. Mullens,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on June 10, 2020. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #48291:

SDG #	Fraction
680-183899-1, 680-183912-1 680-183912-2/SN3820 680-183916-2/SN3818, 680-183925-1 680-183925-2/SN3819, 680-183926-1 680-183965-1, 680-184026-1 680-184098-1, 680-184215-1 680-184220-1, 680-183916-1	Volatiles, Chlorinated Pesticides, Metals, Wet Chemistry, Volatile Petroleum Hydrocarbons, Extractable Petroleum Hydrocarbons

The data validation was performed under Level II guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Former Fort Devens Army Installation – BRAC Legacy Sites, Devens, MA; October 2020
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

518 pages-ADV R1 (added M) Attachment 1

Stage 2B EQUIS EDD

LDC #48291 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		Pest. (8081B)		Metals (6010C /6020A /7470A)		(3) Metals (6010C/ 6020A)		(3)Diss Metals (6010C/ 6020A)		VPH (MADEP -VPH)		EPH (MADEP -EPH)		Alk. (2320B)		COD (410.4)		Cl,SO_4 (9056A)		CN- (9012B)		DOC (9060A)		NO_3 /NO_2-N (353.2)		TDS (2540C)							
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-183899-1	06/10/20	07/01/20	-	-	-	-	-	-	4	0	4	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
B	680-183912-1	06/10/20	07/01/20	-	-	4	0	4	0	-	-	-	-	-	-	-	-	4	0	4	0	4	0	4	0	-	-	4	0	4	0						
C	680-183912-2/SN3820	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	5	0	4	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
D	680-183916-2/SN3818	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	8	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
E	680-183925-1	06/10/20	07/01/20	-	-	1	0	1	0	-	-	-	-	-	-	-	-	1	0	1	0	1	0	1	0	-	-	1	0	1	0						
F	680-183925-2/SN3819	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	1	0	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
G	680-183926-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	7	0	-	-	-	-	7	0	-	-	7	0	-	-	7	0	-	-	-	-						
H	680-183965-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	10	0	-	-	-	-	10	0	-	-	10	0	-	-	10	0	-	-	-	-						
I	680-184026-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	17	0	-	-	-	-	17	0	-	-	17	0	-	-	17	0	-	-	-	-						
J	680-184098-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	12	0	-	-	-	-	12	0	-	-	12	0	-	-	12	0	-	-	-	-						
K	680-184215-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	15	0	-	-	-	-	15	0	-	-	15	0	-	-	15	0	-	-	-	-						
L	680-184220-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	8	0	-	-	-	-	8	0	-	-	8	0	-	-	8	0	-	-	-	-						
M	680-183916-1	06/17/20	07/09/20	6	0	-	-	-	-	5	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Total	T/PG			6	0	5	0	5	0	9	0	73	0	14	0	5	0	74	0	5	0	74	0	5	0	69	0	5	0	5	0	0	0	0	0	0	354

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

L:\Arcadis\Fort Devens\48291ST.wpd

Data Validation Report for 6801839121

Facility:	Former Fort Devens, Long Term Monitoring
Event:	Seres-Arcadis JV, Long Term Monitoring, DCL, Spring 2020
SDG:	6801839121
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020
Prime Contractor:	Seres-Arcadis JV
Project Manager:	Jennifer Singer
Contract Laboratory(ies):	Eurofins Environment Testing TestAmerica, Arvada, CO
Data Review Contractor:	Laboratory Data Consultants, Inc.
Data Review Level:	2B
Primary Data Reviewer:	Kevin Kha, Environmental Scientist
Second Reviewer:	Pei Geng, Senior Scientist
Date Submitted:	June 30, 2020

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	A2320B	A2540C	E353.2	E410.4	SW6010C	SW6020A	SW7470A	SW8081B	SW9012B	SW9056A
DCL-DUP01-SPR20	680-183912-1	Water	Field Duplicate/FD	X	X	X	X	X	X	X	X	X	X
LFM-03-07-SPR20	680-183912-2	Water	Field Sample/N	X	X	X	X	X	X	X	X	X	X
LFM-99-05A-SPR20	680-183912-3	Water	Field Sample/N	X	X	X	X	X	X	X	X	X	X
LFM-99-06ARP-SPR20	680-183912-4	Water	Field Sample/N	X	X	X	X	X	X	X	X	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by Seres-Arcadis JV; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 6801839121. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Calibration Blank
- Calibration Blank - Negative
- Continuing Calibration Verification
- Extracted Internal Standard
- Field Duplicate RPD
- Interference Check Sample A
- Interference Check Sample A - Negative
- Interference Check Sample AB
- Lab Blank
- LCS Recovery
- LCS RPD
- MS Recovery
- MS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 0 results (0.00%) out of the 152 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Data Reviewer Comment
A2320B	No additional comments; see Checklist for detail.
A2540C	No additional comments; see Checklist for detail.
E353.2	No additional comments; see Checklist for detail.
E410.4	No additional comments; see Checklist for detail.
SW6010C	No additional comments; see Checklist for detail.
SW6020A	No additional comments; see Checklist for detail.
SW7470A	No additional comments; see Checklist for detail.
SW8081B	No additional comments; see Checklist for detail.
SW9012B	No additional comments; see Checklist for detail.
SW9056A	No additional comments; see Checklist for detail.

[redacted] June 30, 2020

[redacted]nmental Scientist, Laboratory Data Consultants, Inc.

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

[redacted] March 16, 2021

[redacted]Scientist, Laboratory Data Consultants, Inc.

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method SW8081B, Prep Hold Time

Hold times are ascertained based on project requirements. Holding times were determined by comparing the chain of custody records with the dates of extraction found in the electronic data deliverable and laboratory summary forms. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
DCL-DUP01-SPR20 (FD)/ 680-183912-1		7.100	< 7	< 14	days	J/UJ	H2	Prep Exceeds UWL
LFM-03-07-SPR20 (N)/ 680-183912-2		7.190	< 7	< 14	days	J/UJ	H2	Prep Exceeds UWL
LFM-99-05A-SPR20 (N)/ 680-183912-3		7.100	< 7	< 14	days	J/UJ	H2	Prep Exceeds UWL
LFM-99-06ARP-SPR20 (N)/ 680-183912-4		7.100	< 7	< 14	days	J/UJ	H2	Prep Exceeds UWL

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW9012B, Test Hold Time

Hold times are ascertained based on project requirements. Holding times were determined by comparing the chain of custody records with the dates of analysis found in the electronic data deliverable and laboratory summary forms. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LFM-03-07-SPR20 (N)/ 680-183912-2		14.03	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Qualified Results

No results associated with this sample delivery group required qualification.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8081B

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
DCL-DUP01-SPR20	FD	Aldrin	0.0250	0.00900 U	0.00900 UJ	0.00900 U	
DCL-DUP01-SPR20	FD	alpha-BHC (alpha-Hexachlorocyclohexane)	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
DCL-DUP01-SPR20	FD	alpha-Endosulfan	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
DCL-DUP01-SPR20	FD	beta-BHC (beta-Hexachlorocyclohexane)	0.0250	0.00900 U	0.00900 UJ	0.00900 U	
DCL-DUP01-SPR20	FD	beta-Endosulfan	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
DCL-DUP01-SPR20	FD	Chlordane	0.250	0.150 U M	0.150 UJ	0.150 U	
DCL-DUP01-SPR20	FD	delta-BHC (delta-Hexachlorocyclohexane)	0.0250	0.00900 U	0.00900 UJ	0.00900 U	
DCL-DUP01-SPR20	FD	Dieldrin	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
DCL-DUP01-SPR20	FD	Endosulfan sulfate	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
DCL-DUP01-SPR20	FD	Endrin	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
DCL-DUP01-SPR20	FD	Endrin aldehyde	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
DCL-DUP01-SPR20	FD	Endrin ketone	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
DCL-DUP01-SPR20	FD	gamma-BHC (Lindane)	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
DCL-DUP01-SPR20	FD	Heptachlor	0.0250	0.00900 U	0.00900 UJ	0.00900 U	
DCL-DUP01-SPR20	FD	Heptachlor epoxide	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
DCL-DUP01-SPR20	FD	Methoxychlor	0.0250	0.00900 U	0.00900 UJ	0.00900 U	
DCL-DUP01-SPR20	FD	p,p'-DDD	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
DCL-DUP01-SPR20	FD	p,p'-DDE	0.0250	0.00500 U M	0.00500 UJ	0.00500 U	
DCL-DUP01-SPR20	FD	p,p'-DDT	0.0250	0.00900 U	0.00900 UJ	0.00900 U	
DCL-DUP01-SPR20	FD	Toxaphene	2.50	0.400 U	0.400 UJ	0.400 U	
LFM-03-07-SPR20	N	Aldrin	0.0240	0.00850 U	0.00850 UJ	0.00850 U	
LFM-03-07-SPR20	N	alpha-BHC (alpha-Hexachlorocyclohexane)	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-03-07-SPR20	N	alpha-Endosulfan	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-03-07-SPR20	N	beta-BHC (beta-Hexachlorocyclohexane)	0.0240	0.00850 U	0.00850 UJ	0.00850 U	
LFM-03-07-SPR20	N	beta-Endosulfan	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-03-07-SPR20	N	Chlordane	0.240	0.140 U M	0.140 UJ	0.140 U	
LFM-03-07-SPR20	N	delta-BHC (delta-Hexachlorocyclohexane)	0.0240	0.00850 U	0.00850 UJ	0.00850 U	
LFM-03-07-SPR20	N	Dieldrin	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-03-07-SPR20	N	Endosulfan sulfate	0.0240	0.00470 U	0.00470 UJ	0.00470 U	

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8081B

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
LFM-03-07-SPR20	N	Endrin	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-03-07-SPR20	N	Endrin aldehyde	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-03-07-SPR20	N	Endrin ketone	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-03-07-SPR20	N	gamma-BHC (Lindane)	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-03-07-SPR20	N	Heptachlor	0.0240	0.00850 U M	0.00850 UJ	0.00850 U	
LFM-03-07-SPR20	N	Heptachlor epoxide	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-03-07-SPR20	N	Methoxychlor	0.0240	0.00850 U	0.00850 UJ	0.00850 U	
LFM-03-07-SPR20	N	p,p'-DDD	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-03-07-SPR20	N	p,p'-DDE	0.0240	0.00470 U M	0.00470 UJ	0.00470 U	
LFM-03-07-SPR20	N	p,p'-DDT	0.0240	0.00850 U	0.00850 UJ	0.00850 U	
LFM-03-07-SPR20	N	Toxaphene	2.40	0.380 U	0.380 UJ	0.380 U	
LFM-99-05A-SPR20	N	Aldrin	0.0250	0.00910 U	0.00910 UJ	0.00910 U	
LFM-99-05A-SPR20	N	alpha-BHC (alpha-Hexachlorocyclohexane)	0.0250	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A-SPR20	N	alpha-Endosulfan	0.0250	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A-SPR20	N	beta-BHC (beta-Hexachlorocyclohexane)	0.0250	0.00910 U	0.00910 UJ	0.00910 U	
LFM-99-05A-SPR20	N	beta-Endosulfan	0.0250	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A-SPR20	N	Chlordane	0.250	0.150 U M	0.150 UJ	0.150 U	
LFM-99-05A-SPR20	N	delta-BHC (delta-Hexachlorocyclohexane)	0.0250	0.00910 U	0.00910 UJ	0.00910 U	
LFM-99-05A-SPR20	N	Dieldrin	0.0250	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A-SPR20	N	Endosulfan sulfate	0.0250	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A-SPR20	N	Endrin	0.0250	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A-SPR20	N	Endrin aldehyde	0.0250	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A-SPR20	N	Endrin ketone	0.0250	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A-SPR20	N	gamma-BHC (Lindane)	0.0250	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A-SPR20	N	Heptachlor	0.0250	0.00910 U M	0.00910 UJ	0.00910 U	
LFM-99-05A-SPR20	N	Heptachlor epoxide	0.0250	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A-SPR20	N	Methoxychlor	0.0250	0.00910 U	0.00910 UJ	0.00910 U	
LFM-99-05A-SPR20	N	p,p'-DDD	0.0250	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A-SPR20	N	p,p'-DDE	0.0250	0.00510 U M	0.00510 UJ	0.00510 U	
LFM-99-05A-SPR20	N	p,p'-DDT	0.0250	0.00910 U	0.00910 UJ	0.00910 U	
LFM-99-05A-SPR20	N	Toxaphene	2.50	0.410 U	0.410 UJ	0.410 U	
LFM-99-06ARP-SPR20	N	Aldrin	0.0240	0.00850 U	0.00850 UJ	0.00850 U	
LFM-99-06ARP-SPR20	N	alpha-BHC (alpha-Hexachlorocyclohexane)	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-99-06ARP-SPR20	N	alpha-Endosulfan	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-99-06ARP-SPR20	N	beta-BHC (beta-Hexachlorocyclohexane)	0.0240	0.00850 U	0.00850 UJ	0.00850 U	
LFM-99-06ARP-SPR20	N	beta-Endosulfan	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-99-06ARP-SPR20	N	Chlordane	0.240	0.140 U M	0.140 UJ	0.140 U	
LFM-99-06ARP-SPR20	N	delta-BHC (delta-Hexachlorocyclohexane)	0.0240	0.00850 U	0.00850 UJ	0.00850 U	

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8081B

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
LFM-99-06ARP-SPR20	N	Dieldrin	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-99-06ARP-SPR20	N	Endosulfan sulfate	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-99-06ARP-SPR20	N	Endrin	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-99-06ARP-SPR20	N	Endrin aldehyde	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-99-06ARP-SPR20	N	Endrin ketone	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-99-06ARP-SPR20	N	gamma-BHC (Lindane)	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-99-06ARP-SPR20	N	Heptachlor	0.0240	0.00850 U	0.00850 UJ	0.00850 U	
LFM-99-06ARP-SPR20	N	Heptachlor epoxide	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-99-06ARP-SPR20	N	Methoxychlor	0.0240	0.00850 U	0.00850 UJ	0.00850 U	
LFM-99-06ARP-SPR20	N	p,p'-DDD	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-99-06ARP-SPR20	N	p,p'-DDE	0.0240	0.00470 U	0.00470 UJ	0.00470 U	
LFM-99-06ARP-SPR20	N	p,p'-DDT	0.0240	0.00850 U	0.00850 UJ	0.00850 U	
LFM-99-06ARP-SPR20	N	Toxaphene	2.40	0.380 U	0.380 UJ	0.380 U	

Modified Qualifiers for test method SW9012B

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
LFM-03-07-SPR20	N	Cyanide	0.0100	0.00590 J	0.00590 J	0.00590 J	TR

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
H1	Test Hold Time
H2	Prep Hold Time
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
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.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: A2320B (Alkalinity by Titrimetric Method)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: A2540C (Total Dissolved Solids, Dried at 180 C)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: E353.2 (Nitrogen, Nitrate-Nitrite (Colorimetric Automated, Cadmium Reduction))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: E410.4 (Chemical Oxygen Demand (Colorimetric, Automated Manual))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?				
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW7470A (Mercury in Water (Manual Cold-Vapor Technique))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW8081B (Organochlorine Pesticides by Capillary GC)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			Although ADR flagged several samples as outside the sampling to extraction holding time, the samples were extracted on the last day of hold, therefore no data were qualified.
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW9012B (Total and Amenable Cyanide (Automated Colorimetric, with Off-Line Distillation))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			Although ADR flagged one sample as outside of holding time, the sample was analyzed on the last day of hold, therefore no data were qualified.
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?	•			
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW9056A (Anion Chromatography)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD was not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, DCL, Spring 2020
Field Duplicates for SDG: 6801839121

Location	Analysis
LFM-99-05A	A2320B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Alkalinity, Total (as CaCO3)	92.0	92.0	10.0	0.00	30	OK	NA

Location	Analysis
LFM-99-05A	A2540C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Total Dissolved Solids	350	320	10.0	8.96	30	OK	NA

Location	Analysis
LFM-99-05A	E353.2

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Nitrate-Nitrite (as N)	0.440	0.470	0.100	6.59	30	NA	OK

Location	Analysis
LFM-99-05A	E410.4

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Chemical Oxygen Demand	ND	ND	20.0	NA	30	NA	OK

Location	Analysis
LFM-99-05A	SW6010C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Barium (TOTAL)	11.0	11.0	10.0	0.00	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Cadmium (TOTAL)	ND	ND	5.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, DCL, Spring 2020
Field Duplicates for SDG: 6801839121

Location	Analysis
LFM-99-05A	SW6010C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Chromium (TOTAL)	ND	ND	10.0	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Copper (TOTAL)	ND	ND	20.0	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Iron (TOTAL)	ND	ND	50.0	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Lead (TOTAL)	4.50	ND	10.0	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Manganese (TOTAL)	1.70	ND	10.0	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Selenium (TOTAL)	ND	ND	20.0	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Silver (TOTAL)	ND	ND	10.0	NA	30	NA	OK

Location	Analysis
LFM-99-05A	SW6020A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Arsenic (TOTAL)	ND	ND	3.00	NA	30	NA	OK

Location	Analysis
LFM-99-05A	SW7470A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Mercury (TOTAL)	0.0940	0.0890	0.200	5.46	30	NA	OK

Location	Analysis
LFM-99-05A	SW8081B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Aldrin	ND	ND	0.0250	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, DCL, Spring 2020
Field Duplicates for SDG: 6801839121

Location	Analysis
LFM-99-05A	SW8081B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	alpha-BHC (alpha-Hexachlorocyclohexane)	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	alpha-Endosulfan	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	beta-BHC (beta-Hexachlorocyclohexane)	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	beta-Endosulfan	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Chlordane	ND	ND	0.250	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	delta-BHC (delta-Hexachlorocyclohexane)	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Dieldrin	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Endosulfan sulfate	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Endrin	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Endrin aldehyde	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Endrin ketone	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	gamma-BHC (Lindane)	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Heptachlor	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Heptachlor epoxide	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Methoxychlor	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	p,p'-DDD	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	p,p'-DDE	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	p,p'-DDT	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Toxaphene	ND	ND	2.50	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, DCL, Spring 2020
Field Duplicates for SDG: 6801839121

Location	Analysis
LFM-99-05A	SW9012B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Cyanide	ND	0.00670	0.0100	NA	30	NA	OK

Location	Analysis
LFM-99-05A	SW9056A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Chloride	130	130	0.500	0.00	30	OK	NA
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	680-183912-3 / 680-183912-1	Sulfate	16.0	16.0	1.00	0.00	30	OK	NA

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ARCADIS U.S., Inc.
3109 West Martin Luther King Jr. Blvd, Suite 350
Tampa, FL 33607
ATTN: Mr. Nathan Mullens
nrmullens@seres-es.com

March 16, 2021

SUBJECT: Fort Devens, Data Validation

Dear Mr. Mullens,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on June 10, 2020. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #48291:

SDG #	Fraction
680-183899-1, 680-183912-1 680-183912-2/SN3820 680-183916-2/SN3818, 680-183925-1 680-183925-2/SN3819, 680-183926-1 680-183965-1, 680-184026-1 680-184098-1, 680-184215-1 680-184220-1, 680-183916-1	Volatiles, Chlorinated Pesticides, Metals, Wet Chemistry, Volatile Petroleum Hydrocarbons, Extractable Petroleum Hydrocarbons

The data validation was performed under Level II guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Former Fort Devens Army Installation – BRAC Legacy Sites, Devens, MA; October 2020
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

518 pages-ADV R1 (added M) Attachment 1

Stage 2B EQUIS EDD

LDC #48291 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		Pest. (8081B)		Metals (6010C /6020A /7470A)		(3) Metals (6010C/ 6020A)		(3)Diss Metals (6010C/ 6020A)		VPH (MADEP -VPH)		EPH (MADEP -EPH)		Alk. (2320B)		COD (410.4)		Cl,SO_4 (9056A)		CN- (9012B)		DOC (9060A)		NO_3 /NO_2-N (353.2)		TDS (2540C)							
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-183899-1	06/10/20	07/01/20	-	-	-	-	-	-	4	0	4	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
B	680-183912-1	06/10/20	07/01/20	-	-	4	0	4	0	-	-	-	-	-	-	-	-	4	0	4	0	4	0	4	0	-	-	4	0	4	0						
C	680-183912-2/SN3820	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	5	0	4	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
D	680-183916-2/SN3818	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	8	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
E	680-183925-1	06/10/20	07/01/20	-	-	1	0	1	0	-	-	-	-	-	-	-	-	1	0	1	0	1	0	1	0	-	-	1	0	1	0						
F	680-183925-2/SN3819	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	1	0	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
G	680-183926-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	7	0	-	-	-	-	7	0	-	-	7	0	-	-	7	0	-	-	-	-						
H	680-183965-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	10	0	-	-	-	-	10	0	-	-	10	0	-	-	10	0	-	-	-	-						
I	680-184026-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	17	0	-	-	-	-	17	0	-	-	17	0	-	-	17	0	-	-	-	-						
J	680-184098-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	12	0	-	-	-	-	12	0	-	-	12	0	-	-	12	0	-	-	-	-						
K	680-184215-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	15	0	-	-	-	-	15	0	-	-	15	0	-	-	15	0	-	-	-	-						
L	680-184220-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	8	0	-	-	-	-	8	0	-	-	8	0	-	-	8	0	-	-	-	-						
M	680-183916-1	06/17/20	07/09/20	6	0	-	-	-	-	5	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Total	T/PG			6	0	5	0	5	0	9	0	73	0	14	0	5	0	74	0	5	0	74	0	5	0	69	0	5	0	5	0	0	0	0	0	0	354

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

L:\Arcadis\Fort Devens\48291ST.wpd

Data Validation Report for SN3820

Facility:	Former Fort Devens, Long Term Monitoring
Event:	Seres-Arcadis JV, Long Term Monitoring, DCL, Spring 2020
SDG:	SN3820
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020
Prime Contractor:	Seres-Arcadis JV
Project Manager:	Jennifer Singer
Contract Laboratory(ies):	Katahdin Analytical Services, Westbrook, ME
Data Review Contractor:	Laboratory Data Consultants, Inc.
Data Review Level:	2B
Primary Data Reviewer:	Kevin Kha, Environmental Scientist
Second Reviewer:	Pei Geng, Senior Scientist
Date Submitted:	June 29, 2020

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	MADEPEP	MADEPVP
DCL-DUP01-SPR20	SN3820-1	Water	Field Duplicate/FD	X	X
LFM-03-07-SPR20	SN3820-2	Water	Field Sample/N	X	
LFM-03-07-SPR20	SN3820-2RA	Water	Field Sample/N		X
LFM-99-05A-SPR20	SN3820-3	Water	Field Sample/N	X	
LFM-99-05A-SPR20	SN3820-3RA	Water	Field Sample/N		X
LFM-99-06ARP-SPR20	SN3820-4	Water	Field Sample/N	X	
LFM-99-06ARP-SPR20	SN3820-4RA	Water	Field Sample/N		X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by Seres-Arcadis JV; analyses were performed by Katahdin Analytical Services, Westbrook, ME and were reported under sample delivery group (SDG) SN3820. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Extracted Internal Standard
- Field Duplicate RPD
- Lab Blank
- LCS Recovery
- LCS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 14 results (11.67%) out of the 120 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Data Reviewer Comment
MADEPEP	No additional comments; see Checklist for detail.
MADEPVP	No additional comments; see Checklist for detail.



June 29, 2020

nmental Scientist, Laboratory Data Consultants, Inc.

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.



Scientist, Laboratory Data Consultants, Inc.

March 16, 2021

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method MADEPEP, Continuing Calibration Verification

Compliance requirements for satisfactory continuing calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. Continuing calibration is performed to verify and evaluate instrument performance during sample analysis. Summary forms were evaluated against project acceptance criteria, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
WG278377-1 (CV)	Dibenz (a,h)anthracene	73.36	75 - 125	75 - 125	percent	J/UJ	V2	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Continuing Calibration Verification for MADEPEP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
DCL-DUP01-SPR20	FD	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 UJ		ug/l	V2
LFM-03-07-SPR20	N	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 UJ		ug/l	V2
LFM-99-05A-SPR20	N	Dibenz(a,h)anthracene	2.20	1.60 U	1.60 UJ		ug/l	V2
LFM-99-06ARP-SPR20	N	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 UJ		ug/l	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method MADEPEP, LCS RPD

The objective of laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. LCS/LCSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Laboratory control sample/laboratory control sample duplicate RPD results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
WG278026-3 (BD)/ WG278026-3	Acenaphthene	26.01	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Fluorene	26.58	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Acenaphthylene	27.54	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	2-Methylnaphthalene	28.42	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Naphthalene	28.52	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Phenanthrene	28.74	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	29.49	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Anthracene	29.69	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Fluoranthene	29.88	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Chrysene	30.48	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Pyrene	30.90	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Benzo (a)anthracene	30.92	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Dibenz (a,h)anthracene	31.03	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Benzo(a)pyrene	31.77	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Benzo (g,h,i)perylene	32.18	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Indeno(1,2,3-c,d)pyrene	34.73	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Benzo (k)fluoranthene	39.68	< 25	< 25	rpd	J/None	Z	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method MADEPVP, Surrogate

Method performance for individual samples is demonstrated through spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. The sample itself may produce effects due to such factors as interferences and high concentrations of analytes. Summary forms were evaluated and compared to electronic data deliverables. Surrogate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
DCL-DUP01-SPR20 (FD)/ SN3820-1	2,5-Dibromotoluene	57.20	70 - 130	10 - 130	percent	J/UJ	I	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Surrogate for MADEPVP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
DCL-DUP01-SPR20	FD	Benzene	3.00	2.00 U	2.00 UJ		ug/l	I
DCL-DUP01-SPR20	FD	C5-C8 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
DCL-DUP01-SPR20	FD	C9-C10 Volatile Petroleum Hydrocarbons, Aromatic	100	75.0 U	75.0 UJ		ug/l	I
DCL-DUP01-SPR20	FD	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
DCL-DUP01-SPR20	FD	Ethylbenzene	5.00	3.80 U	3.80 UJ		ug/l	I
DCL-DUP01-SPR20	FD	m,p-Xylene	10.0	7.50 U	7.50 UJ		ug/l	I
DCL-DUP01-SPR20	FD	Methyl tert-butyl ether (MTBE)	5.00	3.80 U	3.80 UJ		ug/l	I
DCL-DUP01-SPR20	FD	Naphthalene	5.00	3.80 U	3.80 UJ		ug/l	I
DCL-DUP01-SPR20	FD	o-Xylene	5.00	3.80 U	3.80 UJ		ug/l	I
DCL-DUP01-SPR20	FD	Toluene	5.00	3.80 U	3.80 UJ		ug/l	I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Table of All Qualified Results

Test Method: MADEPEP	**Extraction Method: METHOD**							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
DCL-DUP01-SPR20	FD	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 UJ		ug/l	V2
LFM-03-07-SPR20	N	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 UJ		ug/l	V2
LFM-99-05A-SPR20	N	Dibenz(a,h)anthracene	2.20	1.60 U	1.60 UJ		ug/l	V2
LFM-99-06ARP-SPR20	N	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 UJ		ug/l	V2

Test Method: MADEPVP	**Extraction Method: METHOD**							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
DCL-DUP01-SPR20	FD	Benzene	3.00	2.00 U	2.00 UJ		ug/l	I
DCL-DUP01-SPR20	FD	C5-C8 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
DCL-DUP01-SPR20	FD	C9-C10 Volatile Petroleum Hydrocarbons, Aromatic	100	75.0 U	75.0 UJ		ug/l	I
DCL-DUP01-SPR20	FD	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
DCL-DUP01-SPR20	FD	Ethylbenzene	5.00	3.80 U	3.80 UJ		ug/l	I
DCL-DUP01-SPR20	FD	m,p-Xylene	10.0	7.50 U	7.50 UJ		ug/l	I
DCL-DUP01-SPR20	FD	Methyl tert-butyl ether (MTBE)	5.00	3.80 U	3.80 UJ		ug/l	I
DCL-DUP01-SPR20	FD	Naphthalene	5.00	3.80 U	3.80 UJ		ug/l	I
DCL-DUP01-SPR20	FD	o-Xylene	5.00	3.80 U	3.80 UJ		ug/l	I
DCL-DUP01-SPR20	FD	Toluene	5.00	3.80 U	3.80 UJ		ug/l	I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method MADEPEP

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
DCL-DUP01-SPR20	FD	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 U	1.40 UJ	V2
LFM-03-07-SPR20	N	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 U	1.40 UJ	V2
LFM-99-05A-SPR20	N	Dibenz(a,h)anthracene	2.20	1.60 U	1.60 U	1.60 UJ	V2
LFM-99-06ARP-SPR20	N	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 U	1.40 UJ	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
I	Surrogate recovery outside project limits.
TR	Trace Level Detect
V2	CCV
Z	LCS RPD

Flag Code and Definitions

Flag	Definition
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.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: MADEPEP (Method for the Determination of Extractable Petroleum Hydrocarbons (EPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?		•		Due to CCV outside acceptance criteria, four dibenz(a,h)anthracene results were qualified as estimated (UJ).
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?		•		The LCSD RPD was outside acceptance limits in several compounds, however the associated sample results were non-detected, therefore no data were qualified.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported or as qualified during data validation.

Review Questions

Method: MADEPVP (Method for the Determination of Volatile Petroleum Hydrocarbons (VPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?		•		Due to low surrogate %R, data in sample DCL-DUP01-SPR20 were qualified as estimated (UJ).
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported or as qualified during data validation. Sample DCL-DUP01-SPR20 was reanalyzed with similar surrogate deviations confirming a matrix effect. The original analysis was chosen as the best results.

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, DCL, Spring 2020
Field Duplicates for SDG: SN3820

Location	Analysis
LFM-99-05A	MADEPEP

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	2-Methylnaphthalene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	Acenaphthene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	Acenaphthylene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	Anthracene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	Benzo(a)anthracene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	Benzo(a)pyrene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	Benzo(b)fluoranthene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	Benzo(g,h,i)perylene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	Benzo(k)fluoranthene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	ND	ND	110	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	C19-C36 Petroleum Hydrocarbons, Aliphatic	ND	ND	110	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	C9-C18 Petroleum Hydrocarbons, Aliphatic	ND	ND	110	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	Chrysene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	Dibenz(a,h)anthracene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	Fluoranthene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	Fluorene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	Indeno(1,2,3-c,d)pyrene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	Naphthalene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	Phenanthrene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3 / SN3820-1	Pyrene	ND	ND	2.20	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, DCL, Spring 2020
Field Duplicates for SDG: SN3820

Location	Analysis
LFM-99-05A	MADEPVP

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3RA / SN3820-1	Benzene	ND	ND	3.00	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3RA / SN3820-1	C5-C8 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	ND	ND	100	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3RA / SN3820-1	C9-C10 Volatile Petroleum Hydrocarbons, Aromatic	ND	ND	100	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3RA / SN3820-1	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	ND	ND	100	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3RA / SN3820-1	Ethylbenzene	ND	ND	5.00	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3RA / SN3820-1	m,p-Xylene	ND	ND	10.0	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3RA / SN3820-1	Methyl tert-butyl ether (MTBE)	ND	ND	5.00	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3RA / SN3820-1	Naphthalene	ND	ND	5.00	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3RA / SN3820-1	o-Xylene	ND	ND	5.00	NA	30	NA	OK
LFM-99-05A-SPR20 / DCL-DUP01-SPR20	SN3820-3RA / SN3820-1	Toluene	ND	ND	5.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ARCADIS U.S., Inc.
3109 West Martin Luther King Jr. Blvd, Suite 350
Tampa, FL 33607
ATTN: Mr. Nathan Mullens
nrmullens@seres-es.com

March 16, 2021

SUBJECT: Fort Devens, Data Validation

Dear Mr. Mullens,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on June 10, 2020. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #48291:

SDG #	Fraction
680-183899-1, 680-183912-1 680-183912-2/SN3820 680-183916-2/SN3818, 680-183925-1 680-183925-2/SN3819, 680-183926-1 680-183965-1, 680-184026-1 680-184098-1, 680-184215-1 680-184220-1, 680-183916-1	Volatiles, Chlorinated Pesticides, Metals, Wet Chemistry, Volatile Petroleum Hydrocarbons, Extractable Petroleum Hydrocarbons

The data validation was performed under Level II guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Former Fort Devens Army Installation – BRAC Legacy Sites, Devens, MA; October 2020
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

518 pages-ADV R1 (added M) Attachment 1

Stage 2B EQUIS EDD

LDC #48291 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		Pest. (8081B)		Metals (6010C /6020A /7470A)		(3) Metals (6010C/ 6020A)		(3)Diss Metals (6010C/ 6020A)		VPH (MADEP -VPH)		EPH (MADEP -EPH)		Alk. (2320B)		COD (410.4)		Cl,SO_4 (9056A)		CN- (9012B)		DOC (9060A)		NO_3 /NO_2-N (353.2)		TDS (2540C)							
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-183899-1	06/10/20	07/01/20	-	-	-	-	-	-	4	0	4	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
B	680-183912-1	06/10/20	07/01/20	-	-	4	0	4	0	-	-	-	-	-	-	-	-	4	0	4	0	4	0	4	0	-	-	4	0	4	0						
C	680-183912-2/SN3820	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	5	0	4	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
D	680-183916-2/SN3818	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	8	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
E	680-183925-1	06/10/20	07/01/20	-	-	1	0	1	0	-	-	-	-	-	-	-	-	1	0	1	0	1	0	1	0	-	-	1	0	1	0						
F	680-183925-2/SN3819	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	1	0	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
G	680-183926-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	7	0	-	-	-	-	7	0	-	-	7	0	-	-	7	0	-	-	-	-						
H	680-183965-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	10	0	-	-	-	-	10	0	-	-	10	0	-	-	10	0	-	-	-	-						
I	680-184026-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	17	0	-	-	-	-	17	0	-	-	17	0	-	-	17	0	-	-	-	-						
J	680-184098-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	12	0	-	-	-	-	12	0	-	-	12	0	-	-	12	0	-	-	-	-						
K	680-184215-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	15	0	-	-	-	-	15	0	-	-	15	0	-	-	15	0	-	-	-	-						
L	680-184220-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	8	0	-	-	-	-	8	0	-	-	8	0	-	-	8	0	-	-	-	-						
M	680-183916-1	06/17/20	07/09/20	6	0	-	-	-	-	5	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Total	T/PG			6	0	5	0	5	0	9	0	73	0	14	0	5	0	74	0	5	0	74	0	5	0	69	0	5	0	5	0	0	0	0	0	0	354

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

L:\Arcadis\Fort Devens\48291ST.wpd

Data Validation Report for 6801839251

Facility:	Former Fort Devens, Long Term Monitoring
Event:	Seres-Arcadis JV, Long Term Monitoring, DCL, Spring 2020
SDG:	6801839251
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020
Prime Contractor:	Seres-Arcadis JV
Project Manager:	Jennifer Singer
Contract Laboratory(ies):	Eurofins Environment Testing TestAmerica, Arvada, CO
Data Review Contractor:	Laboratory Data Consultants, Inc.
Data Review Level:	2B
Primary Data Reviewer:	Kevin Kha, Environmental Scientist
Second Reviewer:	Pei Geng, Senior Scientist
Date Submitted:	June 29, 2020

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	A2320B	A2540C	E353.2	E410.4	SW6010C	SW6020A	SW7470A	SW8081B	SW9012B	SW9056A
LFM-99-O2B-SPR20	680-183925-1	Water	Field Sample/N	X	X	X	X	X	X	X	X	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by Seres-Arcadis JV; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 6801839251. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Calibration Blank
- Calibration Blank - Negative
- Continuing Calibration Verification
- Extracted Internal Standard
- Interference Check Sample A
- Interference Check Sample A - Negative
- Interference Check Sample AB
- Lab Blank
- LCS Recovery
- LCS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 3 results (7.89%) out of the 38 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Data Reviewer Comment
A2320B	No additional comments; see Checklist for detail.
A2540C	No additional comments; see Checklist for detail.
E353.2	No additional comments; see Checklist for detail.
E410.4	No additional comments; see Checklist for detail.
SW6010C	No additional comments; see Checklist for detail.
SW6020A	No additional comments; see Checklist for detail.
SW7470A	No additional comments; see Checklist for detail.
SW8081B	No additional comments; see Checklist for detail.
SW9012B	No additional comments; see Checklist for detail.
SW9056A	No additional comments; see Checklist for detail.

[redacted] June 29, 2020

[redacted]nmental Scientist, Laboratory Data Consultants, Inc.

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

[redacted] March 16, 2021

[redacted]Scientist, Laboratory Data Consultants, Inc.

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method SW8081B, LCS Recovery

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCS 680-619717/22-A (BS)/ LCS 680-619717/22-A	Endosulfan sulfate	135.2	62 - 133	10 - 133	percent	J/None	C	
LCS 680-619717/22-A (BS)/ LCS 680-619717/22-A	Endrin ketone	135.6	58 - 134	10 - 134	percent	J/None	C	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	Aldrin	37.40	45 - 134	10 - 134	percent	J/UJ	C	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	Heptachlor	39.20	54 - 130	10 - 130	percent	J/UJ	C	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	p,p'-DDE	54.60	57 - 135	10 - 135	percent	J/UJ	C	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the LCS Recovery for SW8081B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-99-O2B-SPR20	N	Aldrin	0.0240	0.00860 U Q	0.00860 UJ		ug/l	C
LFM-99-O2B-SPR20	N	Heptachlor	0.0240	0.00860 U Q	0.00860 UJ		ug/l	C
LFM-99-O2B-SPR20	N	p,p'-DDE	0.0240	0.00480 U Q	0.00480 UJ		ug/l	C

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8081B, LCS RPD

The objective of laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. LCS/LCSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Laboratory control sample/laboratory control sample duplicate RPD results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	Aldrin	43.19	< 30	< 30	rpd	J/None	Z	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	p,p'-DDE	48.12	< 30	< 30	rpd	J/None	Z	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	Heptachlor	49.23	< 30	< 30	rpd	J/None	Z	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	Endrin aldehyde	53.14	< 30	< 30	rpd	J/None	Z	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	Methoxychlor	53.81	< 30	< 30	rpd	J/None	Z	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	beta-BHC (beta-Hexachlorocyclohexane)	54.18	< 30	< 30	rpd	J/None	Z	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	alpha-BHC (alpha-Hexachlorocyclohexane)	54.35	< 30	< 30	rpd	J/None	Z	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	alpha-Endosulfan	54.51	< 30	< 30	rpd	J/None	Z	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	p,p'-DDD	55.32	< 30	< 30	rpd	J/None	Z	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	beta-Endosulfan	55.38	< 30	< 30	rpd	J/None	Z	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	Heptachlor epoxide	55.90	< 30	< 30	rpd	J/None	Z	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	gamma-BHC (Lindane)	55.91	< 30	< 30	rpd	J/None	Z	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	p,p'-DDT	56.48	< 30	< 30	rpd	J/None	Z	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	Endrin ketone	56.58	< 30	< 30	rpd	J/None	Z	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	Dieldrin	57.09	< 30	< 30	rpd	J/None	Z	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	Endrin	57.32	< 30	< 30	rpd	J/None	Z	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	Endosulfan sulfate	57.52	< 30	< 30	rpd	J/None	Z	
LCSD 680-619717/23-A (BD)/ LCSD 680-619717/23-A	delta-BHC (delta-Hexachlorocyclohexane)	60.73	< 30	< 30	rpd	J/None	Z	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW8081B, Prep Hold Time

Hold times are ascertained based on project requirements. Holding times were determined by comparing the chain of custody records with the dates of extraction found in the electronic data deliverable and laboratory summary forms. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LFM-99-O2B-SPR20 (N)/ 680-183925-1		7.320	< 7	< 14	days	J/UJ	H2	Prep Exceeds UWL

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Table of All Qualified Results

Test Method: SW8081B	**Extraction Method: SW3520C**							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-99-O2B-SPR20	N	Aldrin	0.0240	0.00860 U Q	0.00860 UJ		ug/l	C
LFM-99-O2B-SPR20	N	Heptachlor	0.0240	0.00860 U Q	0.00860 UJ		ug/l	C
LFM-99-O2B-SPR20	N	p,p'-DDE	0.0240	0.00480 U Q	0.00480 UJ		ug/l	C

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8081B

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
LFM-99-O2B-SPR20	N	Aldrin	0.0240	0.00860 U Q	0.00860 UJ	0.00860 UJ	C
LFM-99-O2B-SPR20	N	alpha-BHC (alpha-Hexachlorocyclohexane)	0.0240	0.00480 U Q	0.00480 UJ	0.00480 U	
LFM-99-O2B-SPR20	N	alpha-Endosulfan	0.0240	0.00480 U Q	0.00480 UJ	0.00480 U	
LFM-99-O2B-SPR20	N	beta-BHC (beta-Hexachlorocyclohexane)	0.0240	0.00860 U Q	0.00860 UJ	0.00860 U	
LFM-99-O2B-SPR20	N	beta-Endosulfan	0.0240	0.00480 U Q	0.00480 UJ	0.00480 U	
LFM-99-O2B-SPR20	N	Chlordane	0.240	0.140 U M	0.140 UJ	0.140 U	
LFM-99-O2B-SPR20	N	delta-BHC (delta-Hexachlorocyclohexane)	0.0240	0.00860 U Q	0.00860 UJ	0.00860 U	
LFM-99-O2B-SPR20	N	Dieldrin	0.0240	0.00480 U Q	0.00480 UJ	0.00480 U	
LFM-99-O2B-SPR20	N	Endosulfan sulfate	0.0240	0.00480 U Q	0.00480 UJ	0.00480 U	
LFM-99-O2B-SPR20	N	Endrin	0.0240	0.00480 U Q	0.00480 UJ	0.00480 U	
LFM-99-O2B-SPR20	N	Endrin aldehyde	0.0240	0.00480 U Q	0.00480 UJ	0.00480 U	
LFM-99-O2B-SPR20	N	Endrin ketone	0.0240	0.00480 U Q	0.00480 UJ	0.00480 U	
LFM-99-O2B-SPR20	N	gamma-BHC (Lindane)	0.0240	0.00480 U Q	0.00480 UJ	0.00480 U	
LFM-99-O2B-SPR20	N	Heptachlor	0.0240	0.00860 U Q	0.00860 UJ	0.00860 UJ	C
LFM-99-O2B-SPR20	N	Heptachlor epoxide	0.0240	0.00480 U Q	0.00480 UJ	0.00480 U	
LFM-99-O2B-SPR20	N	Methoxychlor	0.0240	0.00860 U Q	0.00860 UJ	0.00860 U	
LFM-99-O2B-SPR20	N	p,p'-DDD	0.0240	0.00480 U M Q	0.00480 UJ	0.00480 U	
LFM-99-O2B-SPR20	N	p,p'-DDE	0.0240	0.00480 U Q	0.00480 UJ	0.00480 UJ	C
LFM-99-O2B-SPR20	N	p,p'-DDT	0.0240	0.00860 U Q	0.00860 UJ	0.00860 U	
LFM-99-O2B-SPR20	N	Toxaphene	2.40	0.380 U	0.380 UJ	0.380 U	

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
C	LCS Recovery
H2	Prep Hold Time
TR	Trace Level Detect
Z	LCS RPD

Flag Code and Definitions

Flag	Definition
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.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: A2320B (Alkalinity by Titrimetric Method)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: A2540C (Total Dissolved Solids, Dried at 180 C)

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: E353.2 (Nitrogen, Nitrate-Nitrite (Colorimetric Automated, Cadmium Reduction))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: E410.4 (Chemical Oxygen Demand (Colorimetric, Automated Manual))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW7470A (Mercury in Water (Manual Cold-Vapor Technique))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW8081B (Organochlorine Pesticides by Capillary GC)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			Although ADR flagged sample LFM-99-O2B-SPR20 as outside the holding time, the sample was extracted on the last day of hold, therefore no data were qualified.
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?		•		Due to LCS/LCSD %R, aldrin, heptachlor, and p,p'-DDE were qualified as estimated (UJ).
Was the LCS/LCSD RPD within project acceptance limits?		•		Although several LCSD RPDs were outside the project acceptance limits, the associated sample results were non-detected, therefore no data were qualified.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported or as qualified during data validation.

Review Questions

Method: SW9012B (Total and Amenable Cyanide (Automated Colorimetric, with Off-Line Distillation))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?		•		Only a LCS was analyzed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?		•		A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW9056A (Anion Chromatography)

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ARCADIS U.S., Inc.
3109 West Martin Luther King Jr. Blvd, Suite 350
Tampa, FL 33607
ATTN: Mr. Nathan Mullens
nrmullens@seres-es.com

March 16, 2021

SUBJECT: Fort Devens, Data Validation

Dear Mr. Mullens,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on June 10, 2020. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #48291:

SDG #	Fraction
680-183899-1, 680-183912-1 680-183912-2/SN3820 680-183916-2/SN3818, 680-183925-1 680-183925-2/SN3819, 680-183926-1 680-183965-1, 680-184026-1 680-184098-1, 680-184215-1 680-184220-1, 680-183916-1	Volatiles, Chlorinated Pesticides, Metals, Wet Chemistry, Volatile Petroleum Hydrocarbons, Extractable Petroleum Hydrocarbons

The data validation was performed under Level II guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Former Fort Devens Army Installation – BRAC Legacy Sites, Devens, MA; October 2020
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

518 pages-ADV R1 (added M) Attachment 1

Stage 2B EQUIS EDD

LDC #48291 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		Pest. (8081B)		Metals (6010C /6020A /7470A)		(3) Metals (6010C/ 6020A)		(3)Diss Metals (6010C/ 6020A)		VPH (MADEP -VPH)		EPH (MADEP -EPH)		Alk. (2320B)		COD (410.4)		Cl,SO_4 (9056A)		CN- (9012B)		DOC (9060A)		NO_3 /NO_2-N (353.2)		TDS (2540C)							
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-183899-1	06/10/20	07/01/20	-	-	-	-	-	-	4	0	4	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
B	680-183912-1	06/10/20	07/01/20	-	-	4	0	4	0	-	-	-	-	-	-	-	-	4	0	4	0	4	0	4	0	-	-	4	0	4	0						
C	680-183912-2/SN3820	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	5	0	4	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
D	680-183916-2/SN3818	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	8	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
E	680-183925-1	06/10/20	07/01/20	-	-	1	0	1	0	-	-	-	-	-	-	-	-	1	0	1	0	1	0	1	0	-	-	1	0	1	0						
F	680-183925-2/SN3819	06/10/20	07/01/20	-	-	-	-	-	-	-	-	-	-	1	0	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
G	680-183926-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	7	0	-	-	-	-	7	0	-	-	7	0	-	-	7	0	-	-	-	-						
H	680-183965-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	10	0	-	-	-	-	10	0	-	-	10	0	-	-	10	0	-	-	-	-						
I	680-184026-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	17	0	-	-	-	-	17	0	-	-	17	0	-	-	17	0	-	-	-	-						
J	680-184098-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	12	0	-	-	-	-	12	0	-	-	12	0	-	-	12	0	-	-	-	-						
K	680-184215-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	15	0	-	-	-	-	15	0	-	-	15	0	-	-	15	0	-	-	-	-						
L	680-184220-1	06/10/20	07/01/20	-	-	-	-	-	-	-	-	8	0	-	-	-	-	8	0	-	-	8	0	-	-	8	0	-	-	-	-						
M	680-183916-1	06/17/20	07/09/20	6	0	-	-	-	-	5	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Total	T/PG			6	0	5	0	5	0	9	0	73	0	14	0	5	0	74	0	5	0	74	0	5	0	69	0	5	0	5	0	0	0	0	0	0	354

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

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Data Validation Report for SN3819

Facility:	Former Fort Devens, Long Term Monitoring
Event:	Seres-Arcadis JV, Long Term Monitoring, DCL, Spring 2020
SDG:	SN3819
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020
Prime Contractor:	Seres-Arcadis JV
Project Manager:	Jennifer Singer
Contract Laboratory(ies):	Katahdin Analytical Services, Westbrook, ME
Data Review Contractor:	Laboratory Data Consultants, Inc.
Data Review Level:	2B
Primary Data Reviewer:	Kevin Kha, Environmental Scientist
Second Reviewer:	Pei Geng, Senior Scientist
Date Submitted:	June 29, 2020

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	MADEPEP	MADEPVP
LFM-99-O2B-SPR20	SN3819-1	Water	Field Sample/N	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by Seres-Arcadis JV; analyses were performed by Katahdin Analytical Services, Westbrook, ME and were reported under sample delivery group (SDG) SN3819. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Extracted Internal Standard
- Lab Blank
- LCS Recovery
- LCS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 1 results (3.33%) out of the 30 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Data Reviewer Comment
MADEPEP	No additional comments; see Checklist for detail.
MADEPVP	No additional comments; see Checklist for detail.



June 29, 2020

nmental Scientist, Laboratory Data Consultants, Inc.

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.



Scientist, Laboratory Data Consultants, Inc.

March 16, 2021

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method MADEPEP, Continuing Calibration Verification

Compliance requirements for satisfactory continuing calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. Continuing calibration is performed to verify and evaluate instrument performance during sample analysis. Summary forms were evaluated against project acceptance criteria, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
WG278377-1 (CV)	Dibenz (a,h)anthracene	73.36	75 - 125	75 - 125	percent	J/UJ	V2	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Continuing Calibration Verification for MADEPEP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-99-O2B-SPR20	N	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 UJ		ug/l	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method MADEPEP, LCS RPD

The objective of laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. LCS/LCSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Laboratory control sample/laboratory control sample duplicate RPD results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
WG278026-3 (BD)/ WG278026-3	Acenaphthene	26.01	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Fluorene	26.58	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Acenaphthylene	27.54	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	2-Methylnaphthalene	28.42	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Naphthalene	28.52	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Phenanthrene	28.74	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	29.49	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Anthracene	29.69	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Fluoranthene	29.88	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Chrysene	30.48	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Pyrene	30.90	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Benzo (a)anthracene	30.92	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Dibenz (a,h)anthracene	31.03	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Benzo(a)pyrene	31.77	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Benzo (g,h,i)perylene	32.18	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Indeno(1,2,3-c,d)pyrene	34.73	< 25	< 25	rpd	J/None	Z	
WG278026-3 (BD)/ WG278026-3	Benzo (k)fluoranthene	39.68	< 25	< 25	rpd	J/None	Z	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Table of All Qualified Results

Test Method: MADEPEP	**Extraction Method: METHOD**							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-99-O2B-SPR20	N	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 UJ		ug/l	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method MADEPEP

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
LFM-99-O2B-SPR20	N	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 U	1.40 UJ	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
TR	Trace Level Detect
V2	CCV
Z	LCS RPD

Flag Code and Definitions

Flag	Definition
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.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: MADEPEP (Method for the Determination of Extractable Petroleum Hydrocarbons (EPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?		•		Due to CCV outside acceptance criteria, one dibenz(a,h)anthracene result was qualified as estimated (UJ).
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?		•		The LCSD RPD was outside acceptance limits in several compounds, however the associated sample results were non-detected, therefore no data were qualified.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported or as qualified during data validation.

Review Questions

Method: MADEPVP (Method for the Determination of Volatile Petroleum Hydrocarbons (VPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ARCADIS U.S., Inc.
3109 West Martin Luther King Jr. Blvd, Suite 350
Tampa, FL 33607
ATTN: Mr. Nathan Mullens
nrmullens@seres-es.com

February 19, 2021

SUBJECT: Fort Devens, Data Validation

Dear Mr. Mullens,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on December 22, 2020. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #50075:

SDG #	Fraction
680-190501-1 680-190501-2/SN8927/SN9017 680-190504-1, 680-190689-1	Volatiles, Semivolatiles, Chlorinated Pesticides, Polychlorinated Biphenyls, Metals, Wet Chemistry, Gasoline Range Organics, Diesel Range Organics, Volatile Petroleum Hydrocarbons, Extractable Petroleum Hydrocarbons

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Former Fort Devens Army Installation – BRAC Legacy Sites, Devens, MA; October 2020
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

221 pages-ADV

Attachment 1

Stage 2B EQUIS EDD

LDC #50075 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(2) DATE DUE	VOA (8260B)		VOA (624)		SVOA (625)		Pest. (8081B)		PCBs (8082A)		Metals (6010C /6020A /7470A)		GRO (8015C)		DRO (8015C)		VPH (MADEP -VPH)		EPH (MADEP -EPH)															
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-190501-1	12/22/20	01/07/21	-	-	-	-	-	-	4	0	4	0	4	0	-	-	-	-	-	-	-	-														
B	680-190501-2 /SN8927/SN9017	12/22/20	01/07/21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	0	4	0														
C	680-190504-1	12/22/20	01/07/21	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	-	-	-	-														
D	680-190689-1	12/22/20	01/07/21	5	0	-	-	-	-	4	0	4	0	-	-	-	-	-	-	-	-	-	-														
Total	T/PG			6	0	1	0	1	0	9	0	9	0	5	0	1	0	1	0	5	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42

Stage 2B EQUIS EDD

LDC #50075 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(2) DATE DUE	Alk. (2320B)		COD (410.4)		Cl,SO_4 (9056A)		CN- (9012B)		NO_3 /NO_2-N (353.2)		Total Phenols (9066)		pH (9040C)		TDS (2540C)		TSS (2540D)																	
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-190501-1	12/22/20	01/07/21	4	0	4	0	4	0	4	0	4	0	-	-	-	-	4	0	-	-																
C	680-190504-1	12/22/20	01/07/21	-	-	-	-	-	-	1	0	-	-	1	0	1	0	-	-	1	0																
D	680-190689-1	12/22/20	01/07/21	-	-	4	0	-	-	4	0	-	-	-	-	-	-	-	-	-	-																
Total	T/PG			4	0	8	0	4	0	9	0	4	0	1	0	1	0	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

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Data Validation Report for 6801905011a

Facility:	Former Fort Devens, Long Term Monitoring
Event:	Seres-Arcadis JV, Long Term Monitoring, DCL, Fall 2020
SDG:	6801905011a
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020
Prime Contractor:	Seres-Arcadis JV
Project Manager:	Jennifer Singer
Contract Laboratory(ies):	Eurofins Environment Testing TestAmerica, Arvada, CO
Data Review Contractor:	Laboratory Data Consultants, Inc.
Data Review Level:	2B
Primary Data Reviewer:	Kevin Kha, Environmental Scientist
Second Reviewer:	Pei Geng, Senior Scientist
Date Submitted:	January 06, 2021

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	A2320B	A2540C	E353.2	E410.4	SW6010C	SW6020A	SW7470A	SW8081B	SW9012B	SW9056A
DCL-DUP01-FAL20	680-190501-1	Water	Field Duplicate/FD	X	X	X	X	X	X	X	X	X	X
LFM-99-02B-FAL20	680-190501-2	Water	Field Sample/N	X	X	X	X	X	X	X	X	X	X
LFM-99-05A-FAL20	680-190501-3	Water	Field Sample/N	X	X	X	X	X	X	X	X	X	X
LFM-99-06ARP-FAL20	680-190501-4	Water	Field Sample/N	X	X	X	X	X	X	X	X	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by Seres-Arcadis JV; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 6801905011a. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Calibration Blank
- Calibration Blank - Negative
- Continuing Calibration Verification
- Extracted Internal Standard
- Field Duplicate RPD
- Interference Check Sample A
- Interference Check Sample A - Negative
- Interference Check Sample AB
- Lab Blank
- Lab Replicate RPD
- LCS Recovery
- LCS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 0 results (0.00%) out of the 152 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Data Reviewer Comment
SW9012B	No additional comments; see Checklist for detail.
SW9056A	No additional comments; see Checklist for detail.
A2320B	No additional comments; see Checklist for detail.
SW6020A	No additional comments; see Checklist for detail.
SW7470A	No additional comments; see Checklist for detail.
E353.2	No additional comments; see Checklist for detail.
SW6010C	No additional comments; see Checklist for detail.
E410.4	No additional comments; see Checklist for detail.
A2540C	No additional comments; see Checklist for detail.
SW8081B	No additional comments; see Checklist for detail.

[redacted] January 06, 2021

[redacted]nmental Scientist, Laboratory Data Consultants, Inc.

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

[redacted]Scientist, Laboratory Data Consultants, Inc. March 16, 2021

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method SW7470A, Total, Calibration Blank

The purpose of calibration blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in calibration blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
CCB68064075811A (CB)/ CCB68064075811A	Mercury	0.1020	< 0.08	< 0.2	ug/l	U/None	B2	
CCB68064075811A (CB)/ CCB68064075811A	Mercury	0.09140	< 0.08	< 0.2	ug/l	U/None	B2	
CCB68064075811A (CB)/ CCB68064075811A	Mercury	0.08980	< 0.08	< 0.2	ug/l	U/None	B2	
CCB68064075811A (CB)/ CCB68064075811A	Mercury	0.09940	< 0.08	< 0.2	ug/l	U/None	B2	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW8081B, Continuing Calibration Verification

Compliance requirements for satisfactory continuing calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. Continuing calibration is performed to verify and evaluate instrument performance during sample analysis. Summary forms were evaluated against project acceptance criteria, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
2J31003 (CV)/ 680-190501-3	Endrin	120.1	80 - 120	80 - 120	percent	J/None	V2	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Qualified Results

No results associated with this sample delivery group required qualification.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8081B

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
DCL-DUP01-FAL20	FD	Methoxychlor	0.0290	0.0290 U Q	0.0290 UJ	0.0290 U	
DCL-DUP01-FAL20	FD	p,p'-DDT	0.0290	0.0290 U Q	0.0290 UJ	0.0290 U	
LFM-99-02B-FAL20	N	Methoxychlor	0.0240	0.0240 U Q	0.0240 UJ	0.0240 U	
LFM-99-02B-FAL20	N	p,p'-DDT	0.0240	0.0240 U Q	0.0240 UJ	0.0240 U	
LFM-99-06ARP-FAL20	N	Methoxychlor	0.0240	0.0240 U Q	0.0240 UJ	0.0240 U	
LFM-99-06ARP-FAL20	N	p,p'-DDT	0.0240	0.0240 U Q	0.0240 UJ	0.0240 U	

Modified Qualifiers for test method SW9012B

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
DCL-DUP01-FAL20	FD	Cyanide	0.0100	0.0120	0.0120 J	0.0120	
LFM-99-05A-FAL20	N	Cyanide	0.0100	0.0100 U	0.0100 UJ	0.0100 U	

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
B2	CCB
TR	Trace Level Detect
V2	CCV

Flag Code and Definitions

Flag	Definition
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.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: A2320B (Alkalinity by Titrimetric Method)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were target analytes reported in the field blank(s) less than MDL?			•	A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: A2540C (Total Dissolved Solids, Dried at 180 C)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: E353.2 (Nitrogen, Nitrate-Nitrite (Colorimetric Automated, Cadmium Reduction))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?				
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: E410.4 (Chemical Oxygen Demand (Colorimetric, Automated Manual))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were target analytes reported in the field blank(s) less than MDL?			•	A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?			•	A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW7470A (Mercury in Water (Manual Cold-Vapor Technique))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		Although mercury was detected in the CCBs, the associated sample results were non-detected therefore no data were qualified.
Were target analytes reported in the field blank(s) less than MDL?			•	A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW8081B (Organochlorine Pesticides by Capillary GC)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?		•		Although CCV %R was above criteria for Endrin, the associated sample results were not detected, therefore no data were qualified.
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Were target analytes reported in the field blank(s) less than MDL?			•	A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW9012B (Total and Amenable Cyanide (Automated Colorimetric, with Off-Line Distillation))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were target analytes reported in the field blank(s) less than MDL?			•	A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW9056A (Anion Chromatography)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?				
Was the Calibration within acceptance criteria?				
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, DCL, Fall 2020
Field Duplicates for SDG: 6801905011a

Location	Analysis
LFM-99-05A	A2320B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Alkalinity, Total (as CaCO3)	79.0	81.0	10.0	2.50	30	OK	NA

Location	Analysis
LFM-99-05A	A2540C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Total Dissolved Solids	610	570	20.0	6.78	30	OK	NA

Location	Analysis
LFM-99-05A	E353.2

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Nitrate-Nitrite (as N)	0.640	0.650	0.100	1.55	30	OK	NA

Location	Analysis
LFM-99-05A	E410.4

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Chemical Oxygen Demand	ND	17.0	40.0	NA	30	NA	OK

Location	Analysis
LFM-99-05A	SW6010C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Barium (TOTREC)	21.0	18.0	10.0	15.4	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Cadmium (TOTREC)	ND	ND	5.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, DCL, Fall 2020
Field Duplicates for SDG: 6801905011a

Location	Analysis
LFM-99-05A	SW6010C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Chromium (TOTREC)	ND	ND	10.0	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Copper (TOTREC)	ND	ND	20.0	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Iron (TOTREC)	24.0	28.0	50.0	15.4	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Lead (TOTREC)	ND	ND	10.0	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Manganese (TOTREC)	ND	ND	10.0	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Selenium (TOTREC)	ND	ND	20.0	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Silver (TOTREC)	ND	ND	10.0	NA	30	NA	OK

Location	Analysis
LFM-99-05A	SW6020A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Arsenic (TOTAL)	ND	ND	3.00	NA	30	NA	OK

Location	Analysis
LFM-99-05A	SW7470A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Mercury (TOTAL)	ND	ND	0.200	NA	30	NA	OK

Location	Analysis
LFM-99-05A	SW8081B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Aldrin	ND	ND	0.0270	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, DCL, Fall 2020
Field Duplicates for SDG: 6801905011a

Location	Analysis
LFM-99-05A	SW8081B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	alpha-BHC (alpha-Hexachlorocyclohexane)	ND	ND	0.0270	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	alpha-Endosulfan	ND	ND	0.0270	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	beta-BHC (beta-Hexachlorocyclohexane)	ND	ND	0.0270	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	beta-Endosulfan	ND	ND	0.0270	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Chlordane	ND	ND	0.270	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	delta-BHC (delta-Hexachlorocyclohexane)	ND	ND	0.0270	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Dieldrin	ND	ND	0.0270	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Endosulfan sulfate	ND	ND	0.0270	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Endrin	ND	ND	0.0270	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Endrin aldehyde	ND	ND	0.0270	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Endrin ketone	ND	ND	0.0270	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	gamma-BHC (Lindane)	ND	ND	0.0270	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Heptachlor	ND	ND	0.0270	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Heptachlor epoxide	ND	ND	0.0270	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Methoxychlor	ND	ND	0.0270	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	p,p'-DDD	ND	ND	0.0270	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	p,p'-DDE	ND	ND	0.0270	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	p,p'-DDT	ND	ND	0.0270	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Toxaphene	ND	ND	2.70	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, DCL, Fall 2020
Field Duplicates for SDG: 6801905011a

Location	Analysis
LFM-99-05A	SW9012B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Cyanide	ND	0.0120	0.0100	NA	30	NA	0.012

Location	Analysis
LFM-99-05A	SW9056A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Chloride	290	280	5.00	3.51	30	OK	NA
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	680-190501-3 / 680-190501-1	Sulfate	16.0	16.0	10.0	0.00	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ARCADIS U.S., Inc.
3109 West Martin Luther King Jr. Blvd, Suite 350
Tampa, FL 33607
ATTN: Mr. Nathan Mullens
nrmullens@seres-es.com

February 19, 2021

SUBJECT: Fort Devens, Data Validation

Dear Mr. Mullens,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on December 22, 2020. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #50075:

SDG #	Fraction
680-190501-1 680-190501-2/SN8927/SN9017 680-190504-1, 680-190689-1	Volatiles, Semivolatiles, Chlorinated Pesticides, Polychlorinated Biphenyls, Metals, Wet Chemistry, Gasoline Range Organics, Diesel Range Organics, Volatile Petroleum Hydrocarbons, Extractable Petroleum Hydrocarbons

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Former Fort Devens Army Installation – BRAC Legacy Sites, Devens, MA; October 2020
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

221 pages-ADV

Attachment 1

Stage 2B EQUIS EDD

LDC #50075 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(2) DATE DUE	VOA (8260B)		VOA (624)		SVOA (625)		Pest. (8081B)		PCBs (8082A)		Metals (6010C /6020A /7470A)		GRO (8015C)		DRO (8015C)		VPH (MADEP -VPH)		EPH (MADEP -EPH)															
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-190501-1	12/22/20	01/07/21	-	-	-	-	-	-	4	0	4	0	4	0	-	-	-	-	-	-	-	-														
B	680-190501-2 /SN8927/SN9017	12/22/20	01/07/21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	0	4	0														
C	680-190504-1	12/22/20	01/07/21	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	-	-	-	-														
D	680-190689-1	12/22/20	01/07/21	5	0	-	-	-	-	4	0	4	0	-	-	-	-	-	-	-	-	-	-														
Total	T/PG			6	0	1	0	1	0	9	0	9	0	5	0	1	0	1	0	5	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42

Stage 2B EQUIS EDD

LDC #50075 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(2) DATE DUE	Alk. (2320B)		COD (410.4)		Cl,SO_4 (9056A)		CN- (9012B)		NO_3 /NO_2-N (353.2)		Total Phenols (9066)		pH (9040C)		TDS (2540C)		TSS (2540D)																	
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-190501-1	12/22/20	01/07/21	4	0	4	0	4	0	4	0	4	0	-	-	-	-	4	0	-	-																
C	680-190504-1	12/22/20	01/07/21	-	-	-	-	-	-	1	0	-	-	1	0	1	0	-	-	1	0																
D	680-190689-1	12/22/20	01/07/21	-	-	4	0	-	-	4	0	-	-	-	-	-	-	-	-	-	-																
Total	T/PG			4	0	8	0	4	0	9	0	4	0	1	0	1	0	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

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Data Validation Report for DEVENS-2

Facility:	Former Fort Devens, Long Term Monitoring
Event:	Seres-Arcadis JV, Long Term Monitoring, DCL, Fall 2020
SDG:	DEVENS-2
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020
Prime Contractor:	Seres-Arcadis JV
Project Manager:	Jennifer Singer
Contract Laboratory(ies):	Katahdin Analytical Services, Westbrook, ME
Data Review Contractor:	Laboratory Data Consultants, Inc.
Data Review Level:	2B
Primary Data Reviewer:	Kevin Kha, Environmental Scientist
Second Reviewer:	Pei Geng, Senior Scientist
Date Submitted:	January 06, 2021

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	MADEPEP	MADEPVP
DCL-DUP01-FAL20	SN8927-1	Water	Field Duplicate/FD		X
DCL-DUP01-FAL20	SN8927-1RA	Water	Field Duplicate/FD	X	
DCL-TB1-FAL20	SN9017-1	Water	Trip Blank/TB		X
LFM-99-02B-FAL20	SN8927-2	Water	Field Sample/N		X
LFM-99-02B-FAL20	SN8927-2RA	Water	Field Sample/N	X	
LFM-99-05A-FAL20	SN8927-3	Water	Field Sample/N		X
LFM-99-05A-FAL20	SN8927-3RA	Water	Field Sample/N	X	
LFM-99-06ARP-FAL20	SN8927-4	Water	Field Sample/N		X
LFM-99-06ARP-FAL20	SN8927-4RA	Water	Field Sample/N	X	

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by Seres-Arcadis JV; analyses were performed by Katahdin Analytical Services, Westbrook, ME and were reported under sample delivery group (SDG) DEVENS-2. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Extracted Internal Standard
- Field Duplicate RPD
- Lab Blank
- LCS Recovery
- LCS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time
- Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 23 results (17.69%) out of the 130 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Data Reviewer Comment
MADEPVP	No additional comments; see Checklist for detail.
MADEPEP	No additional comments; see Checklist for detail.



January 06, 2021

nmental Scientist, Laboratory Data Consultants, Inc.

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.



Scientist, Laboratory Data Consultants, Inc.

March 16, 2021

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method MADEPEP, LCS Recovery

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
WG289150-2RA (BS)/ WG289150-2RA	C9-C18 Petroleum Hydrocarbons, Aliphatic	37.96	40 - 140	10 - 140	percent	J/UJ	C	
WG289150-3RA (BD)/ WG289150-3RA	C9-C18 Petroleum Hydrocarbons, Aliphatic	35.93	40 - 140	10 - 140	percent	J/UJ	C	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the LCS Recovery for MADEPEP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
DCL-DUP01-FAL20	FD	C9-C18 Petroleum Hydrocarbons, Aliphatic	110	83.0 ULL	83.0 UJ		ug/l	C
LFM-99-02B-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	96.0	72.0 ULL	72.0 UJ		ug/l	C
LFM-99-05A-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	110	81.0 ULL	81.0 UJ		ug/l	C
LFM-99-06ARP-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	94.0	71.0 ULL	71.0 UJ		ug/l	C/I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method MADEPEP, Surrogate

Method performance for individual samples is demonstrated through spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. The sample itself may produce effects due to such factors as interferences and high concentrations of analytes. Summary forms were evaluated and compared to electronic data deliverables. Surrogate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LFM-99-06ARP-FAL20 (N)/ SN8927-4RA	5-alpha-Androstane	35.90	40 - 140	10 - 140	percent	J/UJ	I	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Surrogate for MADEPEP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-99-06ARP-FAL20	N	2-Methylnaphthalene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Acenaphthene	1.90	1.80 U	1.80 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Acenaphthylene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Anthracene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Benzo(a)anthracene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Benzo(a)pyrene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Benzo(b)fluoranthene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Benzo(g,h,i)perylene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Benzo(k)fluoranthene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	94.0	71.0 U	71.0 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	94.0	71.0 U	71.0 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	94.0	71.0 ULL	71.0 UJ		ug/l	C/I
LFM-99-06ARP-FAL20	N	Chrysene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Fluoranthene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Fluorene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Indeno(1,2,3-c,d)pyrene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Naphthalene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Phenanthrene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Pyrene	1.90	1.40 U	1.40 UJ		ug/l	I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method MADEPVP, Test Hold Time

Hold times are ascertained based on project requirements. Holding times were determined by comparing the chain of custody records with the dates of analysis found in the electronic data deliverable and laboratory summary forms. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
DCL-TB1-FAL20 (TB)/ SN9017-1		14.56	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Table of All Qualified Results

Test Method: MADEPEP	**Extraction Method: METHOD**							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
DCL-DUP01-FAL20	FD	C9-C18 Petroleum Hydrocarbons, Aliphatic	110	83.0 ULL	83.0 UJ		ug/l	C
LFM-99-02B-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	96.0	72.0 ULL	72.0 UJ		ug/l	C
LFM-99-05A-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	110	81.0 ULL	81.0 UJ		ug/l	C
LFM-99-06ARP-FAL20	N	2-Methylnaphthalene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Acenaphthene	1.90	1.80 U	1.80 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Acenaphthylene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Anthracene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Benzo(a)anthracene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Benzo(a)pyrene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Benzo(b)fluoranthene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Benzo(g,h,i)perylene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Benzo(k)fluoranthene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	94.0	71.0 U	71.0 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	94.0	71.0 U	71.0 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	94.0	71.0 ULL	71.0 UJ		ug/l	C/I
LFM-99-06ARP-FAL20	N	Chrysene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Fluoranthene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Fluorene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Indeno(1,2,3-c,d)pyrene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Naphthalene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Phenanthrene	1.90	1.40 U	1.40 UJ		ug/l	I
LFM-99-06ARP-FAL20	N	Pyrene	1.90	1.40 U	1.40 UJ		ug/l	I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method MADEPVP

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
DCL-TB1-FAL20	TB	Benzene	3.00	2.00 U	2.00 UJ	2.00 U	
DCL-TB1-FAL20	TB	C5-C8 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ	75.0 U	
DCL-TB1-FAL20	TB	C9-C10 Volatile Petroleum Hydrocarbons, Aromatic	100	75.0 U	75.0 UJ	75.0 U	
DCL-TB1-FAL20	TB	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ	75.0 U	
DCL-TB1-FAL20	TB	Ethylbenzene	5.00	3.80 U	3.80 UJ	3.80 U	
DCL-TB1-FAL20	TB	m,p-Xylene	10.0	7.50 U	7.50 UJ	7.50 U	
DCL-TB1-FAL20	TB	Methyl tert-butyl ether (MTBE)	5.00	3.80 U	3.80 UJ	3.80 U	
DCL-TB1-FAL20	TB	Naphthalene	5.00	3.80 U	3.80 UJ	3.80 U	
DCL-TB1-FAL20	TB	o-Xylene	5.00	3.80 U	3.80 UJ	3.80 U	
DCL-TB1-FAL20	TB	Toluene	5.00	3.80 U	3.80 UJ	3.80 U	

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
C	LCS Recovery
H1	Test Hold Time
I	Surrogate recovery outside project limits.
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
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.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: MADEPEP (Method for the Determination of Extractable Petroleum Hydrocarbons (EPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?		•		Due to surrogates %R below criteria, sample LFM-99-06ARP-FAL20 was qualified as non-detected estimated (UJ).
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were target analytes reported in the field blank(s) less than MDL?			•	A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?		•		Due to LCS/LCSD %R below criteria, 4 C9-C18 Petroleum Hydrocarbons, Aliphatic results were qualified as non-detected estimated (UJ).
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported or as qualified during data validation.

Review Questions

Method: MADEPVP (Method for the Determination of Volatile Petroleum Hydrocarbons (VPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			Although FUDSChem ADR flagged sample DCL-TB1-FAL20 as outside of holding time, the sample was analyzed within the 14th day of hold, therefore no data were qualified.
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, DCL, Fall 2020
Field Duplicates for SDG: DEVENS-2

Location	Analysis
LFM-99-05A	MADEPEP

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	2-Methylnaphthalene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	Acenaphthene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	Acenaphthylene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	Anthracene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	Benzo(a)anthracene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	Benzo(a)pyrene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	Benzo(b)fluoranthene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	Benzo(g,h,i)perylene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	Benzo(k)fluoranthene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	ND	ND	110	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	C19-C36 Petroleum Hydrocarbons, Aliphatic	ND	ND	110	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	C9-C18 Petroleum Hydrocarbons, Aliphatic	ND	ND	110	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	Chrysene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	Dibenz(a,h)anthracene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	Fluoranthene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	Fluorene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	Indeno(1,2,3-c,d)pyrene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	Naphthalene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	Phenanthrene	ND	ND	2.20	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3RA / SN8927-1RA	Pyrene	ND	ND	2.20	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, DCL, Fall 2020
Field Duplicates for SDG: DEVENS-2

Location	Analysis
LFM-99-05A	MADEPVP

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3 / SN8927-1	Benzene	ND	ND	3.00	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3 / SN8927-1	C5-C8 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	ND	ND	100	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3 / SN8927-1	C9-C10 Volatile Petroleum Hydrocarbons, Aromatic	ND	ND	100	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3 / SN8927-1	C9-C12 Volatile Petroleum Hydrocarbons Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	ND	ND	100	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3 / SN8927-1	Ethylbenzene	ND	ND	5.00	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3 / SN8927-1	m,p-Xylene	ND	ND	10.0	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3 / SN8927-1	Methyl tert-butyl ether (MTBE)	ND	ND	5.00	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3 / SN8927-1	Naphthalene	ND	ND	5.00	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3 / SN8927-1	o-Xylene	ND	ND	5.00	NA	30	NA	OK
LFM-99-05A-FAL20 / DCL-DUP01-FAL20	SN8927-3 / SN8927-1	Toluene	ND	ND	5.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ARCADIS U.S., Inc.
3109 West Martin Luther King Jr. Blvd, Suite 350
Tampa, FL 33607
ATTN: Mr. Nathan Mullens
nrmullens@seres-es.com

February 19, 2021

SUBJECT: Fort Devens, Data Validation

Dear Mr. Mullens,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on December 22, 2020. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #50075:

SDG #	Fraction
680-190501-1 680-190501-2/SN8927/SN9017 680-190504-1, 680-190689-1	Volatiles, Semivolatiles, Chlorinated Pesticides, Polychlorinated Biphenyls, Metals, Wet Chemistry, Gasoline Range Organics, Diesel Range Organics, Volatile Petroleum Hydrocarbons, Extractable Petroleum Hydrocarbons

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Former Fort Devens Army Installation – BRAC Legacy Sites, Devens, MA; October 2020
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

221 pages-ADV

Attachment 1

Stage 2B EQUIS EDD

LDC #50075 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(2) DATE DUE	VOA (8260B)		VOA (624)		SVOA (625)		Pest. (8081B)		PCBs (8082A)		Metals (6010C /6020A /7470A)		GRO (8015C)		DRO (8015C)		VPH (MADEP -VPH)		EPH (MADEP -EPH)															
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-190501-1	12/22/20	01/07/21	-	-	-	-	-	-	4	0	4	0	4	0	-	-	-	-	-	-	-	-														
B	680-190501-2 /SN8927/SN9017	12/22/20	01/07/21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	0	4	0														
C	680-190504-1	12/22/20	01/07/21	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	-	-	-	-														
D	680-190689-1	12/22/20	01/07/21	5	0	-	-	-	-	4	0	4	0	-	-	-	-	-	-	-	-	-	-														
Total	T/PG			6	0	1	0	1	0	9	0	9	0	5	0	1	0	1	0	5	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42

Stage 2B EQUIS EDD

LDC #50075 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(2) DATE DUE	Alk. (2320B)		COD (410.4)		Cl,SO_4 (9056A)		CN- (9012B)		NO_3 /NO_2-N (353.2)		Total Phenols (9066)		pH (9040C)		TDS (2540C)		TSS (2540D)																	
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-190501-1	12/22/20	01/07/21	4	0	4	0	4	0	4	0	4	0	-	-	-	-	4	0	-	-																
C	680-190504-1	12/22/20	01/07/21	-	-	-	-	-	-	1	0	-	-	1	0	1	0	-	-	1	0																
D	680-190689-1	12/22/20	01/07/21	-	-	4	0	-	-	4	0	-	-	-	-	-	-	-	-	-	-																
Total	T/PG			4	0	8	0	4	0	9	0	4	0	1	0	1	0	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

L:\Arcadis\Fort Devens\50075ST.wpd

Data Validation Report for 6801905041a

Facility:	Former Fort Devens, Long Term Monitoring
Event:	Seres-Arcadis JV, Long Term Monitoring, DCL Leach, Fall 2020
SDG:	6801905041a
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020
Prime Contractor:	Seres-Arcadis JV
Project Manager:	Jennifer Singer
Contract Laboratory(ies):	Eurofins Environment Testing TestAmerica, Arvada, CO
Data Review Contractor:	Laboratory Data Consultants, Inc.
Data Review Level:	2B
Primary Data Reviewer:	Kevin Kha, Environmental Scientist
Second Reviewer:	Pei Geng, Senior Scientist
Date Submitted:	January 07, 2021

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	A2540D	E624	E625	M8015D	SW6010C	SW6020A	SW7470A	SW8081B	SW8082A	SW8260B	SW9012B	SW9040C	SW9066
DCL LEACHATE_FAL20	680-190504-1	Liquid	Field Sample/N	X	X	X	X	X	X	X	X	X		X	X	X
DCL-TB2-FAL20	680-190504-2	Water	Trip Blank/TB										X			

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by Seres-Arcadis JV; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 6801905041a. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Calibration Blank
- Calibration Blank - Negative
- Continuing Calibration Verification
- Extracted Internal Standard
- Interference Check Sample A
- Interference Check Sample A - Negative
- Interference Check Sample AB
- Lab Blank
- Lab Replicate RPD
- LCS Recovery
- LCS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time
- Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 60 results (28.71%) out of the 209 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Data Reviewer Comment
SW7470A	No additional comments; see Checklist for detail.
SW8082A	No additional comments; see Checklist for detail.
A2540D	No additional comments; see Checklist for detail.
SW6020A	No additional comments; see Checklist for detail.
SW8081B	No additional comments; see Checklist for detail.
SW9012B	No additional comments; see Checklist for detail.
E624	No additional comments; see Checklist for detail.
SW8260B	No additional comments; see Checklist for detail.
E625	No additional comments; see Checklist for detail.
SW6010C	No additional comments; see Checklist for detail.

[redacted] January 07, 2021

[redacted]nmental Scientist, Laboratory Data Consultants, Inc.

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

[redacted] March 16, 2021

[redacted]Scientist, Laboratory Data Consultants, Inc.

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method E625, LCS Recovery

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCS6806414019A (BS)/ LCS6806414019A	Hexachlorocyclopentadiene	14.70	53 - 135	53 - 135	percent	J/UJ	C	
LCS6806414019A (BS)/ LCS6806414019A	Hexachloroethane	55.00	68 - 128	68 - 128	percent	J/UJ	C	
LCS6806414019A (BS)/ LCS6806414019A	1,3-Dichlorobenzene	56.90	70 - 129	70 - 129	percent	J/UJ	C	
LCSD68064140110A (BD)/ LCSD68064140110A	Hexachlorocyclopentadiene	17.10	53 - 135	53 - 135	percent	J/UJ	C	
LCSD68064140110A (BD)/ LCSD68064140110A	Hexachloroethane	56.70	68 - 128	68 - 128	percent	J/UJ	C	
LCSD68064140110A (BD)/ LCSD68064140110A	1,3-Dichlorobenzene	58.20	70 - 129	70 - 129	percent	J/UJ	C	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the LCS Recovery for E625

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
DCL LEACHATE_FAL20	N	1,3-Dichlorobenzene	9.60	9.60 U	9.60 UJ		ug/l	C
DCL LEACHATE_FAL20	N	Hexachlorocyclopentadiene	19.0	19.0 U	19.0 UJ		ug/l	C
DCL LEACHATE_FAL20	N	Hexachloroethane	9.60	9.60 U	9.60 UJ		ug/l	C

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method M8015D, LCS Recovery

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCS6806407579A (BS)/ LCS6806407579A	C10-C28 Petroleum Hydrocarbons	72.70	78 - 122	78 - 113	percent	J/R	C	
LCSD68064075710A (BD)/ LCSD68064075710A	C10-C28 Petroleum Hydrocarbons	64.30	78 - 122	78 - 113	percent	J/R	C	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the LCS Recovery for M8015D

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
DCL LEACHATE_FAL20	N	C10-C28 Petroleum Hydrocarbons	0.0960	2.20	2.20 J	-	mg/l	C/I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method M8015D, Surrogate

Method performance for individual samples is demonstrated through spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. The sample itself may produce effects due to such factors as interferences and high concentrations of analytes. Summary forms were evaluated and compared to electronic data deliverables. Surrogate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
DCL LEACHATE_FAL20 (N)/ 680-190504-1	o-Terphenyl	68.21	69 - 133	10 - 133	percent	J/UJ	I	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Surrogate for M8015D

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
DCL LEACHATE_FAL20	N	C10-C28 Petroleum Hydrocarbons	0.0960	2.20	2.20 J	-	mg/l	C/I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW7470A, Total, Calibration Blank

The purpose of calibration blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in calibration blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
CCB68064075811A (CB)/ CCB68064075811A	Mercury	0.1020	< 0.08	< 0.2	ug/l	U/None	B2	
CCB68064075811A (CB)/ CCB68064075811A	Mercury	0.09140	< 0.08	< 0.2	ug/l	U/None	B2	
CCB68064075811A (CB)/ CCB68064075811A	Mercury	0.08980	< 0.08	< 0.2	ug/l	U/None	B2	
CCB68064075811A (CB)/ CCB68064075811A	Mercury	0.09940	< 0.08	< 0.2	ug/l	U/None	B2	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW8081B, Confirmation Column Difference

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
DCL LEACHATE_FAL20 (N)/ 680-190504-1	alpha-BHC (alpha-Hexachlorocyclohexane)	121.5	< 40	< 40	rpd	J/None	P1	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Confirmation Column Difference for SW8081B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
DCL LEACHATE_FAL20	N	alpha-BHC (alpha-Hexachlorocyclohexane)	0.0240	0.00830 J	0.00830 J		ug/l	P1/TR

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8082A, Surrogate

Method performance for individual samples is demonstrated through spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. The sample itself may produce effects due to such factors as interferences and high concentrations of analytes. Summary forms were evaluated and compared to electronic data deliverables. Surrogate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
DCL LEACHATE_FAL20 (N)/ 680-190504-1	Decachlorobiphenyl	14.71	40 - 135	10 - 135	percent	J/UJ	I	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Surrogate for SW8082A

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
DCL LEACHATE_FAL20	N	PCB-1016 (Aroclor 1016)	0.480	0.480 U	0.480 UJ		ug/l	I
DCL LEACHATE_FAL20	N	PCB-1221 (Aroclor 1221)	0.480	0.480 U	0.480 UJ		ug/l	I
DCL LEACHATE_FAL20	N	PCB-1232 (Aroclor 1232)	0.480	0.480 U	0.480 UJ		ug/l	I
DCL LEACHATE_FAL20	N	PCB-1242 (Aroclor 1242)	0.480	0.480 U	0.480 UJ		ug/l	I
DCL LEACHATE_FAL20	N	PCB-1248 (Aroclor 1248)	0.480	0.480 U	0.480 UJ		ug/l	I
DCL LEACHATE_FAL20	N	PCB-1254 (Aroclor 1254)	0.480	0.480 U M	0.480 UJ		ug/l	I
DCL LEACHATE_FAL20	N	PCB-1260 (Aroclor 1260)	0.480	0.480 U M	0.480 UJ		ug/l	I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8260B, Continuing Calibration Verification

Compliance requirements for satisfactory continuing calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. Continuing calibration is performed to verify and evaluate instrument performance during sample analysis. Summary forms were evaluated against project acceptance criteria, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
CCVC68064255229 (CV)/ CCVC68064255229	Dichlorodifluoromethane	47.60	80 - 120	80 - 120	percent	J/UJ	V2	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Continuing Calibration Verification for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
DCL-TB2-FAL20	TB	Dichlorodifluoromethane	1.00	1.00 U Q	1.00 UJ		ug/l	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8260B, Initial Calibration Verification

Compliance requirements for satisfactory continuing calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. Continuing calibration is performed to verify and evaluate instrument performance during sample analysis. Summary forms were evaluated against project acceptance criteria, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
ICJ2615 (IV)/ 680-190504-2	Chloromethane	127.6	80 - 120	80 - 120	percent	J/None	V1	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW8260B, Lab Blank

The purpose of laboratory blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in laboratory blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
MB6806425528 (LB)/ MB6806425528	cis-1,2-Dichloroethene	0.7870	< 0.41	< 1	ug/l	U/None	L	
MB6806425528 (LB)/ MB6806425528	1,2-Dichloroethene	0.7870	< 0.74	< 2	ug/l	U/None	L	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Lab Blank for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
DCL-TB2-FAL20	TB	cis-1,2-Dichloroethene	1.00	0.550 J B	1.00 U		ug/l	L

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8260B, Trip Blank

The purpose of trip blanks is to determine the existence and magnitude of cross-contamination problems resulting from the shipping of samples. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in trip blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
DCL-TB2-FAL20 (TB)/ 680-190504-2	cis-1,2-Dichloroethene	0.5500	< 0.41	< 1	ug/l	U/None	T	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW9066, LCS Recovery

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCS2805152871A (BS)/ LCS2805152871A	Phenolics, Total Recoverable	101.5	90 - 90	10 - 130	percent	J/None	C	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Table of All Qualified Results

Test Method: E625 Extraction Method: METHOD								
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
DCL LEACHATE_FAL20	N	1,3-Dichlorobenzene	9.60	9.60 U	9.60 UJ		ug/l	C
DCL LEACHATE_FAL20	N	Hexachlorocyclopentadiene	19.0	19.0 U	19.0 UJ		ug/l	C
DCL LEACHATE_FAL20	N	Hexachloroethane	9.60	9.60 U	9.60 UJ		ug/l	C

Test Method: M8015D Extraction Method: SW3520C								
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
DCL LEACHATE_FAL20	N	C10-C28 Petroleum Hydrocarbons	0.0960	2.20	2.20 J	-	mg/l	C/I

Test Method: SW8081B Extraction Method: SW3520C								
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
DCL LEACHATE_FAL20	N	alpha-BHC (alpha-Hexachlorocyclohexane)	0.0240	0.00830 J	0.00830 J		ug/l	P1/TR

Test Method: SW8082A Extraction Method: SW3520C								
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
DCL LEACHATE_FAL20	N	PCB-1016 (Aroclor 1016)	0.480	0.480 U	0.480 UJ		ug/l	I
DCL LEACHATE_FAL20	N	PCB-1221 (Aroclor 1221)	0.480	0.480 U	0.480 UJ		ug/l	I
DCL LEACHATE_FAL20	N	PCB-1232 (Aroclor 1232)	0.480	0.480 U	0.480 UJ		ug/l	I
DCL LEACHATE_FAL20	N	PCB-1242 (Aroclor 1242)	0.480	0.480 U	0.480 UJ		ug/l	I
DCL LEACHATE_FAL20	N	PCB-1248 (Aroclor 1248)	0.480	0.480 U	0.480 UJ		ug/l	I
DCL LEACHATE_FAL20	N	PCB-1254 (Aroclor 1254)	0.480	0.480 U M	0.480 UJ		ug/l	I
DCL LEACHATE_FAL20	N	PCB-1260 (Aroclor 1260)	0.480	0.480 U M	0.480 UJ		ug/l	I

Test Method: SW8260B Extraction Method: SW5030B								
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
DCL-TB2-FAL20	TB	Dichlorodifluoromethane	1.00	1.00 U Q	1.00 UJ		ug/l	V2
DCL-TB2-FAL20	TB	cis-1,2-Dichloroethene	1.00	0.550 J B	1.00 U		ug/l	L

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method E624

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
DCL LEACHATE_FAL20	N	1,1,1-Trichloroethane	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	1,1,2,2-Tetrachloroethane	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	1,1,2-Trichloroethane	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	1,1-Dichloroethane	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	1,1-Dichloroethene	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	1,2,4-Trichlorobenzene	5.00	5.00 U	5.00 U	5.00 UJ	H1
DCL LEACHATE_FAL20	N	1,2-Dibromoethane (EDB)	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	1,2-Dichlorobenzene	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	1,2-Dichloroethane	1.00	1.00 U M	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	1,2-Dichloroethene	2.00	2.00 U	2.00 U	2.00 UJ	H1
DCL LEACHATE_FAL20	N	1,2-Dichloropropane	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	1,3-Dichlorobenzene	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	1,4-Dichlorobenzene	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	2-Butanone (MEK)	10.0	10.0 U	10.0 U	10.0 UJ	H1
DCL LEACHATE_FAL20	N	2-Hexanone	10.0	10.0 U	10.0 U	10.0 UJ	H1
DCL LEACHATE_FAL20	N	4-Methyl-2-pentanone (MIBK)	10.0	10.0 U	10.0 U	10.0 UJ	H1
DCL LEACHATE_FAL20	N	Acetone	25.0	25.0 U	25.0 U	25.0 UJ	H1
DCL LEACHATE_FAL20	N	Benzene	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	Bromodichloromethane	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	Bromoform	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	Bromomethane	5.00	5.00 U	5.00 U	5.00 UJ	H1
DCL LEACHATE_FAL20	N	Carbon disulfide	2.00	2.00 U	2.00 U	2.00 UJ	H1
DCL LEACHATE_FAL20	N	Carbon tetrachloride	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	Chlorobenzene	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	Chloroethane	5.00	5.00 U	5.00 U	5.00 UJ	H1
DCL LEACHATE_FAL20	N	Chloroform	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	Chloromethane	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	cis-1,2-Dichloroethene	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	cis-1,3-Dichloropropene	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	Cyclohexane	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	Dibromochloromethane	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	Dichlorodifluoromethane	1.00	1.00 U Q	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	Ethylbenzene	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	m,p-Xylene	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	Methyl tert-butyl ether (MTBE)	10.0	10.0 U	10.0 U	10.0 UJ	H1
DCL LEACHATE_FAL20	N	Methylene chloride	5.00	5.00 U	5.00 U	5.00 UJ	H1
DCL LEACHATE_FAL20	N	o-Xylene	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	Styrene	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	Tetrachloroethene (PCE)	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	Toluene	1.00	1.00 U	1.00 U	1.00 UJ	H1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method E624

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
DCL LEACHATE_FAL20	N	trans-1,2-Dichloroethene	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	trans-1,3-Dichloropropene	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	Trichloroethene (TCE)	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	Trichlorofluoromethane	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	Vinyl chloride	1.00	1.00 U	1.00 U	1.00 UJ	H1
DCL LEACHATE_FAL20	N	Xylenes, Total	2.00	2.00 U	2.00 U	2.00 UJ	H1

Modified Qualifiers for test method E625

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
DCL LEACHATE_FAL20	N	Hexachlorobutadiene	9.60	9.60 U	9.60 UJ	9.60 U	

Modified Qualifiers for test method SW8081B

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
DCL LEACHATE_FAL20	N	Methoxychlor	0.0240	0.0240 U M Q	0.0240 UJ	0.0240 U	
DCL LEACHATE_FAL20	N	p,p'-DDT	0.0240	0.0240 U M Q	0.0240 UJ	0.0240 U	

Modified Qualifiers for test method SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
DCL-TB2-FAL20	TB	1,1-Dichloroethene	1.00	1.00 U	1.00 UJ	1.00 U	
DCL-TB2-FAL20	TB	2,2-Dichloropropane	1.00	1.00 U	1.00 UJ	1.00 U	
DCL-TB2-FAL20	TB	Bromoform	1.00	1.00 U	1.00 UJ	1.00 U	
DCL-TB2-FAL20	TB	Bromomethane	5.00	5.00 U	5.00 UJ	5.00 U	
DCL-TB2-FAL20	TB	Carbon disulfide	2.00	2.00 U	2.00 UJ	2.00 U	
DCL-TB2-FAL20	TB	Carbon tetrachloride	1.00	1.00 U	1.00 UJ	1.00 U	
DCL-TB2-FAL20	TB	Hexachlorobutadiene	5.00	5.00 U	5.00 UJ	5.00 U	
DCL-TB2-FAL20	TB	n-Butylbenzene	1.00	1.00 U	1.00 UJ	1.00 U	
DCL-TB2-FAL20	TB	trans-1,2-Dichloroethene	1.00	1.00 U	1.00 UJ	1.00 U	
DCL-TB2-FAL20	TB	Trichlorofluoromethane	1.00	1.00 U	1.00 UJ	1.00 U	
DCL-TB2-FAL20	TB	Vinyl chloride	1.00	1.00 U	1.00 UJ	1.00 U	

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
B2	CCB
C	LCS Recovery
H1	Test Hold Time
I	Surrogate recovery outside project limits.
L	Lab Blank
P1	Column RPD
T	Trip Blank
TR	Trace Level Detect
V1	ICV
V2	CCV

Flag Code and Definitions

Flag	Definition
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.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: A2540D (Total Suspended Solids Dried at 103-105 C)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?	•			A laboratory duplicate (DUP) was prepared and analyzed with these samples. The DUP RPD was within project acceptance limits.
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: E624 (Volatile Organics GC/MS)

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?		•		Sample DCL LEACHATE_FAL20 was not properly preserved to <2 pH.
Were holding times met?		•		Due to improper preservation, the holding time for sample DCL LEACHATE_FAL20 was shortened to 7 days. Due to holding time exceedance, sample DCL LEACHATE_FAL20 was qualified as non-detected (UJ).
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were target analytes reported in the field blank(s) less than MDL?			•	A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported or as qualified during data validation.

Review Questions

Method: E625 (Extractable Priority Pollutants (Base/Neutral and Acid))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?		•		Although pentachlorophenol ICV %R was above criteria, the associated sample results were non-detected, therefore no data were qualified.
Were CCVs run at the required frequency and within acceptance criteria?		•		Although bis(2-chloroisopropyl)ether [2,2'-Oxybis (1-chloropropane)] was above criteria, the associated sample results were non-detected, therefore no data were qualified.
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were target analytes reported in the field blank(s) less than MDL?			•	A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?		•		Due to LCS/LCSD %R below criteria, 3 results were qualified as non-detected (UJ).
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported or as qualified during data validation.

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?		•		Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW7470A (Mercury in Water (Manual Cold-Vapor Technique))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		Although mercury was detected in the calibration blanks, the associated sample results were non-detected therefore no data were qualified.
Were target analytes reported in the field blank(s) less than MDL?			•	A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW8081B (Organochlorine Pesticides by Capillary GC)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were target analytes reported in the field blank(s) less than MDL?			•	A field blank was not analyzed for this method.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?		•		Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?		•		Due to confirmation column RPD outside criteria, 1 alpha-BHC result was qualified as detected estimated (J).
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Review Questions

Method: SW8082A (Polychlorinated Biphenyls (PCB))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?		•		Due to surrogate %R below criteria, sample DCL LEACHATE_FAL20 was qualified as non-detected (UJ).
Was a method blank prepared and analyzed with each batch?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Were target analytes reported in the field blank(s) less than MDL?			•	A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported or as qualified during data validation.

Review Questions

Method: SW8260B (Volatile Organic Compounds by Capillary GC/MS)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?		•		Although chloromethane ICV %R was above criteria, the associated sample results were non-detected, therefore no data were qualified.
Were CCVs run at the required frequency and within acceptance criteria?		•		Due to CCV %R below criteria, 1 dichlorodifluoromethane result was qualified as non-detected estimated (UJ).
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were field blanks (EBs or FBs) submitted with these samples?	•			
Were target analytes reported in the field blank(s) less than MDL?		•		Although cis-1,2-Dichloroethene was detected in sample DCL-TB2-FAL20, there were no associated samples in this SDG, therefore no data were qualified.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported or as qualified during data validation.

Review Questions

Method: SW9012B (Total and Amenable Cyanide (Automated Colorimetric, with Off-Line Distillation))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	A field duplicate was not submitted with these samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ARCADIS U.S., Inc.
3109 West Martin Luther King Jr. Blvd, Suite 350
Tampa, FL 33607
ATTN: Mr. Nathan Mullens
nrmullens@seres-es.com

February 19, 2021

SUBJECT: Fort Devens, Data Validation

Dear Mr. Mullens,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on December 15, 2020. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #50005:

SDG #	Fraction
680-190497-1, 680-191327-1	Dissolved Metals, Wet Chemistry

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Former Fort Devens Army Installation – BRAC Legacy Sites, Devens, MA; October 2020
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,



Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

60 pages-ADV

Attachment 1

Stage 2B EQUIS EDD

LDC #50005 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(2) DATE DUE	3 D.Metal (6010C/ 6020A)		Alk. (2320B)		DOC (9060A)		Cl,SO_4 (9056A)																											
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-190497-1	12/15/20	12/30/20	11	0	-	-	-	-	-	-																										
B	680-191327-1	12/15/20	12/30/20	11	0	11	0	11	0	11	0																										
Total	T/PG			22	0	11	0	11	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

L:\Arcadis\Fort Devens\50005ST.wpd

Data Validation Report for 6801904971

Facility:	Former Fort Devens, Long Term Monitoring
Event:	Seres-Arcadis JV, Long Term Monitoring, AOC 69W, Fall 2020
SDG:	6801904971
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020
Prime Contractor:	Seres-Arcadis JV
Project Manager:	Jennifer Singer
Contract Laboratory(ies):	Eurofins Environment Testing TestAmerica, Savannah, GA
Data Review Contractor:	Laboratory Data Consultants, Inc.
Data Review Level:	2B
Primary Data Reviewer:	Kevin Kha, Environmental Scientist
Second Reviewer:	Pei Geng, Senior Scientist
Date Submitted:	December 30, 2020

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW6010C - Dissolved	SW6020A - Dissolved
69W-94-13-FAL20	680-190497-1	Water	Field Sample/N	X	X
69W-94-14-FAL20	680-190497-2	Water	Field Sample/N	X	X
69WP-08-01-FAL20	680-190497-3	Water	Field Sample/N	X	X
69WP-13-01-FAL20	680-190497-4	Water	Field Sample/N	X	X
AOC69W-DUP01-FAL20	680-190497-5	Water	Field Duplicate/FD	X	X
ZWM-01-25X-FAL20	680-190497-6	Water	Field Sample/N	X	X
ZWM-95-15X-FAL20	680-190497-7	Water	Field Sample/N	X	X
ZWM-95-18X-FAL20	680-190497-8	Water	Field Sample/N	X	X
ZWM-99-22X-FAL20	680-190497-9	Water	Field Sample/N	X	X
ZWM-99-23X-FAL20	680-190497-10	Water	Field Sample/N	X	X
ZWM-99-24X-FAL20	680-190497-11	Water	Field Sample/N	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by Seres-Arcadis JV; analyses were performed by Eurofins Environment Testing TestAmerica, Savannah, GA and were reported under sample delivery group (SDG) 6801904971. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Calibration Blank
- Calibration Blank - Negative
- Continuing Calibration Verification
- Field Duplicate RPD
- Interference Check Sample A
- Interference Check Sample A - Negative
- Interference Check Sample AB
- Lab Blank
- LCS Recovery
- MS Recovery
- MS RPD
- Prep Hold Time
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 1 results (3.03%) out of the 33 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Data Reviewer Comment
SW6020A	No additional comments; see Checklist for detail.
SW6010C	No additional comments; see Checklist for detail.

[redacted] December 30, 2020

[redacted]nmental Scientist, Laboratory Data Consultants, Inc.

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

[redacted]Scientist, Laboratory Data Consultants, Inc. March 16, 2021

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method SW6010C, Dissolved, Lab Blank

The purpose of laboratory blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in laboratory blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
MB6806407421A (LB)/ MB6806407421A	Manganese	1.740	< 1	< 10	ug/l	U/None	L	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW6010C, Dissolved, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
69WP-13-01-FAL20 (MS)/ 680-190497-4	Iron	65.00	87 - 115	10 - 125	percent	J/UJ	M	
69WP-13-01-FAL20 (SD)/ 680-190497-4	Iron	77.00	87 - 115	10 - 125	percent	J/UJ	M	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the MS Recovery for SW6010C, Dissolved

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
69WP-13-01-FAL20	N	Iron	50.0	17000 J	17000 J	-	ug/l	M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Table of All Qualified Results

Test Method: SW6010C	**Extraction Method: Dissolved**							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
69WP-13-01-FAL20	N	Iron	50.0	17000 J	17000 J	-	ug/l	M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Results with Modified Qualifiers

No qualifiers associated with this sample delivery group were modified manually.

Reason Code Definitions

Code	Definition
L	Lab Blank
M	MS Recovery
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
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.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		Although manganese was detected in the method blank, the associated sample results were significantly greater than the concentration found in the blank, therefore no data were qualified.
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?	•			
Were MS/MSD recoveries within project acceptance limits?		•		Due to MS/MSD %R below limits, one iron result was qualified as detected estimated (J) with a low bias (-).
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported or as qualified during data validation.

Data Validation Report for 6801904971

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	Only a LCS was performed.
Was a MS/MSD pair prepared with each batch?	•			
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported.

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, AOC 69W, Fall 2020
Field Duplicates for SDG: 6801904971

Location	Analysis
ZWM-95-18X	SW6010C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	680-190497-8 / 680-190497-5	Iron (FLDFLT)	ND	ND	50.0	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	680-190497-8 / 680-190497-5	Manganese (FLDFLT)	14.0	13.0	10.0	7.41	30	NA	OK

Location	Analysis
ZWM-95-18X	SW6020A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	680-190497-8 / 680-190497-5	Arsenic (FLDFLT)	ND	ND	3.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ARCADIS U.S., Inc.
3109 West Martin Luther King Jr. Blvd, Suite 350
Tampa, FL 33607
ATTN: Mr. Nathan Mullens
nrmullens@seres-es.com

February 19, 2021

SUBJECT: Fort Devens, Data Validation

Dear Mr. Mullens,

Enclosed is the final validation report for the fraction listed below. This SDG was received on January 5, 2021. Attachment 1 is a summary of the samples that were reviewed for analysis.

LDC Project #50158:

SDG #	**Fraction**
680-190497-2/SN8926	Extractable Petroleum Hydrocarbons

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Former Fort Devens Army Installation – BRAC Legacy Sites, Devens, MA; October 2020
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

74 pages-ADV

Attachment 1

Stage 2B EQUIS EDD

LDC #50158 (Arcadis-Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(2) DATE DUE	EPH (MADEP -EPH)																															
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-190497-2/SN8926	01/05/21	01/19/21	9	0																														
Total	J/PG			9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

L:\Arcadis\Fort Devens\50158ST.wpd

Data Validation Report for SN8926

Facility:	Former Fort Devens, Long Term Monitoring
Event:	Seres-Arcadis JV, Long Term Monitoring, AOC 69W, Fall 2020
SDG:	SN8926
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020
Prime Contractor:	Seres-Arcadis JV
Project Manager:	Jennifer Singer
Contract Laboratory(ies):	Katahdin Analytical Services, Westbrook, ME
Data Review Contractor:	Laboratory Data Consultants, Inc.
Data Review Level:	2B
Primary Data Reviewer:	Kevin Kha, Environmental Scientist
Second Reviewer:	Pei Geng, Senior Scientist
Date Submitted:	January 11, 2021

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	MADEPEP
69W-94-13-FAL20	SN8926-1RA	Water	Field Sample/N	X
69W-94-14-FAL20	SN8926-2RA	Water	Field Sample/N	X
AOC69W-DUP01-FAL20	SN8926-3RA	Water	Field Duplicate/FD	X
ZWM-01-25X-FAL20	SN8926-4RA	Water	Field Sample/N	X
ZWM-95-15X-FAL20	SN8926-5RA	Water	Field Sample/N	X
ZWM-95-18X-FAL20	SN8926-6RA	Water	Field Sample/N	X
ZWM-99-22X-FAL20	SN8926-7RA	Water	Field Sample/N	X
ZWM-99-23X-FAL20	SN8926-8RA	Water	Field Sample/N	X
ZWM-99-24X-FAL20	SN8926-9RA	Water	Field Sample/N	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by Seres-Arcadis JV; analyses were performed by Katahdin Analytical Services, Westbrook, ME and were reported under sample delivery group (SDG) SN8926. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Extracted Internal Standard
- Field Duplicate RPD
- Lab Blank
- LCS Recovery
- LCS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 126 results (70.00%) out of the 180 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Data Reviewer Comment
MADEPEP	No additional comments; see Checklist for detail.

[redacted] January 11, 2021

[redacted]nmental Scientist, Laboratory Data Consultants, Inc.

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

[redacted]Scientist, Laboratory Data Consultants, Inc. March 16, 2021

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method MADEPEP, LCS Recovery

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
WG289064-2RA (BS)/ WG289064-2RA	C9-C18 Petroleum Hydrocarbons, Aliphatic	37.78	40 - 140	10 - 140	percent	J/UJ	C	
WG289064-3RA (BD)/ WG289064-3RA	C9-C18 Petroleum Hydrocarbons, Aliphatic	34.81	40 - 140	10 - 140	percent	J/UJ	C	
WG289064-3RA (BD)/ WG289064-3RA	Naphthalene	37.89	40 - 140	10 - 140	percent	J/UJ	C	
WG289150-2RA (BS)/ WG289150-2RA	C9-C18 Petroleum Hydrocarbons, Aliphatic	37.96	40 - 140	10 - 140	percent	J/UJ	C	
WG289150-3RA (BD)/ WG289150-3RA	C9-C18 Petroleum Hydrocarbons, Aliphatic	35.93	40 - 140	10 - 140	percent	J/UJ	C	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the LCS Recovery for MADEPEP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
69W-94-13-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	93.0	70.0 ULL	70.0 UJ		ug/l	C/I
69W-94-13-FAL20	N	Naphthalene	1.90	1.40 UL	1.40 UJ		ug/l	C/I
69W-94-14-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	95.0	71.0 ULL	71.0 UJ		ug/l	C
69W-94-14-FAL20	N	Naphthalene	1.90	1.40 UL	1.40 UJ		ug/l	C
AOC69W-DUP01-FAL20	FD	C9-C18 Petroleum Hydrocarbons, Aliphatic	100	77.0 ULL	77.0 UJ		ug/l	C
AOC69W-DUP01-FAL20	FD	Naphthalene	2.10	1.50 UL	1.50 UJ		ug/l	C
ZWM-01-25X-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	110	82.0 ULL	82.0 UJ		ug/l	C/I
ZWM-01-25X-FAL20	N	Naphthalene	2.20	1.60 UL	1.60 UJ		ug/l	C/I
ZWM-95-15X-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	100	76.0 ULL	76.0 UJ		ug/l	C/I
ZWM-95-15X-FAL20	N	Naphthalene	2.00	1.50 UL	1.50 UJ		ug/l	C/I
ZWM-95-18X-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	100	76.0 ULL	76.0 UJ		ug/l	C
ZWM-95-18X-FAL20	N	Naphthalene	2.00	1.50 UL	1.50 UJ		ug/l	C
ZWM-99-22X-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	95.0	71.0 ULL	71.0 UJ		ug/l	C/I
ZWM-99-22X-FAL20	N	Naphthalene	1.90	1.40 UL	1.40 UJ		ug/l	C/I
ZWM-99-23X-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	99.0	74.0 ULL	74.0 UJ		ug/l	C/I
ZWM-99-23X-FAL20	N	Naphthalene	2.00	1.50 UL	1.50 UJ		ug/l	C/I

Qualified Results associated with the LCS Recovery for MADEPEP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
ZWM-99-24X-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	98.0	74.0 ULL	74.0 UJ		ug/l	C/I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method MADEPEP, Surrogate

Method performance for individual samples is demonstrated through spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. The sample itself may produce effects due to such factors as interferences and high concentrations of analytes. Summary forms were evaluated and compared to electronic data deliverables. Surrogate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
69W-94-13-FAL20 (N)/ SN8926-1RA	5-alpha-Androstane	34.20	40 - 140	10 - 140	percent	J/UJ	I	
ZWM-01-25X-FAL20 (N)/ SN8926-4RA	5-alpha-Androstane	36.30	40 - 140	10 - 140	percent	J/UJ	I	
ZWM-95-15X-FAL20 (N)/ SN8926-5RA	5-alpha-Androstane	36.30	40 - 140	10 - 140	percent	J/UJ	I	
ZWM-99-22X-FAL20 (N)/ SN8926-7RA	5-alpha-Androstane	35.90	40 - 140	10 - 140	percent	J/UJ	I	
ZWM-99-23X-FAL20 (N)/ SN8926-8RA	5-alpha-Androstane	12.80	40 - 140	10 - 140	percent	J/UJ	I	
ZWM-99-23X-FAL20 (N)/ SN8926-8RA	o-Terphenyl	20.90	40 - 140	10 - 140	percent	J/UJ	I	
ZWM-99-24X-FAL20 (N)/ SN8926-9RA	5-alpha-Androstane	17.20	40 - 140	10 - 140	percent	J/UJ	I	
ZWM-99-24X-FAL20 (N)/ SN8926-9RA	o-Terphenyl	32.00	40 - 140	10 - 140	percent	J/UJ	I	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Surrogate for MADEPEP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
69W-94-13-FAL20	N	2-Methylnaphthalene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Acenaphthene	1.90	1.80 U	1.80 UJ		ug/l	I
69W-94-13-FAL20	N	Acenaphthylene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Anthracene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Benzo(a)anthracene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Benzo(a)pyrene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Benzo(b)fluoranthene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Benzo(g,h,i)perylene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Benzo(k)fluoranthene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	93.0	50.0 J	50.0 J	-	ug/l	I/TR
69W-94-13-FAL20	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	93.0	70.0 U	70.0 UJ		ug/l	I
69W-94-13-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	93.0	70.0 ULL	70.0 UJ		ug/l	C/I
69W-94-13-FAL20	N	Chrysene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Fluoranthene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Fluorene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Indeno(1,2,3-c,d)pyrene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Naphthalene	1.90	1.40 UL	1.40 UJ		ug/l	C/I

Qualified Results associated with the Surrogate for MADEPEP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
69W-94-13-FAL20	N	Phenanthrene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Pyrene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-01-25X-FAL20	N	2-Methylnaphthalene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Acenaphthene	2.20	2.10 U	2.10 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Acenaphthylene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Anthracene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Benzo(a)anthracene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Benzo(a)pyrene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Benzo(b)fluoranthene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Benzo(g,h,i)perylene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Benzo(k)fluoranthene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	110	82.0 U	82.0 UJ		ug/l	I
ZWM-01-25X-FAL20	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	110	82.0 U	82.0 UJ		ug/l	I
ZWM-01-25X-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	110	82.0 ULL	82.0 UJ		ug/l	C/I
ZWM-01-25X-FAL20	N	Chrysene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Dibenz(a,h)anthracene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Fluoranthene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Fluorene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Indeno(1,2,3-c,d)pyrene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Naphthalene	2.20	1.60 UL	1.60 UJ		ug/l	C/I
ZWM-01-25X-FAL20	N	Phenanthrene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Pyrene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-95-15X-FAL20	N	2-Methylnaphthalene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Acenaphthene	2.00	1.90 U	1.90 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Acenaphthylene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Anthracene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Benzo(a)anthracene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Benzo(a)pyrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Benzo(b)fluoranthene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Benzo(g,h,i)perylene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Benzo(k)fluoranthene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	100	76.0 U	76.0 UJ		ug/l	I
ZWM-95-15X-FAL20	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	100	76.0 U	76.0 UJ		ug/l	I
ZWM-95-15X-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	100	76.0 ULL	76.0 UJ		ug/l	C/I
ZWM-95-15X-FAL20	N	Chrysene	2.00	1.50 U	1.50 UJ		ug/l	I

Qualified Results associated with the Surrogate for MADEPEP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
ZWM-95-15X-FAL20	N	Dibenz(a,h)anthracene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Fluoranthene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Fluorene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Indeno(1,2,3-c,d)pyrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Naphthalene	2.00	1.50 UL	1.50 UJ		ug/l	C/I
ZWM-95-15X-FAL20	N	Phenanthrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Pyrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-22X-FAL20	N	2-Methylnaphthalene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Acenaphthene	1.90	1.80 U	1.80 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Acenaphthylene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Anthracene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Benzo(a)anthracene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Benzo(a)pyrene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Benzo(b)fluoranthene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Benzo(g,h,i)perylene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Benzo(k)fluoranthene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	95.0	78.0 J	78.0 J	-	ug/l	I/TR
ZWM-99-22X-FAL20	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	95.0	71.0 U	71.0 UJ		ug/l	I
ZWM-99-22X-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	95.0	71.0 ULL	71.0 UJ		ug/l	C/I
ZWM-99-22X-FAL20	N	Chrysene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Fluoranthene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Fluorene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Indeno(1,2,3-c,d)pyrene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Naphthalene	1.90	1.40 UL	1.40 UJ		ug/l	C/I
ZWM-99-22X-FAL20	N	Phenanthrene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Pyrene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-23X-FAL20	N	2-Methylnaphthalene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Acenaphthene	2.00	1.90 U	1.90 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Acenaphthylene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Anthracene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Benzo(a)anthracene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Benzo(a)pyrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Benzo(b)fluoranthene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Benzo(g,h,i)perylene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Benzo(k)fluoranthene	2.00	1.50 U	1.50 UJ		ug/l	I

Qualified Results associated with the Surrogate for MADEPEP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
ZWM-99-23X-FAL20	N	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	99.0	74.0 U	74.0 UJ		ug/l	I
ZWM-99-23X-FAL20	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	99.0	74.0 U	74.0 UJ		ug/l	I
ZWM-99-23X-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	99.0	74.0 ULL	74.0 UJ		ug/l	C/I
ZWM-99-23X-FAL20	N	Chrysene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Dibenz(a,h)anthracene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Fluoranthene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Fluorene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Indeno(1,2,3-c,d)pyrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Naphthalene	2.00	1.50 UL	1.50 UJ		ug/l	C/I
ZWM-99-23X-FAL20	N	Phenanthrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Pyrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	2-Methylnaphthalene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Acenaphthene	2.00	1.90 U	1.90 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Acenaphthylene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Anthracene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Benzo(a)anthracene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Benzo(a)pyrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Benzo(b)fluoranthene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Benzo(g,h,i)perylene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Benzo(k)fluoranthene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	98.0	74.0 U	74.0 UJ		ug/l	I
ZWM-99-24X-FAL20	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	98.0	74.0 U	74.0 UJ		ug/l	I
ZWM-99-24X-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	98.0	74.0 ULL	74.0 UJ		ug/l	C/I
ZWM-99-24X-FAL20	N	Chrysene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Dibenz(a,h)anthracene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Fluoranthene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Fluorene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Indeno(1,2,3-c,d)pyrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Naphthalene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Phenanthrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Pyrene	2.00	1.50 U	1.50 UJ		ug/l	I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Table of All Qualified Results

Test Method: MADEPEP	**Extraction Method: METHOD**							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
69W-94-13-FAL20	N	2-Methylnaphthalene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Acenaphthene	1.90	1.80 U	1.80 UJ		ug/l	I
69W-94-13-FAL20	N	Acenaphthylene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Anthracene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Benzo(a)anthracene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Benzo(a)pyrene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Benzo(b)fluoranthene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Benzo(g,h,i)perylene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Benzo(k)fluoranthene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	93.0	50.0 J	50.0 J	-	ug/l	I/TR
69W-94-13-FAL20	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	93.0	70.0 U	70.0 UJ		ug/l	I
69W-94-13-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	93.0	70.0 ULL	70.0 UJ		ug/l	C/I
69W-94-13-FAL20	N	Chrysene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Fluoranthene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Fluorene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Indeno(1,2,3-c,d)pyrene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Naphthalene	1.90	1.40 UL	1.40 UJ		ug/l	C/I
69W-94-13-FAL20	N	Phenanthrene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-13-FAL20	N	Pyrene	1.90	1.40 U	1.40 UJ		ug/l	I
69W-94-14-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	95.0	71.0 ULL	71.0 UJ		ug/l	C
69W-94-14-FAL20	N	Naphthalene	1.90	1.40 UL	1.40 UJ		ug/l	C
AOC69W-DUP01-FAL20	FD	C9-C18 Petroleum Hydrocarbons, Aliphatic	100	77.0 ULL	77.0 UJ		ug/l	C
AOC69W-DUP01-FAL20	FD	Naphthalene	2.10	1.50 UL	1.50 UJ		ug/l	C
ZWM-01-25X-FAL20	N	2-Methylnaphthalene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Acenaphthene	2.20	2.10 U	2.10 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Acenaphthylene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Anthracene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Benzo(a)anthracene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Benzo(a)pyrene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Benzo(b)fluoranthene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Benzo(g,h,i)perylene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Benzo(k)fluoranthene	2.20	1.60 U	1.60 UJ		ug/l	I

Table of All Qualified Results

Test Method: MADEPEP	Extraction Method: METHOD							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
ZWM-01-25X-FAL20	N	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	110	82.0 U	82.0 UJ		ug/l	I
ZWM-01-25X-FAL20	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	110	82.0 U	82.0 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Chrysene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Dibenz(a,h)anthracene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Fluoranthene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Fluorene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Indeno(1,2,3-c,d)pyrene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Naphthalene	2.20	1.60 UL	1.60 UJ		ug/l	C/I
ZWM-01-25X-FAL20	N	Phenanthrene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	Pyrene	2.20	1.60 U	1.60 UJ		ug/l	I
ZWM-01-25X-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	110	82.0 ULL	82.0 UJ		ug/l	C/I
ZWM-95-15X-FAL20	N	2-Methylnaphthalene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Acenaphthene	2.00	1.90 U	1.90 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Acenaphthylene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Anthracene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Benzo(a)anthracene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Benzo(a)pyrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Benzo(b)fluoranthene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Benzo(g,h,i)perylene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Benzo(k)fluoranthene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	100	76.0 U	76.0 UJ		ug/l	I
ZWM-95-15X-FAL20	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	100	76.0 U	76.0 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Chrysene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Dibenz(a,h)anthracene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Fluoranthene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Fluorene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Indeno(1,2,3-c,d)pyrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Naphthalene	2.00	1.50 UL	1.50 UJ		ug/l	C/I
ZWM-95-15X-FAL20	N	Phenanthrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	Pyrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-95-15X-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	100	76.0 ULL	76.0 UJ		ug/l	C/I
ZWM-95-18X-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	100	76.0 ULL	76.0 UJ		ug/l	C
ZWM-95-18X-FAL20	N	Naphthalene	2.00	1.50 UL	1.50 UJ		ug/l	C

Table of All Qualified Results

Test Method: MADEPEP	Extraction Method: METHOD							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
ZWM-99-22X-FAL20	N	2-Methylnaphthalene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Acenaphthene	1.90	1.80 U	1.80 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Acenaphthylene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Anthracene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Benzo(a)anthracene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Benzo(a)pyrene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Benzo(b)fluoranthene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Benzo(g,h,i)perylene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Benzo(k)fluoranthene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	95.0	78.0 J	78.0 J	-	ug/l	I/TR
ZWM-99-22X-FAL20	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	95.0	71.0 U	71.0 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Chrysene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Fluoranthene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Fluorene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Indeno(1,2,3-c,d)pyrene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Naphthalene	1.90	1.40 UL	1.40 UJ		ug/l	C/I
ZWM-99-22X-FAL20	N	Phenanthrene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	Pyrene	1.90	1.40 U	1.40 UJ		ug/l	I
ZWM-99-22X-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	95.0	71.0 ULL	71.0 UJ		ug/l	C/I
ZWM-99-23X-FAL20	N	2-Methylnaphthalene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Acenaphthene	2.00	1.90 U	1.90 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Acenaphthylene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Anthracene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Benzo(a)anthracene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Benzo(a)pyrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Benzo(b)fluoranthene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Benzo(g,h,i)perylene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Benzo(k)fluoranthene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	99.0	74.0 U	74.0 UJ		ug/l	I
ZWM-99-23X-FAL20	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	99.0	74.0 U	74.0 UJ		ug/l	I
ZWM-99-23X-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	99.0	74.0 ULL	74.0 UJ		ug/l	C/I
ZWM-99-23X-FAL20	N	Chrysene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Dibenz(a,h)anthracene	2.00	1.50 U	1.50 UJ		ug/l	I

Table of All Qualified Results

Test Method: MADEPEP	Extraction Method: METHOD							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
ZWM-99-23X-FAL20	N	Fluoranthene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Fluorene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Indeno(1,2,3-c,d)pyrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Naphthalene	2.00	1.50 UL	1.50 UJ		ug/l	C/I
ZWM-99-23X-FAL20	N	Phenanthrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-23X-FAL20	N	Pyrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	2-Methylnaphthalene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Acenaphthene	2.00	1.90 U	1.90 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Acenaphthylene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Anthracene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Benzo(a)anthracene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Benzo(a)pyrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Benzo(b)fluoranthene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Benzo(g,h,i)perylene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Benzo(k)fluoranthene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	98.0	74.0 U	74.0 UJ		ug/l	I
ZWM-99-24X-FAL20	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	98.0	74.0 U	74.0 UJ		ug/l	I
ZWM-99-24X-FAL20	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	98.0	74.0 ULL	74.0 UJ		ug/l	C/I
ZWM-99-24X-FAL20	N	Chrysene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Dibenz(a,h)anthracene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Fluoranthene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Fluorene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Indeno(1,2,3-c,d)pyrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Naphthalene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Phenanthrene	2.00	1.50 U	1.50 UJ		ug/l	I
ZWM-99-24X-FAL20	N	Pyrene	2.00	1.50 U	1.50 UJ		ug/l	I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Results with Modified Qualifiers

No qualifiers associated with this sample delivery group were modified manually.

Reason Code Definitions

Code	Definition
C	LCS Recovery
I	Surrogate recovery outside project limits.
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
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.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: MADEPEP (Method for the Determination of Extractable Petroleum Hydrocarbons (EPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?		•		Due to surrogate %R below criteria, 6 samples were qualified as detected estimated (J) with a low bias (-) or as non-detected estimated (UJ) as applicable.
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were target analytes reported in the field blank(s) less than MDL?			•	A field blank was not submitted with these samples.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?		•		Due to LCS/LCSD %R below criteria, several C9 -C18 Petroleum Hydrocarbons, Aliphatic and Naphthalene results were qualified as non-detected estimated (UJ).
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		MS/MSD not performed.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		All data is acceptable as reported or as qualified during data validation.

Field Duplicate Report By SDG
Former Fort Devens, Long Term Monitoring
Seres-Arcadis JV, Long Term Monitoring, AOC 69W, Fall 2020
Field Duplicates for SDG: SN8926

Location	Analysis
ZWM-95-18X	MADEPEP

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	2-Methylnaphthalene	ND	ND	2.00	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	Acenaphthene	ND	ND	2.00	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	Acenaphthylene	ND	ND	2.00	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	Anthracene	ND	ND	2.00	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	Benzo(a)anthracene	ND	ND	2.00	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	Benzo(a)pyrene	ND	ND	2.00	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	Benzo(b)fluoranthene	ND	ND	2.00	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	Benzo(g,h,i)perylene	ND	ND	2.00	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	Benzo(k)fluoranthene	ND	ND	2.00	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	C11-C22 Petroleum Hydrocarbons, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	ND	ND	100	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	C19-C36 Petroleum Hydrocarbons, Aliphatic	ND	ND	100	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	C9-C18 Petroleum Hydrocarbons, Aliphatic	ND	ND	100	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	Chrysene	ND	ND	2.00	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	Dibenz(a,h)anthracene	ND	ND	2.00	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	Fluoranthene	ND	ND	2.00	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	Fluorene	ND	ND	2.00	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	Indeno(1,2,3-c,d)pyrene	ND	ND	2.00	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	Naphthalene	ND	ND	2.00	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	Phenanthrene	ND	ND	2.00	NA	30	NA	OK
ZWM-95-18X-FAL20 / AOC69W-DUP01-FAL20	SN8926-6RA / SN8926-3RA	Pyrene	ND	ND	2.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Appendix D

Summary of Historical Groundwater Sampling Results

Appendix D
AOC 32/43A Exceedances Over Time, 2006 to 2020
2020 Annual Operation, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

Sample Location	Spring 2006	Fall 2006	Spring 2007	Fall 2007	Spring 2008	Fall 2008	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013
Arsenic (Total) - 10 µg/L Cleanup Goal															
32M-01-18XBR	**30**	**15**	**51**	3.1 J	**38**	**34**	**51**	**18**	**18**	3.5 J	3.0 J	5.0	5.0	4.0 J	2.0 J
32M-01-14XOB	**59**	**49**	**45**	**69**	**50**	**70**	**66**	NS	**43**	NS	**62**	NS	**80**	NS	**58**
32M-01-15XBR	ND	ND	ND	ND	ND	ND	**180**	NA	**9.0**	**2.9 J**	ND	**3.0 J**	**2.0 J**	ND	ND
Manganese (Total) - 3,500 µg/L Cleanup Goal															
32M-01-18XBR	**18,000**	**16,000**	**18,200**	**10,200**	**14,800**	**18,900**	**29,400**	**6,970**	2,360	**4,510**	2,300	1,150	**4,100**	1,540	270
32M-01-14XOB	2,800	3,200	1,500	3,420	2,760	**5,050**	**3,660**	NS	2,460	NS	1,740	NS	1,950	NS	1,650
1,2-Dichlorobenzene - 600 µg/L Cleanup Goal															
32M-01-18XBR	**5,900**	**2,800**	**6,100**	**690**	**2,700**	**4,100**	**1,700**	**730**	300	570	340	260	**640 J**	340	7.46 J
1,3-Dichlorobenzene - 100 µg/L Cleanup Goal															
32M-01-18XBR	**750**	**360**	**850**	**120**	**450**	**580**	**270**	**150**	59	100	86	64	**120 J**	70	7.10 J
1,4-Dichlorobenzene - 5 µg/L Cleanup Goal															
32M-01-18XBR	**490**	**210 J**	**550**	**67**	**270**	**390**	**180**	**100**	**26**	**62**	**50**	**37**	**69**	**42**	1.2 J
32M-01-15XBR	ND	**5.5**	**0.78 J**	**5.1 J**	**7.9**	**5.7 J**	ND	ND	**0.55 J**	ND	ND	ND	ND	**0.33 J**	ND
Chlorobenzene - 100 µg/L Cleanup Goal															
32M-01-18XBR	**900**	**480**	**1,200**	**110**	**850**	**1,600**	**540**	**200**	88	**210**	78	49	**280**	82	0.88 J
VPH C_9- C_{10} Aromatics - 200 µg/L Monitoring Criteria															
32M-01-18XBR	**5,850**	**4,120**	**6,050**	**952**	**3,230**	**3,660**	**1,890**	**837**	**300**	**541**	**444**	**272**	**728**	**322**	ND

Notes:

0.333

* = Spring 2015 and 2016 metals results are for dissolved metals.
T/D = Total and dissolved metals results are reported for Spring 2017 results.

J = Estimated result
NA = Not analyzed
ND = non-detect
NS = not sampled
µg/L = microgram per liter

Appendix D
AOC 32/43A Exceedances Over Time, 2006 to 2020
2020 Annual Operation, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

Sample Location	Fall 2013	Spring 2014	Spring 2015*	Spring 2016*	Spring 2017 (T/D)	Spring 2018	Spring 2019	Fall 2019	Spring 2020
Arsenic (Total) - 10 µg/L Cleanup Goal									
32M-01-18XBR	6.0	3.0 J	4.0	2.8 J	4.7/2.4 J	6.5	3.4	NS	8.8
32M-01-14XOB	NS	**62 J**	**90**	**13**	**33/30**	**32**	**29**	NS	**31**
32M-01-15XBR	**2.0 J**	ND	NS	NS	NS	NS	NS	ND	NS
Manganese (Total) - 3,500 µg/L Cleanup Goal									
32M-01-18XBR	137	1,990	1,720	1,100	2,300 / 2,700	**8,400**	2,200 J	NS	**25,000**
32M-01-14XOB	NS	2,550	3,390	1,800	2,900 / 2,900	2,700	2,200	NS	1,900
1,2-Dichlorobenzene - 600 µg/L Cleanup Goal									
32M-01-18XBR	7.30	598	407	340	390	**840**	250 J	NS	**1,500 J**
1,3-Dichlorobenzene - 100 µg/L Cleanup Goal									
32M-01-18XBR	2.12 J	**106**	80	58	70	**150**	41 J	NS	**250 J**
1,4-Dichlorobenzene - 5 µg/L Cleanup Goal									
32M-01-18XBR	1.1 J	**71**	**51**	**38**	**46**	**97**	**29 J**	NS	**170 J**
32M-01-15XBR	ND	ND	NS	NS	NS	NS	NS	ND	NS
Chlorobenzene - 100 µg/L Cleanup Goal									
32M-01-18XBR	0.97 J	**131**	88	81	**170**	**440**	**180 J**	NS	**970 J**
VPH C_9- C_{10} Aromatics - 200 µg/L Monitoring Criteria									
32M-01-18XBR	ND	**730**	**360**	**450**	**410**	**760**	160 J	NS	**1,000 J**

Notes:

0.333 = Above cleanup goal and/or monitoring criteria

* = Spring 2015 and 2016 metals results are for dissolved metals.
T/D = Total and dissolved metals results are reported for Spring 2017 results.

J = Estimated result
NA = Not analyzed
ND = non-detect
NS = not sampled
µg/L = microgram per liter

Appendix D
AOC 43G Exceedances Over Time, 1999 to 2020
2020 Annual Operation, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

Sample Location	Fall 1999	Fall 2000	Fall 2001	Fall 2002	Fall 2003	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009	Fall 2010	Fall 2011	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	Fall 2018	Fall 2019	Fall 2020
Benzene- 5 µg/L Cleanup Goal																						
AAFES-2	**62**	**36**	**43**	**26**	**9.0**	**6.6**	**6.1**	1.3	ND	ND	3.93 J	ND	ND	**6.60 J**	**5.04**	3.7	4.2	ND	ND	ND	1.5 J	ND
XGM-93-02X	**81**	**32**	**12**	**140**	**24**	**39**	**29**	**18.5**	**8.8**	2.6	0.997 J	ND	ND	ND	ND	0.77 J	ND	ND	0.38 J	0.60 J	ND	ND
XGM-97-12X	**270**	**550**	**700**	**780**	**290**	**260**	**35.6**	**129**	**22.8**	**13.7 J**	**27.4 J**	ND	**13.8**	3.03 J	3.87	1.5	3.8	ND	ND	4.0	ND	ND
Toluene- 1,000 µg/L Cleanup Goal																						
XGM-97-12X	390	**1,100**	870	**1,000**	610	460	53.4	239	15.9	11.4 J	5.3 J	ND	ND	ND	2.54	ND	7.4	ND	ND	5.1	1.6 J	ND
Iron, total - 9,100 µg/L Cleanup Goal																						
AAFES-2	**24,000**	**20,000**	**27,000**	**26,000**	**14,000**	**20,000**	**21,900**	**12,000**	**20,000**	**18,000**	**16,000**	**14,000**	**22,000**	**18,000**	**19,000**	**19,400**	**14,400**	**11,000**	**10,000**	**19,000**	**20,000**	**17,000**
AAFES-6/6R	**11,000**	**9,200**	**13,000**	**9,400**	NS	NS	NS	**11,000**	**11,000**	6,500	4,300	3,300	1,100	6,900	**9,200**	8,240	NA	NA	NA	NS	NS	NS
XGM-93-02X	**30,000**	**18,000**	**11,000**	**24,000**	**15,000**	**28,000**	**11,500**	**13,000**	5,800	**11,000**	8,500	**11,000**	**12,000**	6,000	**10,000**	**9,580**	**13,200**	**6,000**	**6,500**	**20,000**	**9,300**	6,400
XGM-94-07X	3,500	2,900	5,800	2,300	1,000	300	1,610	1,400	4,500	**9,300**	8,800	**12,000**	**13,000**	**23,000**	**10,000**	6,820	NS	NS	NS	NS	8,300	**12,000**
XGM-94-08X	4,800	**13,000**	4,500	4,600	3,200	2,500	4,520	6,100	4,600	2,200	1,300	1,000	750	2,300	910	147	NS	NS	NS	NS	1,000	**11,000**
XGM-97-12X	**32,000**	**26,000**	**33,000**	**46,000**	**33,000**	**32,000**	**20,100**	**18,000**	**22,000**	**25,000**	**25,000**	**16,000**	**27,000**	**20,000**	**24,000**	**25,800**	**34,300**	**25,000**	**18,000**	**27,000**	6,200	**18,000**
Manganese, total - 375 µg/L Cleanup Goal																						
AAFES-2	**4,600**	**3,900**	**4,800**	**3,700**	**3,100**	**4,000**	**3,590**	**2,700**	**3,790**	**3,600**	**3,320**	**2,490**	**3,700**	**3,100**	**3,270**	**3,460**	**2,740**	**2,800**	**2,800**	**3,100**	**3,500**	**3,200**
AAFES-5	**710**	180	190	27	21	89	118	50	34	ND	ND	244	36	206	127	32.5	NS	NS	NS	NS	NS	NS
AAFES-6/6R	**2,900**	**9,200**	**3,400**	**3,000**	NS	NS	NS	**2,900**	**3,090**	**3,630**	**907**	**1,670**	**1,830**	**3,220**	**2,820**	**3,000**	NS	NS	NS	NS	NS	NS
AAFES-7	NS	NS	NS	NS	NS	NS	NS	NS	NS	106	81	79	5 J	**706**	**2,390**	**1,640**	139	**510**	330	NS	**86**	**3,400**
XGM-93-02X	**3,900**	**2,500**	**1,900**	**2,500**	**1,900**	**2,600**	**1,450**	**2,000**	**1,800**	**1,420**	**1,630**	**737**	**3,020**	**612**	**1,180**	**1,570**	**2,020**	**1,400**	**1,400**	**1,900**	**1,300**	**1,200**
XGM-94-04X	**2,900**	**2,200**	**3,400**	**2,000**	**1,400**	**1,400**	**1,580**	**1,100**	**559**	68	**2,730**	**6,490**	**2,140**	**2,580**	**2,730**	**1,510**	**1,090**	**1,500**	**1,700 J**	230	**5,500**	13
XGM-94-06X	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	**1,400**	**1,800**
XGM-94-07X	**5,700**	**3,700**	**6,100**	**4,500**	**3,600**	**1,000**	**6,120**	**5,100**	**4,120**	**5,100**	**4,990**	**3,870**	**6,060**	**5,560**	**5,380**	**6,940**	NS	NS	NS	NS	**4,200**	**4,500**
XGM-94-08X	**4,500**	**4,600**	**4,900**	**3,600**	**3,600**	**3,800**	**7,260**	**4,200**	**3,380**	**3,100**	**2,150**	**2,070**	**2,780**	**4,620**	**2,300**	**3,210**	NS	NS	NS	NS	**3,500**	**7,100**
XGM-97-12X	**6,300**	**4,100**	**4,200**	**3,900**	**4,100**	**3,000**	**437**	**1,800**	**2,070**	**3,060**	**2,390**	**2,110**	**3,540**	**1,640**	**1,680**	**2,080**	**3,460**	**1,700**	**1,200**	**3,800**	250	**1,300**
C_5-C_8 Aliphatics - 300 µg/L Monitoring Criteria																						
AAFES-2	ND	**1,400**	ND	**1,200**	**1,200**	ND	**2,070**	**1,430**	**1,400**	ND	ND	**859**	**1,270**	**1,560 J**	**1,390**	**1,250**	**728**	**850**	**890**	**480 J**	**1,200**	**480**
AAFES-6/6R	**370**	**420**	290	ND	NA	NA	NA	**305**	ND	ND	ND	114	ND	215	287	188	NS	NS	NS	NS	NS	NS
XGM-93-02X	ND	**570**	270	**790**	**410**	ND	**788**	**519**	ND	ND	ND	124	ND	ND	65	268	101	94	79 J	84 J	210	150
XGM-94-04X	ND	**420**	140	ND	ND	ND	ND	ND	ND	ND	ND	**533**	**765**	**497 J**	**1,140**	186	**65**	**480**	**360**	ND	**590**	ND
XGM-94-07X	ND	ND B	ND	ND	ND	ND	ND	**113**	ND	ND	ND	159	ND	**66**	**120**	58.8	NS	NS	NS	NS	NA	ND
XGM-94-08X	120	150 B	100	140	120	ND	ND	125	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NA	ND
XGM-97-12X	**970**	**1,300**	**1,100**	**1,100**	**1,100**	ND	**2,370**	**1,740**	**1,230**	ND	**4,050**	**644**	**367**	**507 J**	**494**	272	**515**	**420**	**350**	**360**	**350**	110
C_9-C_{12} Aliphatics - 700 µg/L Monitoring Criteria																						
AAFES-2	ND	81	ND	200	ND	57	**5,220**	**987**	**1,000**	**1,020**	**950**	**768**	**1,080**	542 J	**1,650**	688	85.7	430	530 J	330 J	**790**	450 J
XGM-93-02X	ND	39	ND	58	33	34	**1,570**	268	94	182	55.5	ND	85.1	ND	100	76.6	ND	56	78 J	ND	79 J	ND
XGM-94-07X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	89.1	54.5	90.5	ND	66.8	ND	NS	NS	NS	NS	NA	ND
XGM-94-08X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.19 J	ND	ND	ND	ND	ND	NS	NS	NS	NS	NA	ND
XGM-97-12X	96	ND	ND	130	ND	90	**7,310**	**1,340**	**1,080**	**2,210**	**1,450**	**922**	535	275 J	**724**	162	*718*	230	170 J	420 J	150 J	210 J
C_9-C_{10} Aromatics - 200 µg/L Monitoring Criteria																						
AAFES-2	**9,400**	**7,200**	**5,300**	**13,000**	**6,600**	**6,700**	**3,130**	**3,710**	**2,420**	**2,120**	**2,660**	**1,870**	**1,050**	**1,090**	**1,940**	**1,090**	**827**	**730**	**1,100 J**	**990**	**1,400**	**820**
XGM-93-02X	**510**	**2,300**	**1,100**	**3,600**	**1,600**	**3,700**	**918**	**766**	**228**	**325**	110	73.4	ND	ND	ND	113	62.3	ND	ND	75 J	100	66 J
XGM-94-04X	200	**570**	170	28	ND	ND	ND	ND	ND	ND	ND	**243**	**469**	**300 J**	**769**	76.8	ND	**320**	**410 J**	ND	**830**	ND
XGM-94-07X	ND	ND	ND	ND	ND	ND	ND	ND	ND	45.1 J	76.4	77.8	ND	ND	ND	ND	NS	NS	NS	NS	NA	ND
XGM-94-08X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NA	ND
XGM-97-12X	**4,500**	**5,500**	**5,400**	**7,500**	**8,700**	**7,400**	**3,810**	**4,010**	**4,220**	**5,260**	**4,110**	**2,470 J**	**463**	**367 J**	**840**	**253**	**1,560**	**340**	**430 J**	**1,000**	**340**	**300**

Notes:

0.333 = Above cleanup goal and/or monitoring criteria

The cleanup goal for iron is the background level. The cleanup goal for manganese is a site-specific goal determined in 2008 (Long-Term Monitoring Plan Former Fort Devens Army Installation, HGL, 2008).
The VPH carbon ranges are not contaminants of concern and are evaluated against MCP GW-1 standards for comparison purposes. Benzene, ethylbenzene, xylenes, and toluene are not contaminants of concern but the cleanup goals are the Maximum Contaminant Levels.

µg/L = microgram per liter
J = Estimated result
B = Blank Qualified
NA = Not analyzed
ND = Non-detect
NS = not sampled

Appendix D
AOC 57 Area 3 Exceedances Over Time, 2003 to 2020
2020 Annual Operation, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

Sample Location	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005	Spring 2006	Fall 2006	Spring 2007	Fall 2007	Spring 2008	Spring 2009	Spring 2010	Spring 2011	Spring 2012	Spring 2013	Spring 2014	Spring 2015	Spring 2016	Spring 2017	Spring 2018	Spring 2019	Spring 2020
Groundwater																						
Arsenic (Total) - 10 µg/L Cleanup Goal																						
57M-95-03X	**36**	**44**	**230**	**25**	**13.6**	7.0	**49**	4.8	**51**	**23**	**21**	**23**	**58**	**36**	**60**	**60**	**38**	**31**	**27**	**42**	**15**	**42**
57M-96-11X	**270**	**240**	**120**	**161**	**215**	**163**	**171**	**166**	**193**	**160**	**163**	**148**	**190**	**192**	**181**	**160**	**284**	**290**	**180**	**180**	**100**	**300 J**
Surface Water																						
Arsenic (Dissolved) - 150 µg/L Water Quality Criterion																						
57-SW-1	35	3.1 J	4.9 J	ND	5.2	34 J	6.0	2.7 J	9	11	ND	ND	18	8.0	8.0	ND	9.9	23	31	5.2	ND	5.3
Iron (Dissolved) - 1,000 µg/L Water Quality Criterion																						
57-SW-1	NA	NA	NA	NA	NA	600	**4,500**	520	**7,100**	**6,800**	**2,500**	240	**20,000**	**8,300**	**10,000**	**10,000**	**4,140**	**19,000**	**21,000**	**4,000**	760	490

Notes:

0.333 = Above cleanup goal and/or monitoring criteria
J = Estimated result
NA = Not analyzed
ND = non-detect
µg/L = microgram per liter

Appendix D
AOC 69W Exceedances Over Time, 2000 to 2020
2020 Annual Operation, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

Sample Location	Spring 2000	Fall 2000	Spring 2001	Fall 2001	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005	Spring 2006	Fall 2007	Fall 2008	Fall 2009
Arsenic, dissolved - 10 µg/l Cleanup Goal																
69W-94-13	**54**	**110**	**85**	**150**	**52**	**130**	**35**	**69**	**27**	**88**	**56**	**60**	**69**	**142**	**73**	**86**
ZWM-95-15X	ND	7.9	ND	**22**	**36**	**40**	ND	**16**	7.7	**30**	ND	ND	ND	**16**	ND	ND
ZWM-99-22X	150	130	230	**140**	**86**	**140**	**150**	**160**	**140**	**140**	**120**	**120**	**159**	**244**	**223**	**408**
ZWM-99-23X	**23**	**70**	**67**	**55**	**15**	ND	**27**	ND	**44**	**61**	**46**	**47**	**56**	**56**	**52**	**62**
ZWM-01-25X	NA	NA	NA	4.1 J	ND	ND	2.3 J	ND	ND	3.4 J	ND	ND	3 J	5	2.3 J	2 J
Manganese, dissolved - 375 µg/l Monitoring Criteria																
69WP-08-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	174	89
69W-94-13	**2,300**	**1,700**	**1,500**	**1,600**	**2,100**	**2,400**	**2,800**	**4,100**	**2,500**	**1,300**	**3,000**	**1,600**	**2,600**	**1,120**	**1,940**	**2,110**
ZWM-95-15X	28	**1,300**	25	100	**1,500**	**2,200**	**1,600**	**970**	**4,600**	**980**	**850**	130	**860**	**1,230**	**438**	**502**
ZWM-99-22X	**2,000**	**1,800**	**2,300**	**2,400**	**2,000**	**1,500**	**2,700**	**2,300**	**3,100**	**1,900**	**3,400**	**3,200**	**3,700**	**3,120**	**3,790**	**2,660**
ZWM-99-23X	**4,200**	**3,600**	**5,800**	**1,500**	**550**	**1,700**	**5,300**	**4,300**	**2,500**	**2,300**	**5,200**	**2,500**	**2,700**	**1,320**	**2,500**	**3,080**
ZWM-01-25X	NA	NA	NA	280	61	**1,000**	89	230	140	300	140	**490**	**1,400**	**3,210**	**1,320**	**5,830**
EPH C_{11}-C_{22} Aromatics - 200 µg/l Monitoring Criteria																
69W-94-13	**690**	**1,400**	**720**	**790**	**1,900**	**290**	ND	160	ND	110	ND	ND	**209**	**311**	152	**225**
ZWM-95-15X	ND	ND	ND	ND	**1,400**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
ZWM-99-22X	**2,500**	**1,400**	**2,100**	**370**	**620**	**210**	**380**	**330**	**270**	**400**	**320**	**280**	**627**	166	**356**	**276**
ZWM-99-23X	170	**520**	**200**	140	140	ND	ND	ND	ND	ND	ND	ND	174	107	80	ND
EPH C_{9}-C_{18} Aromatics - 700 µg/l Monitoring Criteria																
69W-94-13	120	270	160	320	150	200	62	140	130	230	110	140	84	144	81	105
ZWM-99-22X	620	150	550	83	88	150	**840**	450	650	600	460	460	330	113	217	120
ZWM-99-23X	46	62	40	34	ND	ND	53	59	ND	ND	100	ND	ND	ND	28	35.2

Notes:

0.333

J = Estimated result

NA = Not analyzed

ND = non-detect

µg/L = microgram per liter

Appendix D
AOC 69W Exceedances Over Time, 2000 to 2020
2020 Annual Operation, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

Sample Location	Fall 2010	Fall 2011	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	Fall 2018	Fall 2019	Fall 2020
Arsenic, dissolved - 10 µg/l Cleanup Goal											
69W-94-13	**127**	**120**	**115**	**73**	**101**	**120**	**76**	**24**	**35**	**70**	**32**
ZWM-95-15X	**13**	**41**	**23**	**17**	**30.2**	**19.3**	3.7	**10**	**18**	**17**	7.0
ZWM-99-22X	**343**	**367**	**299**	**233 J**	**172**	**125**	**150**	**190**	**150**	**150**	**130**
ZWM-99-23X	**15**	**60**	**29**	**27**	**19.5**	**13.9**	7.7	**17**	**39**	**24**	5.3
ZWM-01-25X	ND	**13**	**19**	5	ND	ND	ND	4.5	NA	ND	2.90 J
Manganese, dissolved - 375 µg/l Monitoring Criteria											
69WP-08-01	78	**2,190**	**904**	237	64.5	78.4	79	33	35	**1,300**	360
69W-94-13	**1,360**	**1,840**	**1,400**	**1,730**	**1,940**	**2,050**	**2,600**	320	**1,600**	**1,600**	**970**
ZWM-95-15X	**1,120**	**1,010**	**1,580**	**1,280**	**900**	**843**	17	220	340	**690 J**	360
ZWM-99-22X	**1,750**	**2,160**	**1,120**	**998**	**1,280**	**1,440**	**960**	**1,200**	**1,500**	**1,100**	**910**
ZWM-99-23X	**523**	**1,720**	**500**	**556**	**533**	**749**	**590**	**1,800**	**1,600**	**770**	110
ZWM-01-25X	**1,490**	**2,820**	**2,540**	**1,570**	**435**	**859**	78	**590**	NA	**6,200**	**1,700**
EPH C_{11}-C_{22} Aromatics - 200 µg/l Monitoring Criteria											
69W-94-13	**339**	**242**	**379**	**227**	**252**	175	**410**	ND	98	77.0 J	50.0 J
ZWM-95-15X	ND	ND	ND	ND	ND	ND	**100**	ND	ND	ND	ND
ZWM-99-22X	**209**	**327**	**308**	**286**	**332**	**354**	**210**	170	**230**	**220**	78.0 J
ZWM-99-23X	ND	ND	ND	ND	ND	ND	110	ND	130	ND	ND
EPH C_9-C_{18} Aromatics - 700 µg/l Monitoring Criteria											
69W-94-13	142	66.7	63 J	87.6	NA	NA	NA	NA	NA	76 J	ND
ZWM-99-22X	76.4	114	55.5 J	119	NA	NA	NA	NA	NA	65 J	ND
ZWM-99-23X	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND

Notes:

0.333

J = Estimated result

NA = Not analyzed

ND = non-detect

µg/L = microgram per liter

Appendix D
DCL Historical Groundwater Data, Well LFM-99-02B
2020 Annual Operation, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

LFM-99-02B	Units	Monitoring Criteria	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005	Spring 2006	Spring 2007	Spring 2008	Fall 2008	Spring 2009	Fall 2009	Spring 2010	Fall 2010
Extractable Petroleum Hydrocarbons (EPH)																
Naphthalene	µg/L	140	1.0 U	5.1 U	2.4 U	2.1 U	10.0 U	0.400 U	0.2 U	0.46 U	0.412 U	0.430 U	10 U	NA	0.419 U	0.400 U
Pesticides																
Aldrin	µg/L	0.50	0.0064 U	0.0067 U	0.0076 U	0.0076 U	0.05 UJ	0.200 UJ	0.05 U	0.0217 U	0.021 UJ	0.021 UJ	0.200 UJ	NA	0.020 U	0.020 U
Dieldrin	µg/L	0.10	0.013 U	0.0013 U	0.015 U	0.014 U	0.1 U	0.040 UJ	0.05 U	0.0435 U	0.043 UJ	0.042 UJ	0.040 UJ	NA	0.040 U	0.040 U
alpha-Chlordane	µg/L	2.0	0.0064 U	0.0067 U	0.0076 U	0.071 U	0.05 U	0.020 UJ	0.05 U	0.0217 U	0.021 UJ	0.021 UJ	0.020 UJ	NA	0.020 U	0.020 U
gamma-Chlordane	µg/L	2.0	0.0064 U	0.0053 J	0.0076 U	0.071 U	0.05 U	0.020 UJ	0.05 U	0.0217 U	0.021 UJ	0.021 UJ	0.020 UJ	NA	0.020 U	0.020 U
Chlordane	µg/L	2.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (Lindane)	µg/L	0.20	0.0064 U	0.0067 U	0.0076 U	0.0076 U	0.05 U	0.020 UJ	0.05 U	0.0217 U	0.021 UJ	0.021 UJ	0.020 UJ	NA	0.020 U	0.020 U
Metals																
Arsenic, Total	µg/L	10	5.0 U	50.0 U	5.0 U	5.0 U	4.2 U	5.0 J	2.5 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U
Chromium, Total	µg/L	100	28	1.7 J	0.96 J	1.07 J	12.0 U	NA	10.0 U	10.0 U	10 U	10 U	5 U	40	10 U	10 U
Iron, Total	µg/L	NS	NA	100 U	17 J	100 U	38.0 U	32 J	50.0 U	50.0 U	50 U	28 J	50 U	380	50 U	50 U
Lead, Total	µg/L	15	5.0 U	8.5 J	5.0 U	5.0 U	3.1	10 U	2.5 U	10.0 U	10 U	10 U	10 J	10 U	10 U	10 U
Manganese, Total	µg/L	NS	NA	2.4 J	1.5 J	12.7 J	5.2 J	10 U	10.0 U	1.1 J	10 U	10 U	10 U	9.1 J	10 U	10 U
General Chemistry																
Total Cyanide	mg/L	0.20	0.01 U	0.004 J	0.01 U	0.005 J	0.01 U	0.005 U	0.05 U	0.01 UJ	0.005 U	0.005 U	0.005 U	NA	0.0011 J	0.005 U
Nitrate/Nitrite (as N)	mg/L	NS	0.21	1.4	0.66	0.796	0.36 J	0.64 U	0.45	0.5	0.43 J	1.9	0.92	NA	0.41	0.54
Chemical Oxygen Demand	mg/L	NS	170	50.0 U	15 J	50.0 U	20.0 U	20 U	10.0 U	20.0 U	20 U	12 J	20 U	NA	20	20 U
Water Quality Parameters																
pH	std	NS	6.20	6.38	6.09	6.38	5.97	6.17	6.32	6.15	6.32	7.00	5.57	6.22	6.71	6.35
Oxidation-Reduction Potential	mV	NS	NA	204.7	243.3	308.4	266.3	311.3	223.6	200.8	160.7	55.2	215.4	113	-232.2	163.6
Turbidity	NTU	NS	NA	0.40	0.80	0.55	0.37	3.8	0.18	0.00	2.80	2.0	0.0	0.0	2.2	0.39

J = Estimated result
NA = Not analyzed
NS = No Standard
Q = Qualifier
U = The target analyte was not detected at or above the laboratory reporting limit.
UJ = Estimated non-detect
ND = non-detect
µg/L = microgram per liter
mg/L = milligram per liter
mV = millivolts
µS/cm = microsiemens per centimeter
NTU - Nephelometric Turbidity Unit

Appendix D
DCL Historical Groundwater Data, Well LFM-99-02B
2020 Annual Operation, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

LFM-99-02B	Units	Monitoring Criteria	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014	Spring 2015	Fall 2015	Spring 2016	Fall 2016	Spring 2017	Fall 2017
Extractable Petroleum Hydrocarbons (EPH)																
Naphthalene	µg/L	140	0.400 U	0.400 U	0.400 U	0.148 J	0.400 U	0.400 U	0.400 U	1.0 U	5.100 U	4.300 U	2.0 U	2.3 U	1.9 U	1.9 U
Pesticides																
Aldrin	µg/L	0.50	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.010 U	0.026 U	0.051 U	0.013 U	0.019 U	0.017 U	0.017 U
Dieldrin	µg/L	0.10	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.010 U	0.026 U	0.051 U	0.007 U	0.010 U	0.0096 U	0.0096 U
alpha-Chlordane	µg/L	2.0	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.054 U	NA	NA	NA	NA	NA	NA
gamma-Chlordane	µg/L	2.0	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.054 U	NA	NA	NA	NA	NA	NA
Chlordane	µg/L	2.0	NA	NA	NA	NA	NA	NA	NA	NA	0.130 U	0.530 U	0.16 U	0.31 U	0.29 U	0.29 U
gamma-BHC (Lindane)	µg/L	0.20	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.011 U	0.026 U	0.051 U	0.007 U	0.010 U	0.0096 U	0.0096 U
Metals																
Arsenic, Total	µg/L	10	5 U	2 J	5 U	5 U	5 U	5 U	3 U	3 U	2.0 U	4.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Chromium, Total	µg/L	100	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.0 U	10 U	4.0 U	6.0 J	4.0 U	4.0 U
Iron, Total	µg/L	NS	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	100 U	50 U	28	50 U	75 U
Lead, Total	µg/L	15	10 U	3 J	10 U	10 U	10 U	10 U	10 U	10 U	2.5 U	5.0 U	10 U	10 U	10 U	2.5 U
Manganese, Total	µg/L	NS	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	7.5 U	15 U	3.0 U	2.0 J	3.0 U	5.0 U
General Chemistry																
Total Cyanide	mg/L	0.20	0.005 U	0.005 U	0.002 J	0.0020 J	0.005 U	0.005 U	0.0001 J	0.0041 U	0.0011 U	0.0082 J	0.005 U	0.0082 J	0.005 U	0.005 U
Nitrate/Nitrite (as N)	mg/L	NS	0.43	0.76	0.22 U	0.49	0.069 J	0.51	0.52	0.36	0.390	0.630	0.60	0.630	0.47	0.78
Chemical Oxygen Demand	mg/L	NS	8 J	20 U	20 U	20 U	15 J	20 U	4.1 J	10 U	15 U	20 U	10 U	20 U	5.4 J	10 U
Water Quality Parameters																
pH	std	NS	6.10	6.03	6.25	6.29	5.87	6.45	6.00	6.51	6.07	---	6.16	6.44	6.55	6.72
Oxidation-Reduction Potential	mV	NS	150.1	142.2	135.5	196.3	303.3	101.8	200.3	113.3	248.5	---	197.0	77.8	172.6	111.1
Turbidity	NTU	NS	0.00	2.57	0.33	0.00	0.00	0.79	0.69	0.88	1.65	---	0.36	1.73	7.57	2.59

J = Estimated result
NA = Not analyzed
NS = No Standard
Q = Qualifier
U = The target analyte was not detected at or above the laboratory reporting limit.
UJ = Estimated non-detect
ND = non-detect
µg/L = microgram per liter
mg/L = milligram per liter
mV = millivolts
µS/cm = microsiemens per centimeter
NTU - Nephelometric Turbidity Unit

Appendix D
DCL Historical Groundwater Data, Well LFM-99-02B
2020 Annual Operation, Maintenance, and Monitoring Report
Main Post, Former Fort Devens Army Installation
Devens, Massachusetts

LFM-99-02B	Units	Monitoring Criteria	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
Extractable Petroleum Hydrocarbons (EPH)								
Naphthalene	µg/L	140	1.9 U	1.4 U	1.6 U	1.5 U	3.80 U	3.80 U
Pesticides								
Aldrin	µg/L	0.50	0.019 UJ	0.017 UJ	0.0086 UJ	0.0089 U	0.00860 UJ	0.003 U
Dieldrin	µg/L	0.10	0.0110 UJ	0.0096 UJ	0.0048 U	0.0049 U	0.00480 U	0.0018 U
alpha-Chlordane	µg/L	2.0	NA	NA	NA	NA	NA	NA
gamma-Chlordane	µg/L	2.0	NA	NA	NA	NA	NA	NA
Chlordane	µg/L	2.0	0.32 UJ	0.29 UJ	0.14 U	0.15 U	0.140 U	0.05 U
gamma-BHC (Lindane)	µg/L	0.20	0.0110 UJ	0.0096 UJ	0.0048 U	0.0049 U	0.00480 U	0.0017 U
Metals								
Arsenic, Total	µg/L	10	3.0 U	3.0 U	3.0 U	3.0 U	3.00 U	1.5 U
Chromium, Total	µg/L	100	4.0 U	4.0 U	4.0 U	4.0 U	4.00 U	1.6 U
Iron, Total	µg/L	NS	50 U	50 U	50 U	50 U	50.0 U	17 U
Lead, Total	µg/L	15	10 U	15 U	10 U	10 U	10.0 U	4 U
Manganese, Total	µg/L	NS	3.0 U	3.0 U	3.0 U	3.0 U	3.00 U	1.0 U
General Chemistry								
Total Cyanide	mg/L	0.20	0.0048 J	0.0044 J	0.0050 U	0.0026 J	0.00270 J	0.0025
Nitrate/Nitrite (as N)	mg/L	NS	0.60	0.69	0.28	0.55 J	0.470	0.380
Chemical Oxygen Demand	mg/L	NS	10 J	10 U	20 U	40 UJ	20.0 U	17 U
Water Quality Parameters								
pH	std	NS	6.27	5.95	6.4	6.4	5.97	6.68
Oxidation-Reduction Potential	mV	NS	80.9	226	210	190	320	110
Turbidity	NTU	NS	2.91	2.47	0.75	0.52	0.420	2.22

J = Estimated result
NA = Not analyzed
NS = No Standard
Q = Qualifier
U = The target analyte was not detected at or above the laboratory reporting limit.
UJ = Estimated non-detect
ND = non-detect
µg/L = microgram per liter
mg/L = milligram per liter
mV = millivolts
µS/cm = microsiemens per centimeter
NTU - Nephelometric Turbidity Unit

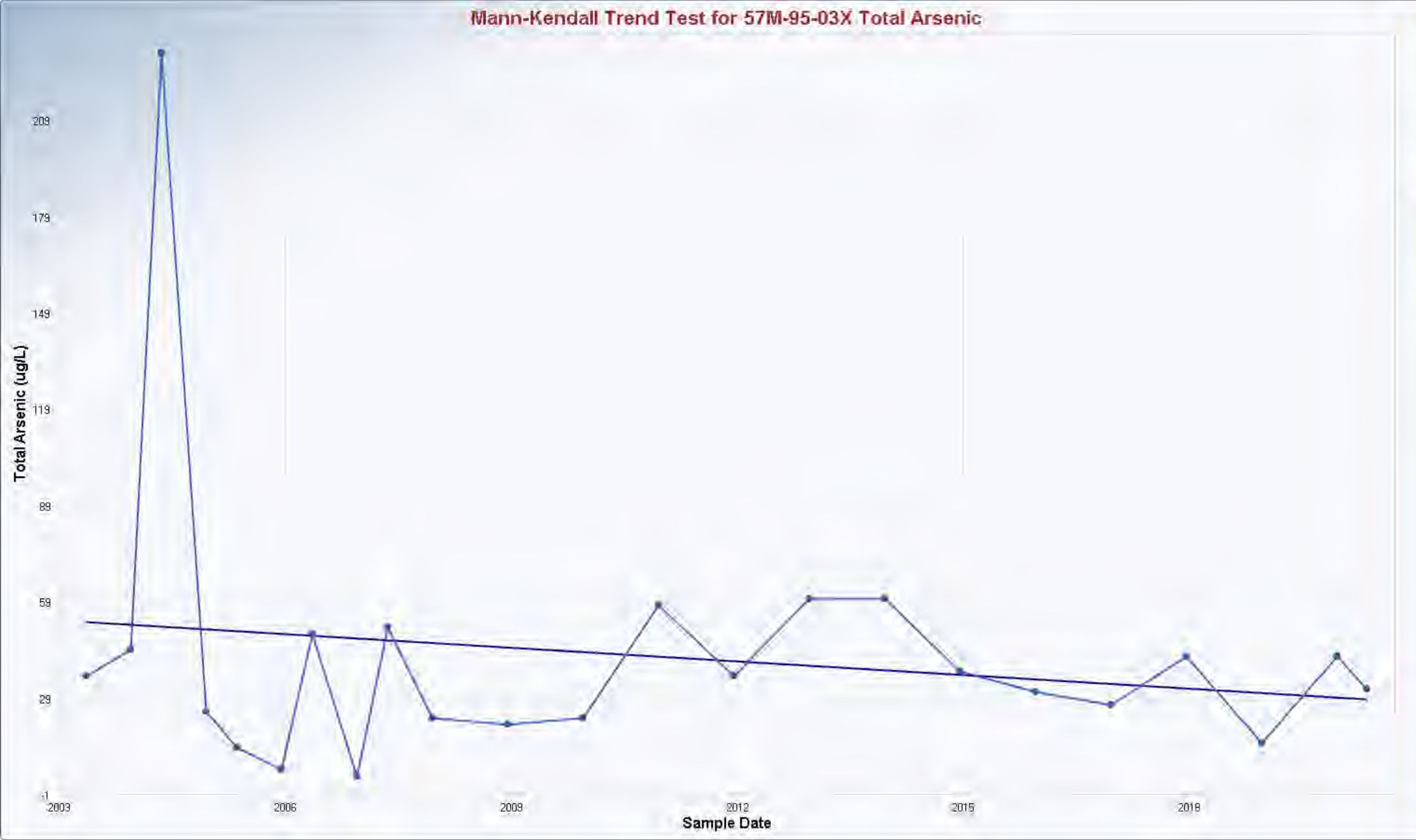
Appendix E

Mann-Kendall Data Trend Analyses

AOC 57

AOC 57
Total Arsenic

Mann-Kendall Trend Test for 57M-95-03X Total Arsenic



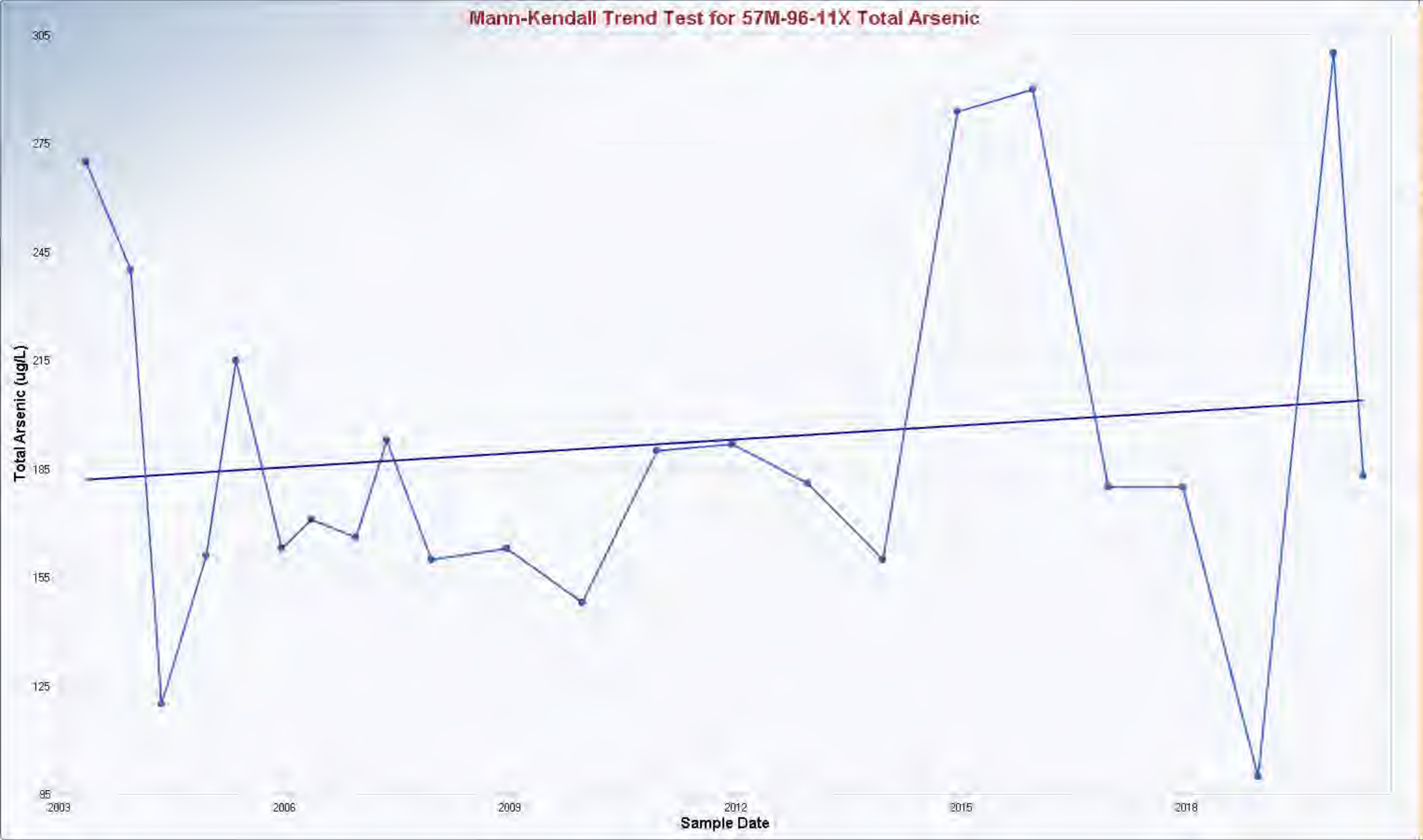
Mann-Kendall Trend Analysis

n	23
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	37.8109
Standardized Value of S	0.2645
M-K Test Value (S)	11
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.3957

OLS Regression Line (Blue)

OLS Regression Slope	-1.4114
OLS Regression Intercept	2,880.8954

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	23
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	37.8242
Standardized Value of S	0.3966
M-K Test Value (S)	16
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.3458

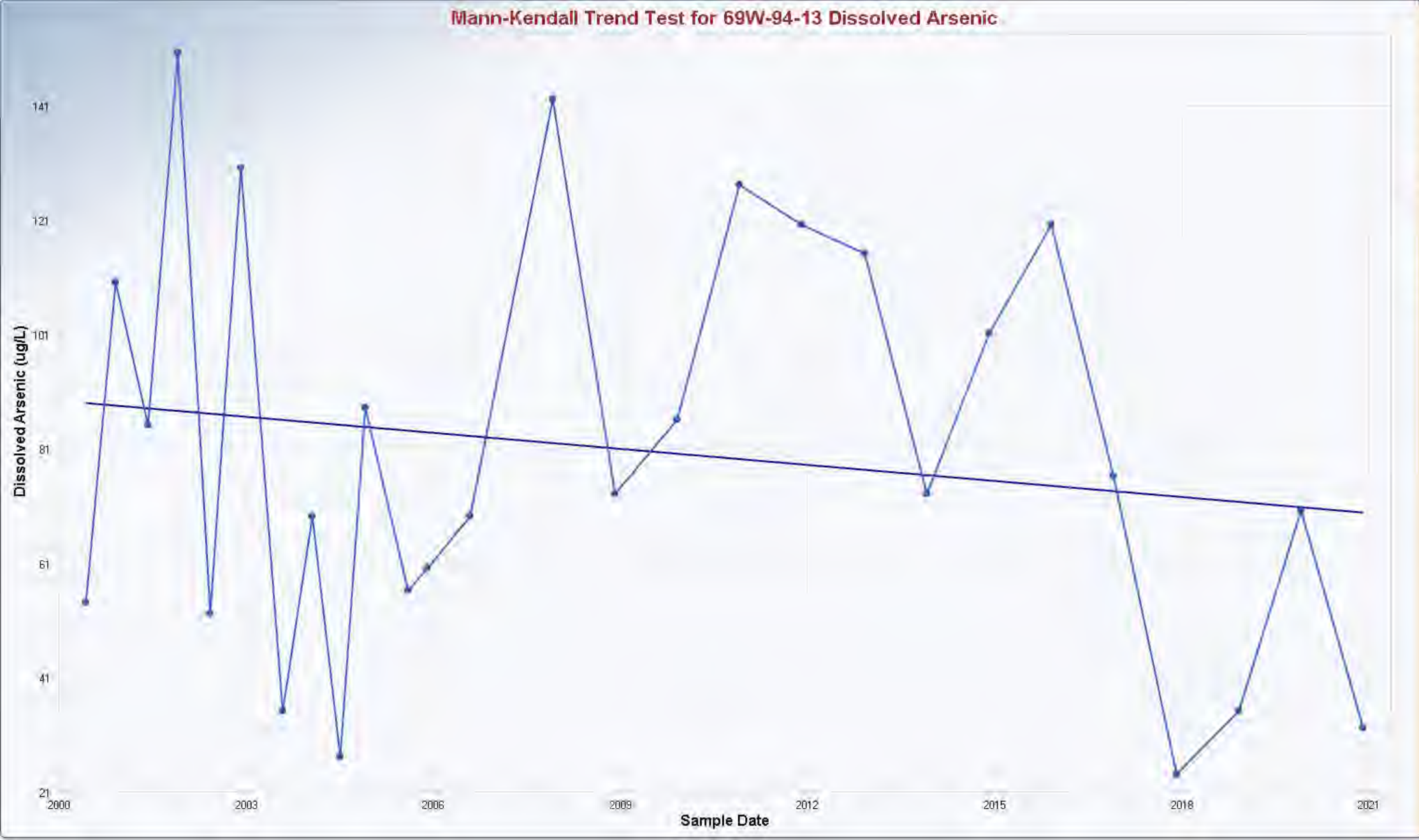
OLS Regression Line (Blue)

OLS Regression Slope	1.2919
OLS Regression Intercept	-2,406.7806

Insufficient statistical evidence of a significant trend at the specified level of significance.

AOC 69W

AOC 69W
Dissolved Arsenic



Mann-Kendall Trend Analysis

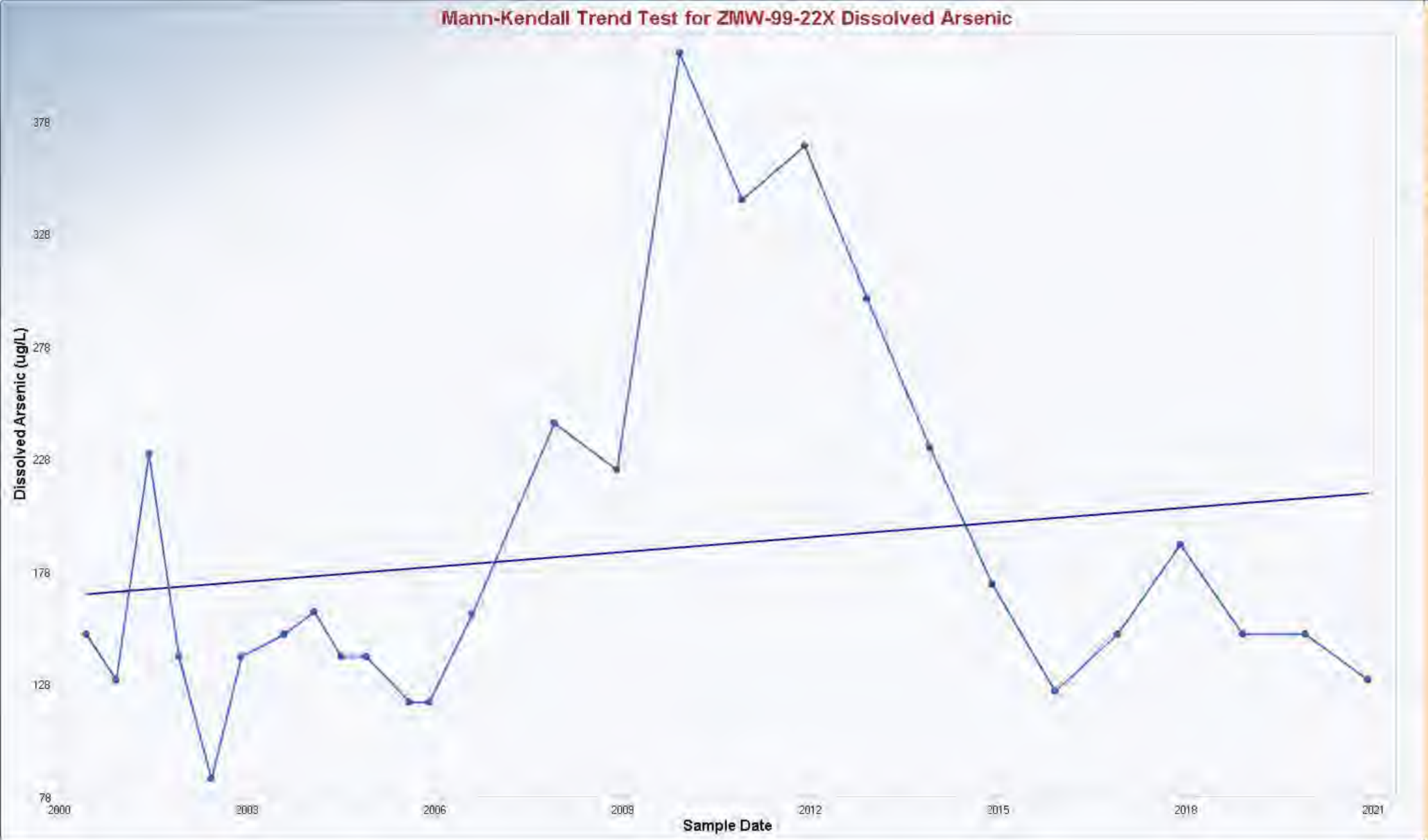
n	27
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	47.9270
Standardized Value of S	-0.4173
M-K Test Value (S)	-21
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.3382

OLS Regression Line (Blue)

OLS Regression Slope	-0.9381
OLS Regression Intercept	1,965.3317

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test for ZMW-99-22X Dissolved Arsenic



Mann-Kendall Trend Analysis

n	27
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	47.8830
Standardized Value of S	1.0486
M-K Test Value (S)	51
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.1472

OLS Regression Line (Blue)

OLS Regression Slope	2.1875
OLS Regression Intercept	-4,207.7089

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test ZMW-99-23X Dissolved Arsenic



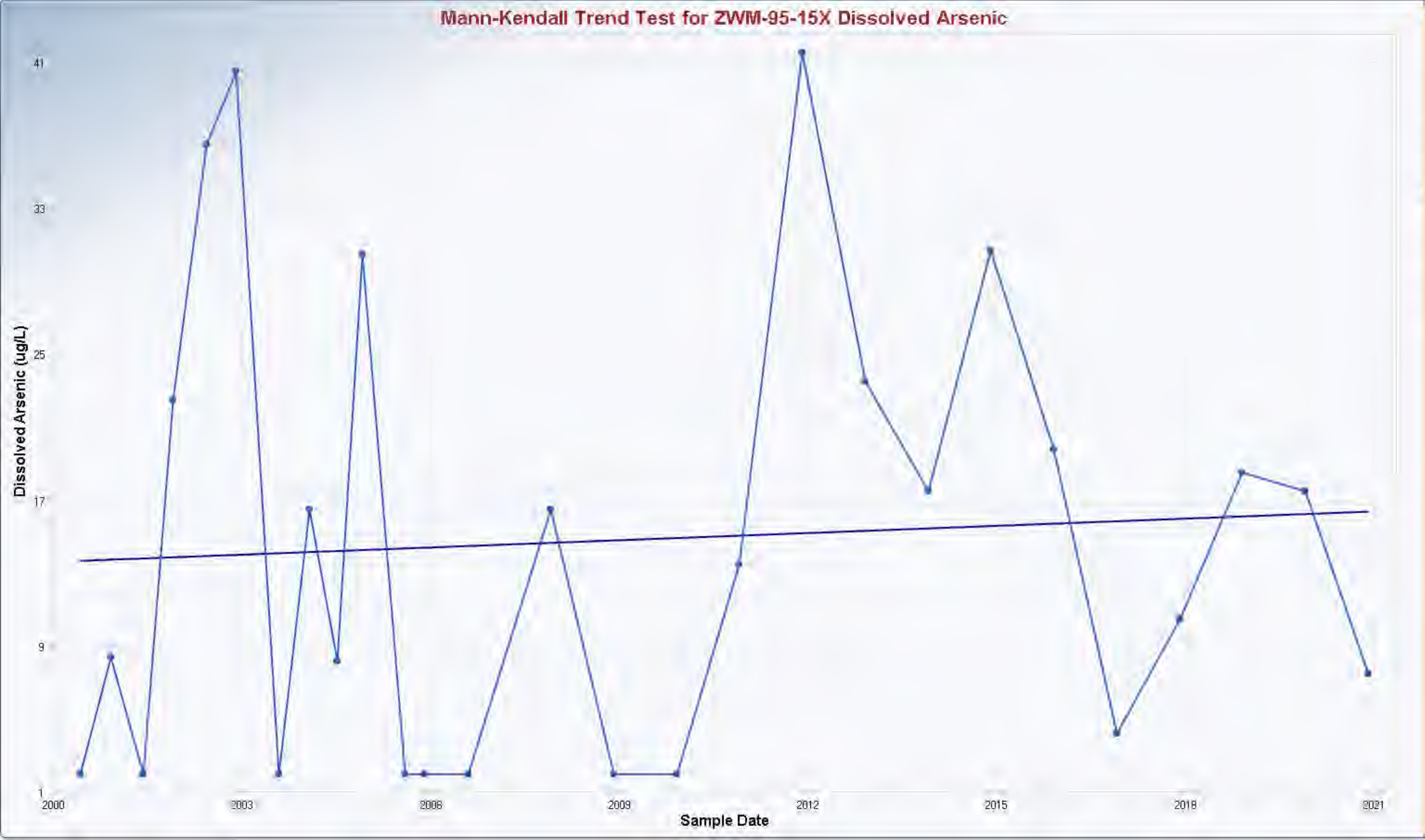
Mann-Kendall Trend Analysis

n	27
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	47.9270
Standardized Value of S	-1.6692
M-K Test Value (S)	-81
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0475

OLS Regression Line (Blue)

OLS Regression Slope	-1.2655
OLS Regression Intercept	2,577.2669

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	27
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	47.2617
Standardized Value of S	0.7617
M-K Test Value (S)	37
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.2231

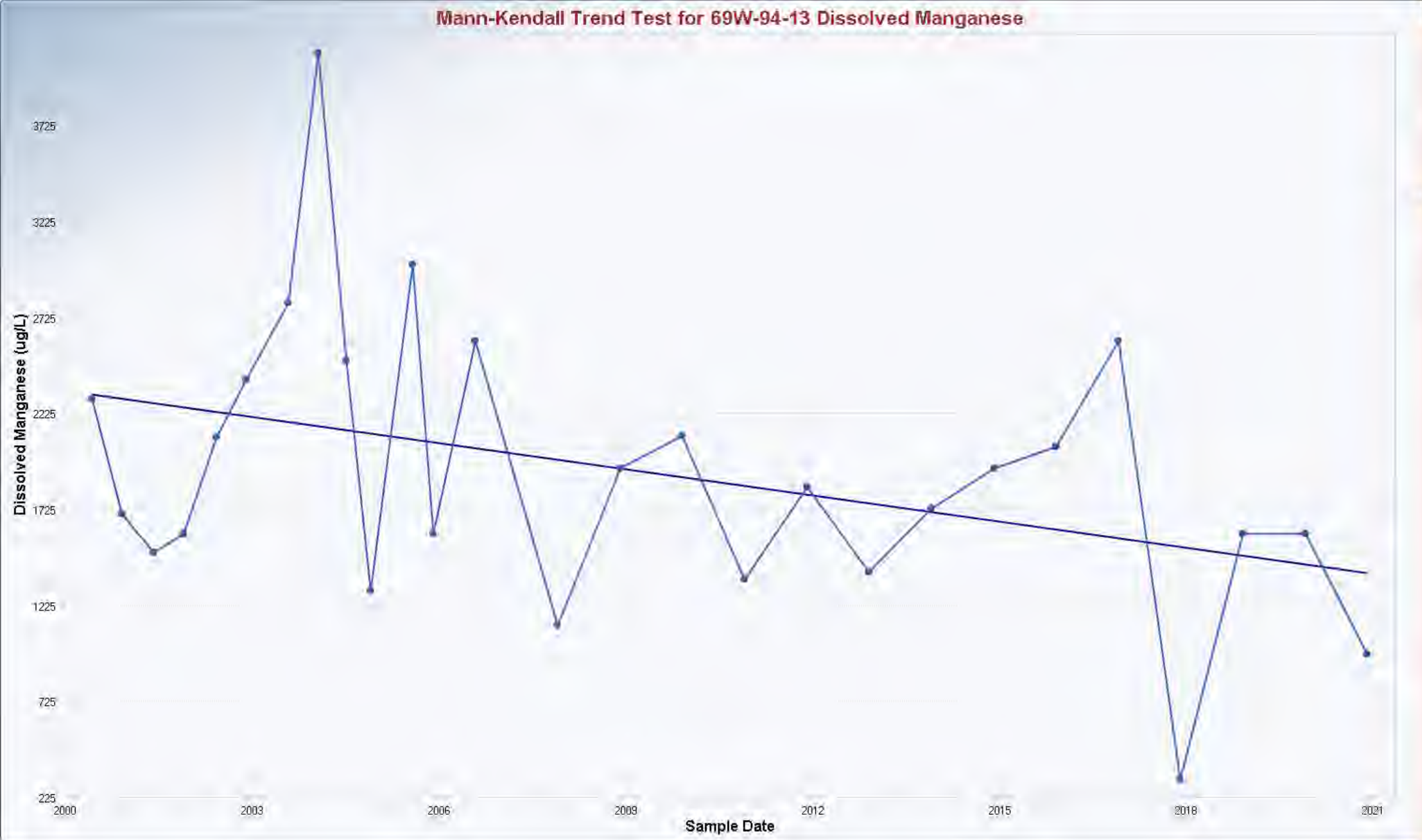
OLS Regression Line (Blue)

OLS Regression Slope	0.1301
OLS Regression Intercept	-247.0293

Insufficient statistical evidence of a significant trend at the specified level of significance.

AOC 69W
Total Manganese

Mann-Kendall Trend Test for 69W-94-13 Dissolved Manganese



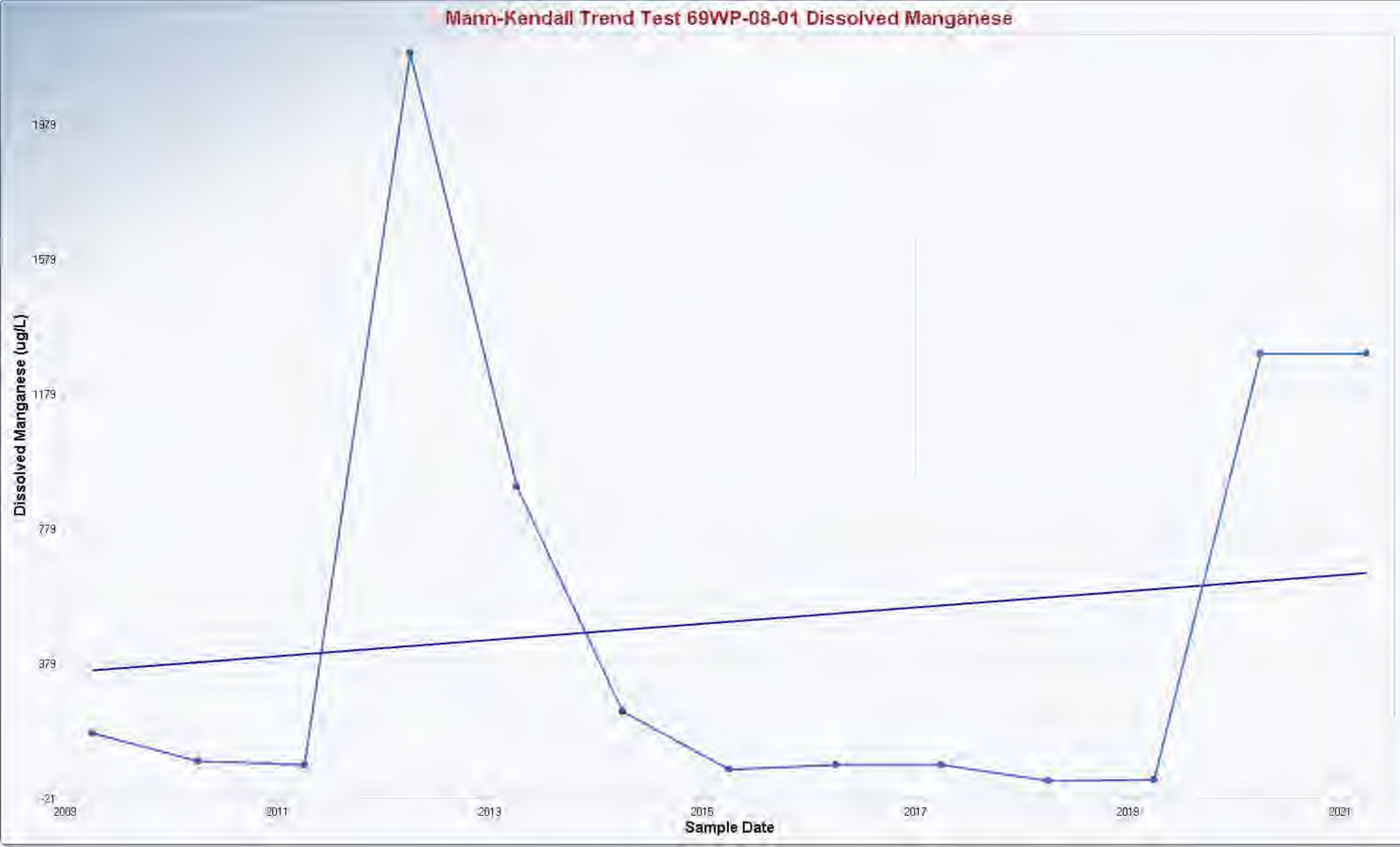
Mann-Kendall Trend Analysis

n	27
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	47.8574
Standardized Value of S	-1.5045
M-K Test Value (S)	-73
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0662

OLS Regression Line (Blue)

OLS Regression Slope	-45.4660
OLS Regression Intercept	93,271.6905

Insufficient statistical evidence of a significant trend at the specified level of significance.



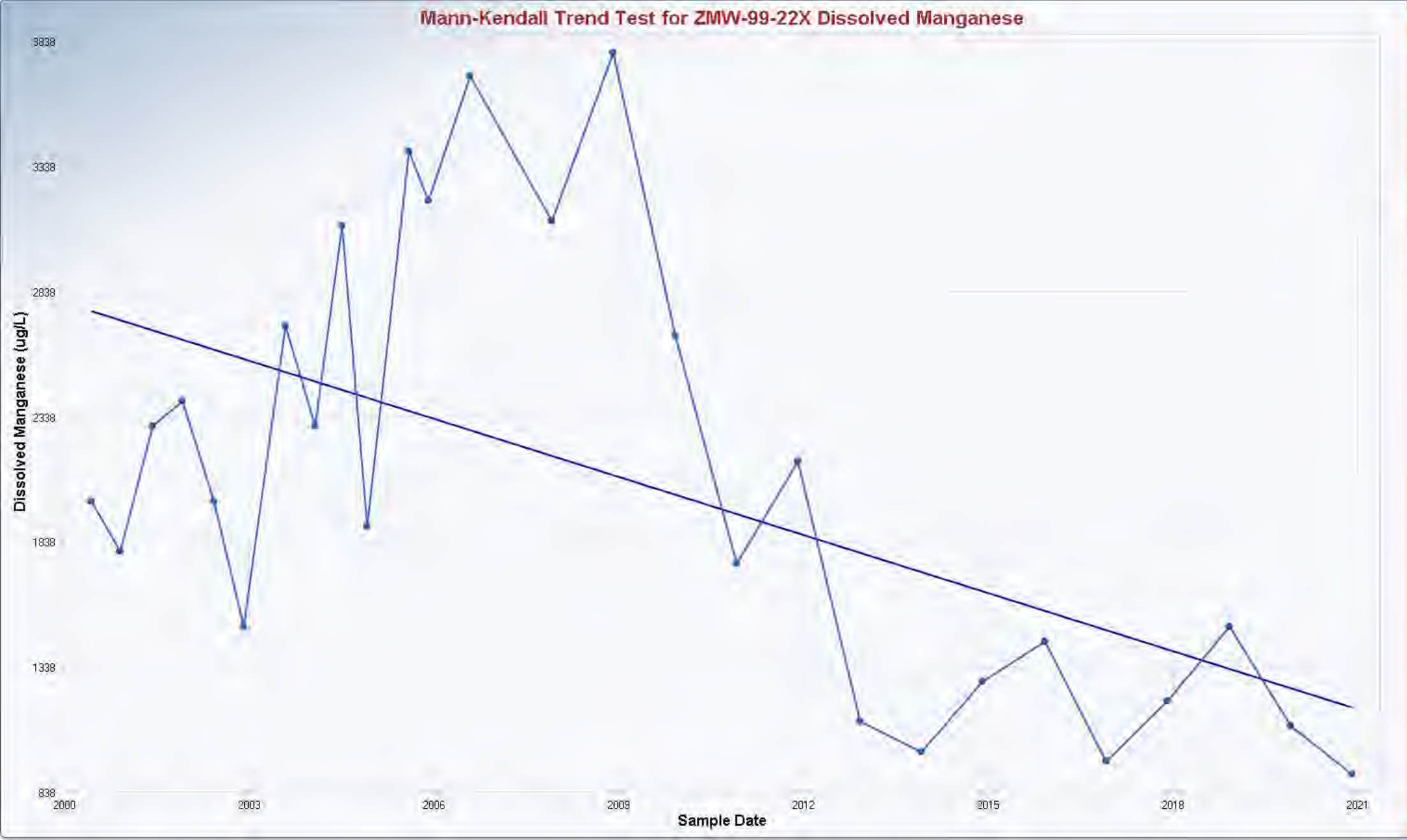
Mann-Kendall Trend Analysis

n	13
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	16.3605
Standardized Value of S	-0.3667
M-K Test Value (S)	-7
Tabulated p-value	0.3830
Approximate p-value	0.3569

OLS Regression Line (Blue)

OLS Regression Slope	23.9527
OLS Regression Intercept	-47,755.2336

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

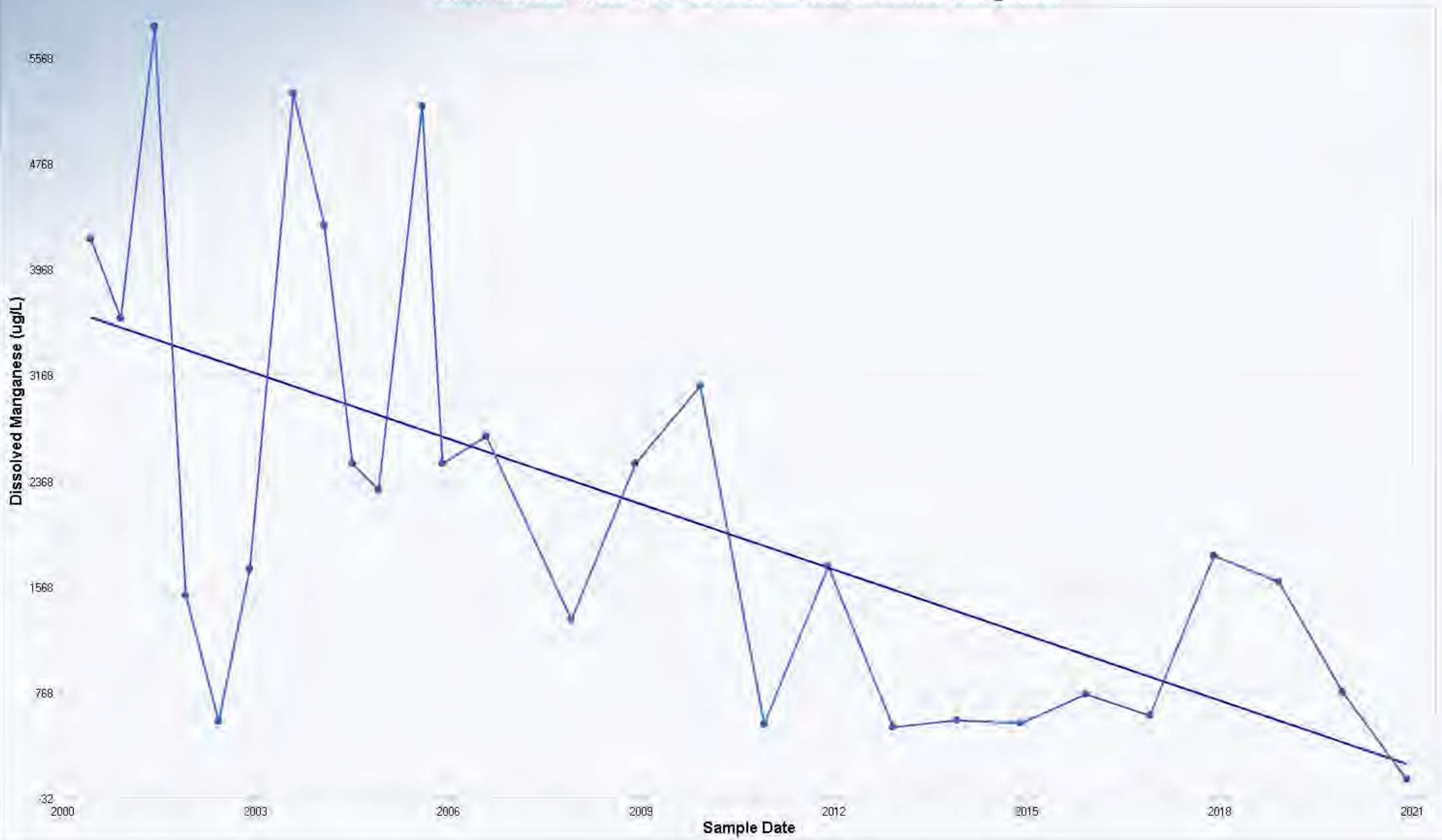
n	27
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	47.9375
Standardized Value of S	-2.5241
M-K Test Value (S)	-122
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0058

OLS Regression Line (Blue)

OLS Regression Slope	-77.2922
OLS Regression Intercept	157,367.5117

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test for ZMW-99-23X Dissolved Manganese



Mann-Kendall Trend Analysis

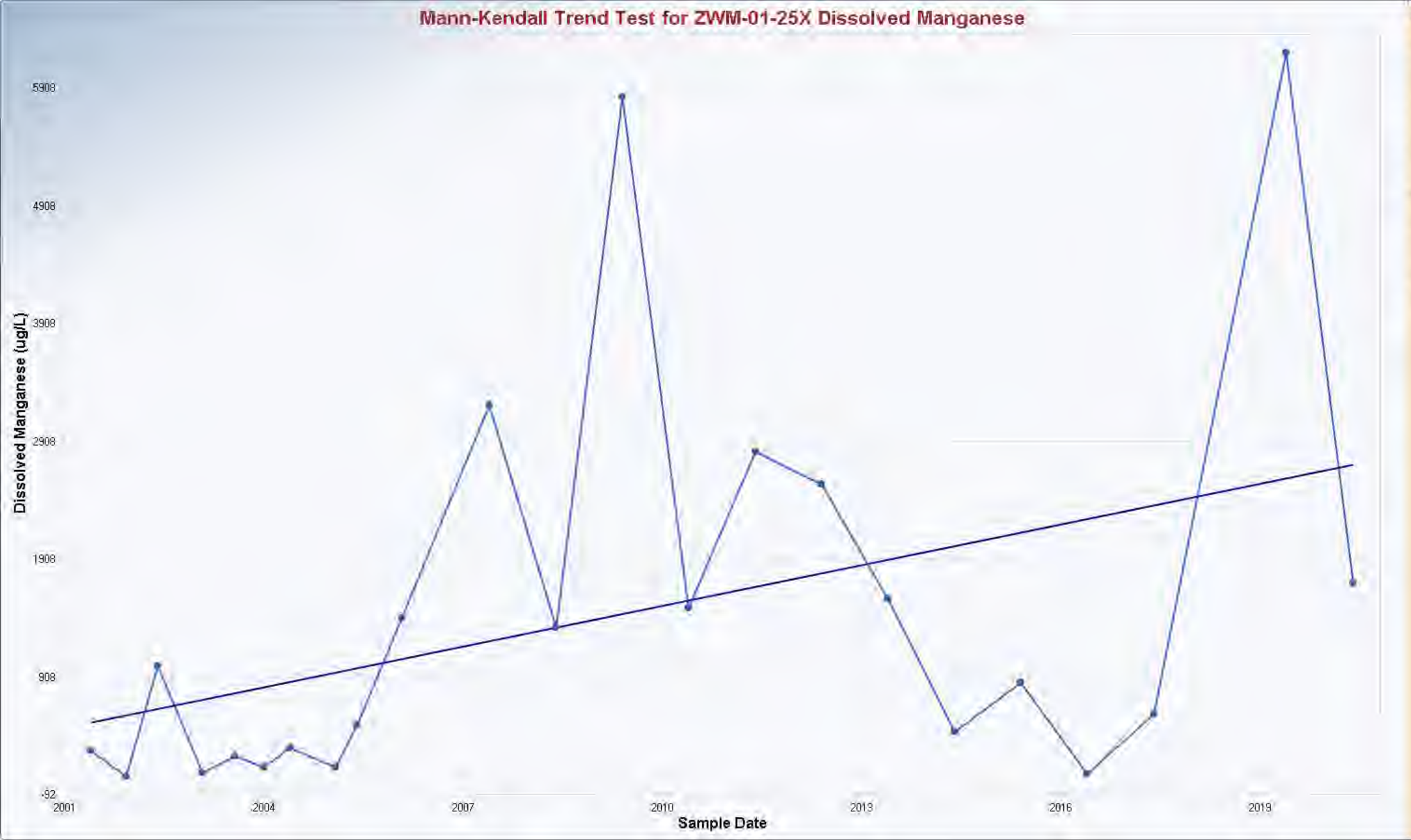
n	27
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	47.9305
Standardized Value of S	-3.0669
M-K Test Value (S)	-148
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0011

OLS Regression Line (Blue)

OLS Regression Slope	-164.8554
OLS Regression Intercept	333,366.9856

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test for ZWM-01-25X Dissolved Manganese



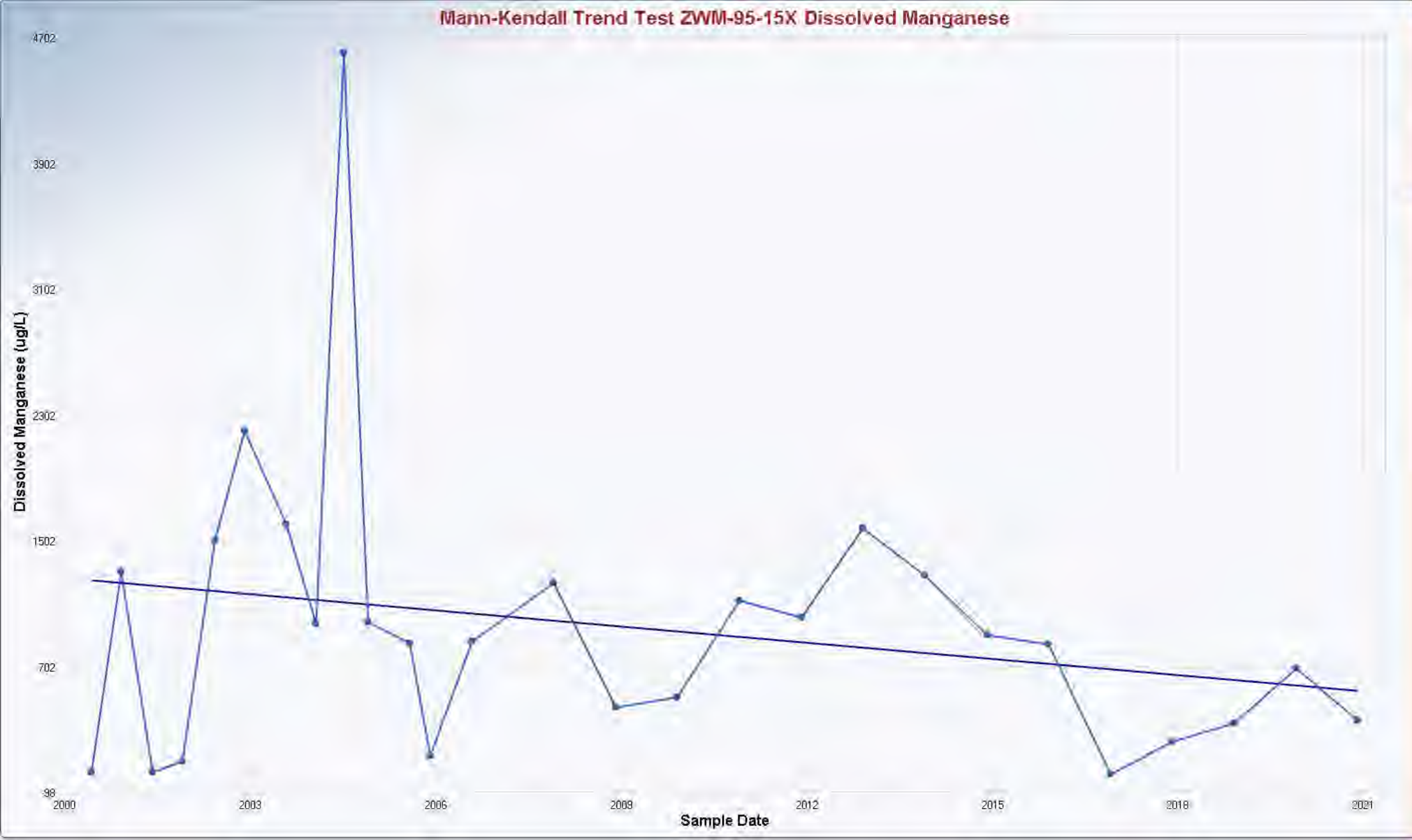
Mann-Kendall Trend Analysis

n	23
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	37.8506
Standardized Value of S	2.4570
M-K Test Value (S)	94
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0070

OLS Regression Line (Blue)

OLS Regression Slope	115.6387
OLS Regression Intercept	-230,968.2023

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	27
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	47.9687
Standardized Value of S	-1.0840
M-K Test Value (S)	-53
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.1392

OLS Regression Line (Blue)

OLS Regression Slope	-34.3036
OLS Regression Intercept	69,667.9175

Insufficient statistical evidence of a significant trend at the specified level of significance.

AOC 69W
EPH C_{11}-C_{22}

Mann-Kendall Trend Test for 69W-94-13 EPH C11-C12 Aromatics



Mann-Kendall Trend Analysis

n	27
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	47.7947
Standardized Value of S	-1.6738
M-K Test Value (S)	-81
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0471

OLS Regression Line (Blue)

OLS Regression Slope	-31.2549
OLS Regression Intercept	63,140.1902

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test for ZMW-99-22X EPH C11-C12 Aromatics



Mann-Kendall Trend Analysis

n	27
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	47.9583
Standardized Value of S	-3.5656
M-K Test Value (S)	-172
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0002

OLS Regression Line (Blue)

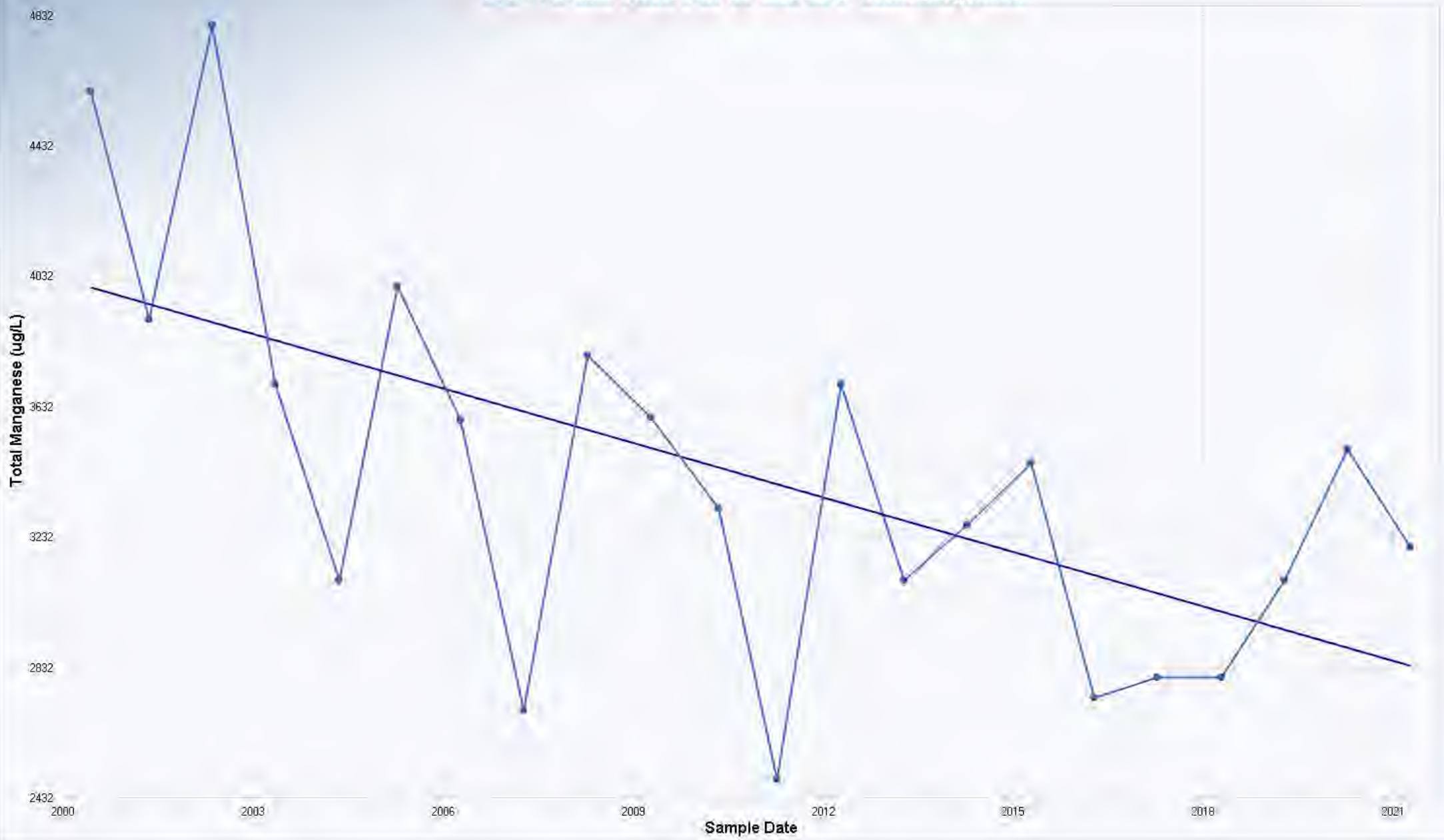
OLS Regression Slope	-47.5296
OLS Regression Intercept	95,982.3813

Statistically significant evidence of a decreasing trend at the specified level of significance.

AOC 43G

AOC 43G
Total Manganese

Mann-Kendall Trend Test for AAFES-2 Total Manganese



Mann-Kendall Trend Analysis

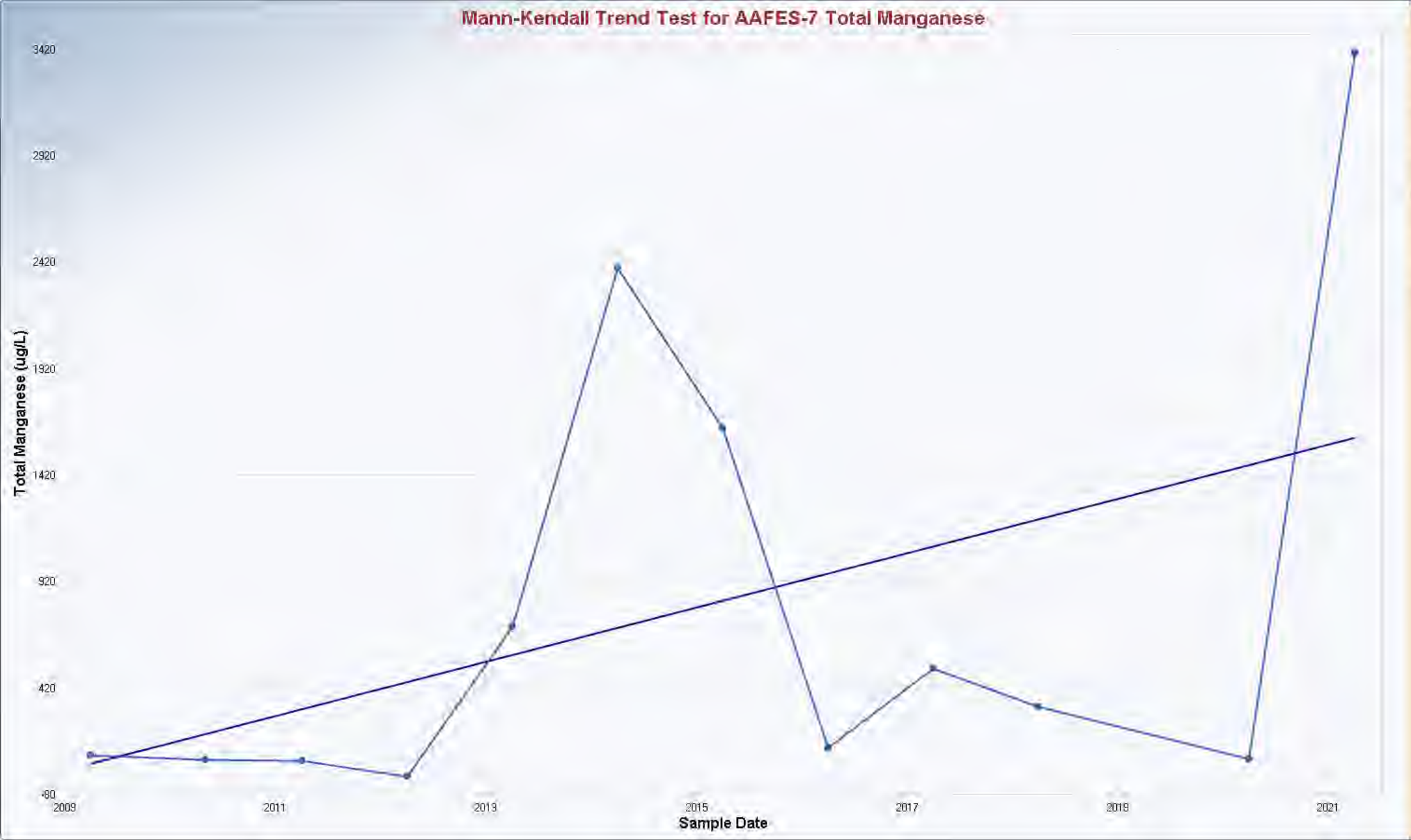
n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.3836
Standardized Value of S	-2.6849
M-K Test Value (S)	-96
Tabulated p-value	0.0030
Approximate p-value	0.0036

OLS Regression Line (Blue)

OLS Regression Slope	-55.6842
OLS Regression Intercept	115,364.2579

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test for AAFES-7 Total Manganese



Mann-Kendall Trend Analysis

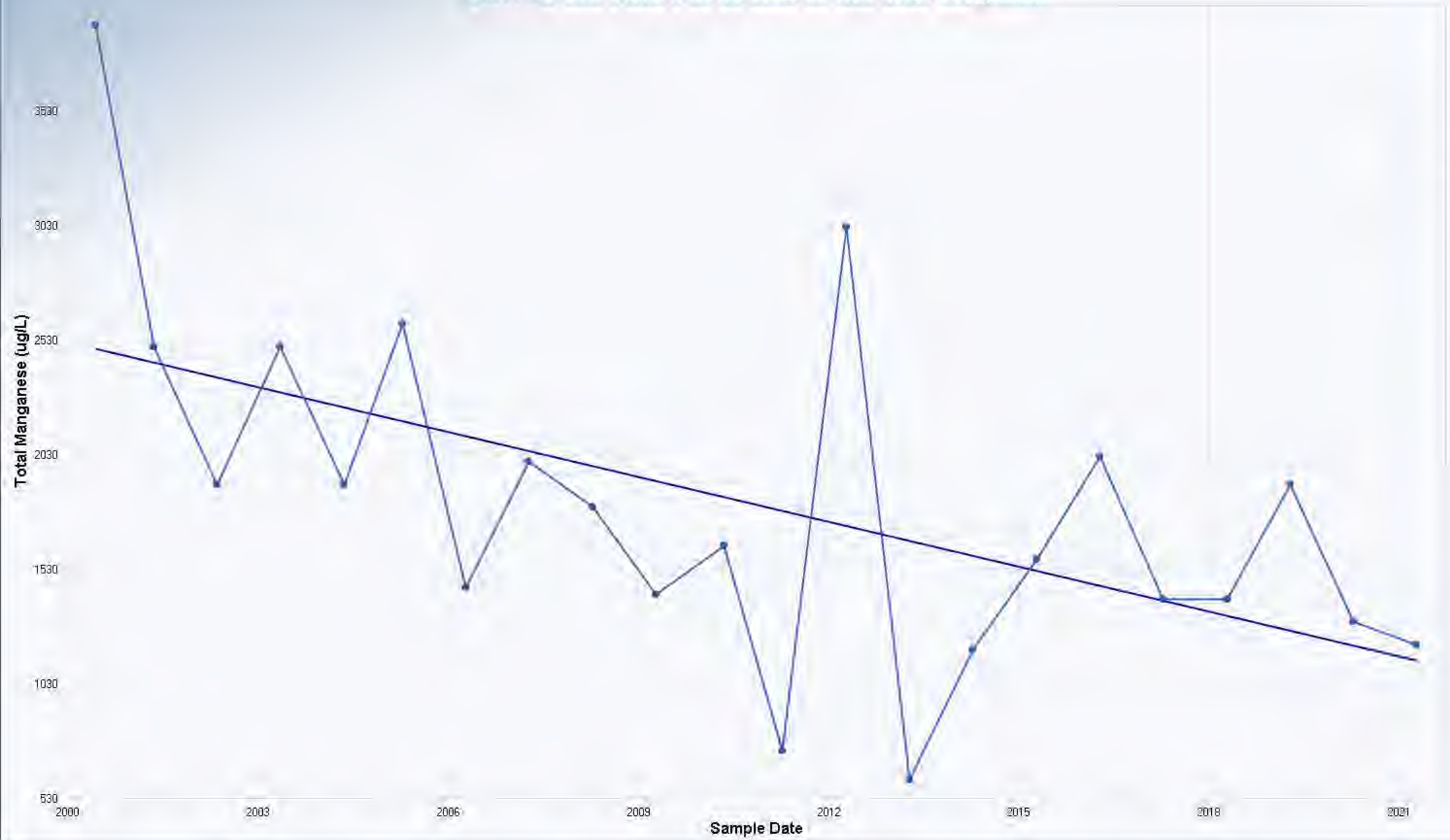
n	12
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	14.5831
Standardized Value of S	1.1657
M-K Test Value (S)	18
Tabulated p-value	0.1250
Approximate p-value	0.1219

OLS Regression Line (Blue)

OLS Regression Slope	127.5312
OLS Regression Intercept	-256,118.9196

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test for XGM-93-02X Total Manganese



Mann-Kendall Trend Analysis

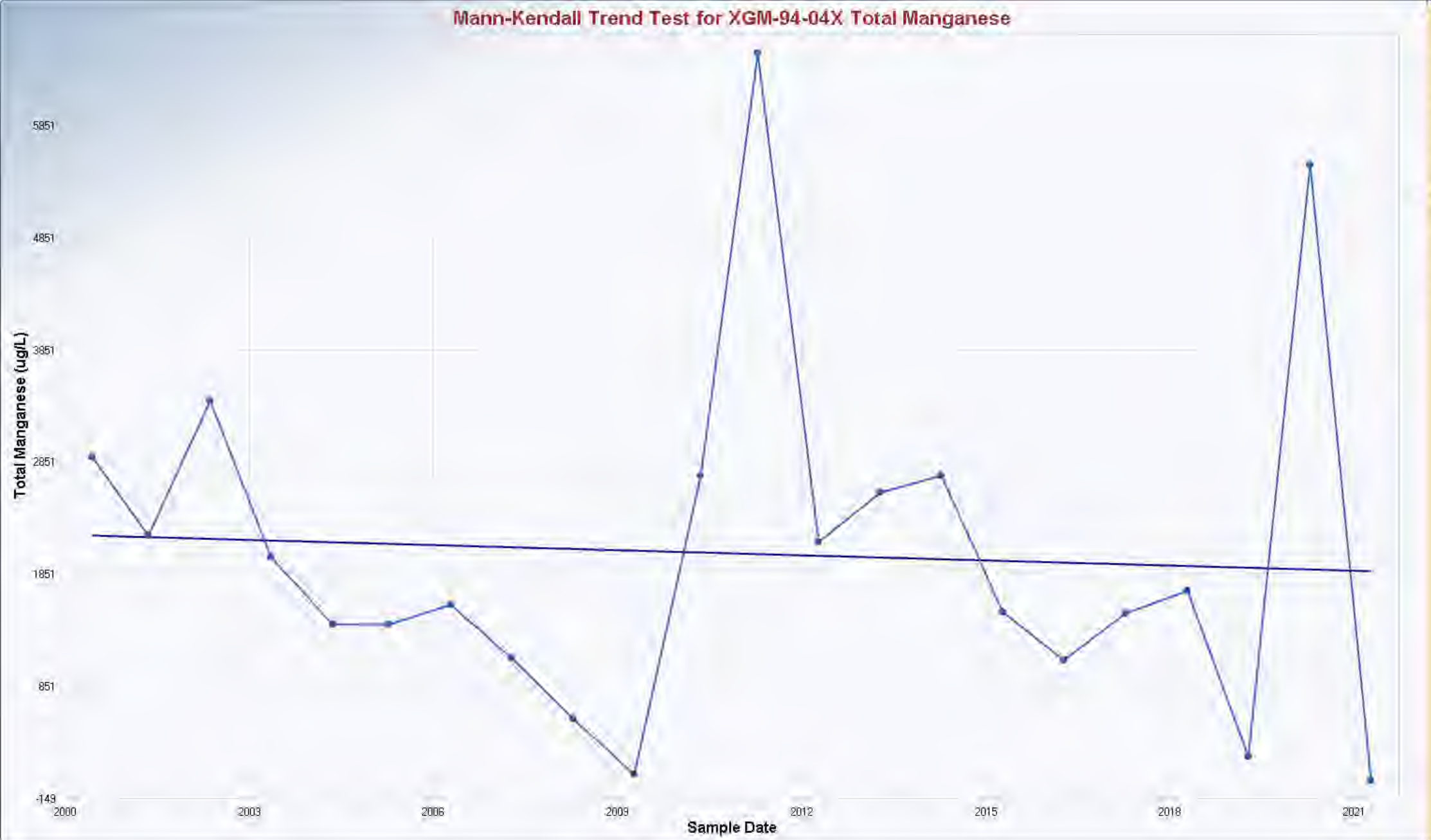
n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.3836
Standardized Value of S	-2.8544
M-K Test Value (S)	-102
Tabulated p-value	0.0020
Approximate p-value	0.0022

OLS Regression Line (Blue)

OLS Regression Slope	-65.3886
OLS Regression Intercept	133,267.8126

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test for XGM-94-04X Total Manganese



Mann-Kendall Trend Analysis

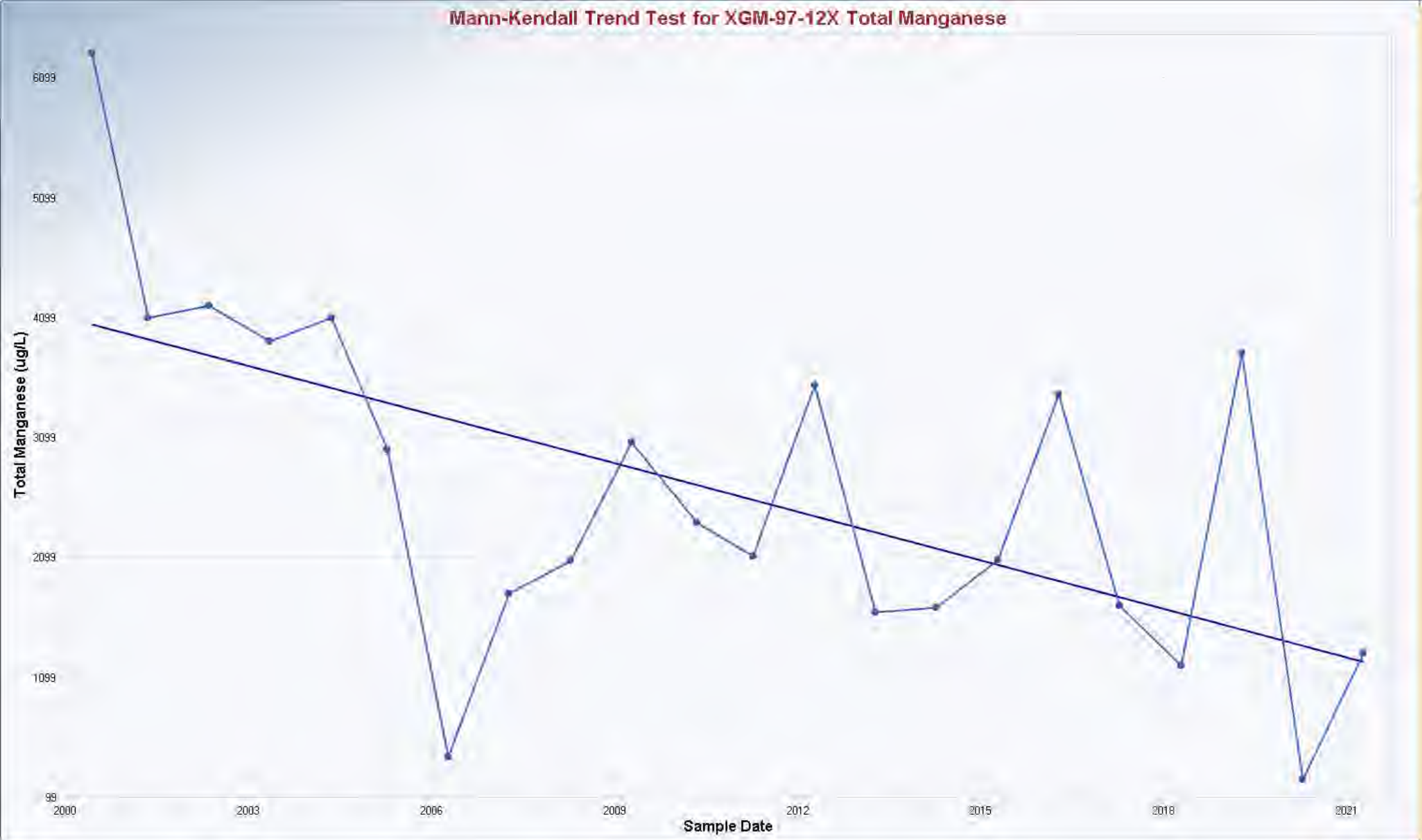
n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4354
Standardized Value of S	-1.2981
M-K Test Value (S)	-47
Tabulated p-value	0.0090
Approximate p-value	0.0971

OLS Regression Line (Blue)

OLS Regression Slope	-15.4182
OLS Regression Intercept	33,032.7996

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test for XGM-97-12X Total Manganese



Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4495
Standardized Value of S	-3.0184
M-K Test Value (S)	-108
Tabulated p-value	0.0010
Approximate p-value	0.0013

OLS Regression Line (Blue)

OLS Regression Slope	-134.8858
OLS Regression Intercept	273,806.1346

Statistically significant evidence of a decreasing trend at the specified level of significance.

AOC 43G
Total Iron



Mann-Kendall Trend Analysis

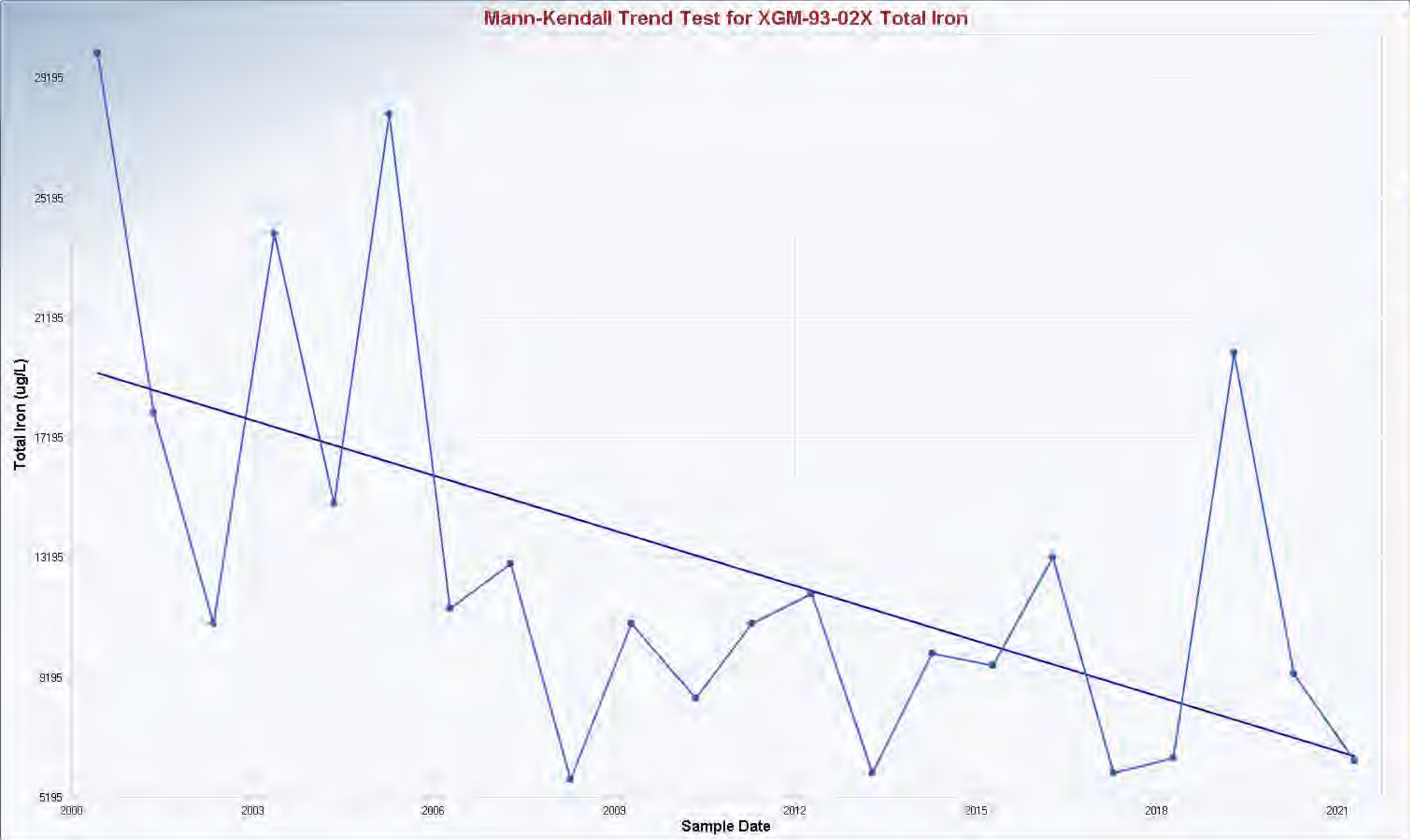
n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.2987
Standardized Value of S	-2.1814
M-K Test Value (S)	-78
Tabulated p-value	0.0130
Approximate p-value	0.0146

OLS Regression Line (Blue)

OLS Regression Slope	-338.3423
OLS Regression Intercept	698,462.6452

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test for XGM-93-02X Total Iron



Mann-Kendall Trend Analysis

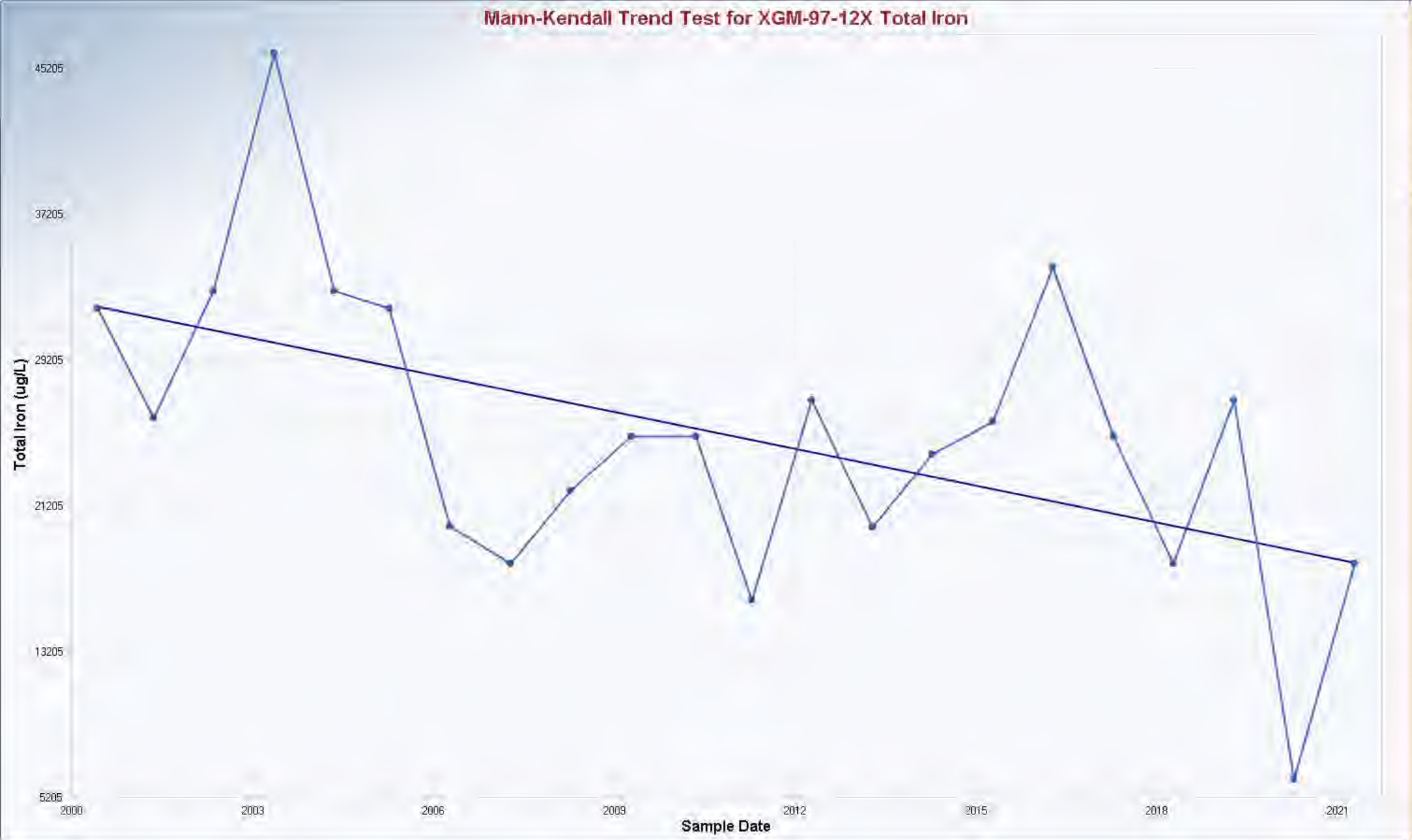
n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.3877
Standardized Value of S	-2.6555
M-K Test Value (S)	-95
Tabulated p-value	0.0030
Approximate p-value	0.0040

OLS Regression Line (Blue)

OLS Regression Slope	-612.7190
OLS Regression Intercept	1,244,754.6975

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test for XGM-97-12X Total Iron



Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.3176
Standardized Value of S	-2.0670
M-K Test Value (S)	-74
Tabulated p-value	0.0180
Approximate p-value	0.0194

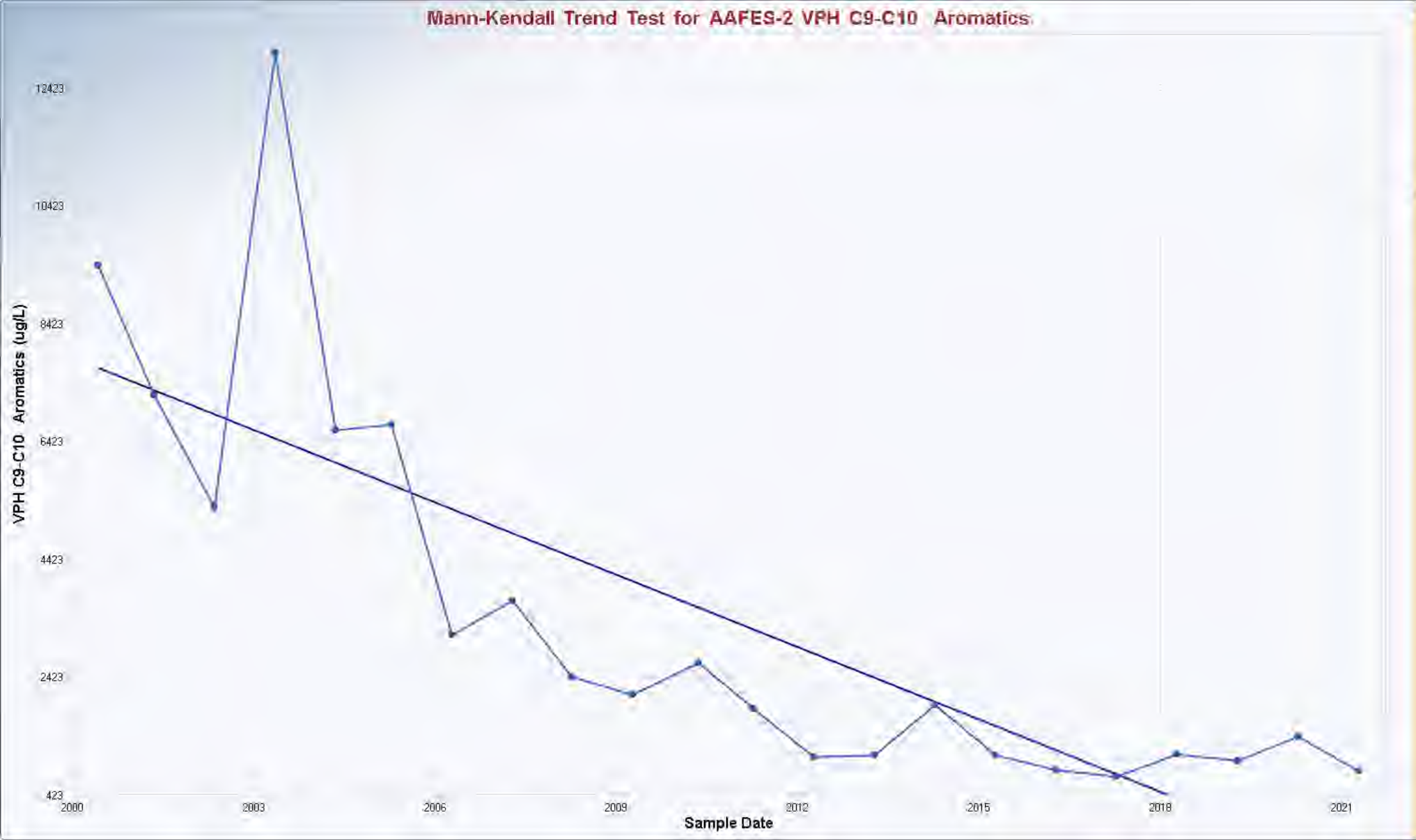
OLS Regression Line (Blue)

OLS Regression Slope	-674.1594
OLS Regression Intercept	1,880,434.3007

Statistically significant evidence of a decreasing trend at the specified level of significance.

AOC 43G
VPH C_9-C_{10}

Mann-Kendall Trend Test for AAFES-2 VPH C9-C10 Aromatics



Mann-Kendall Trend Analysis

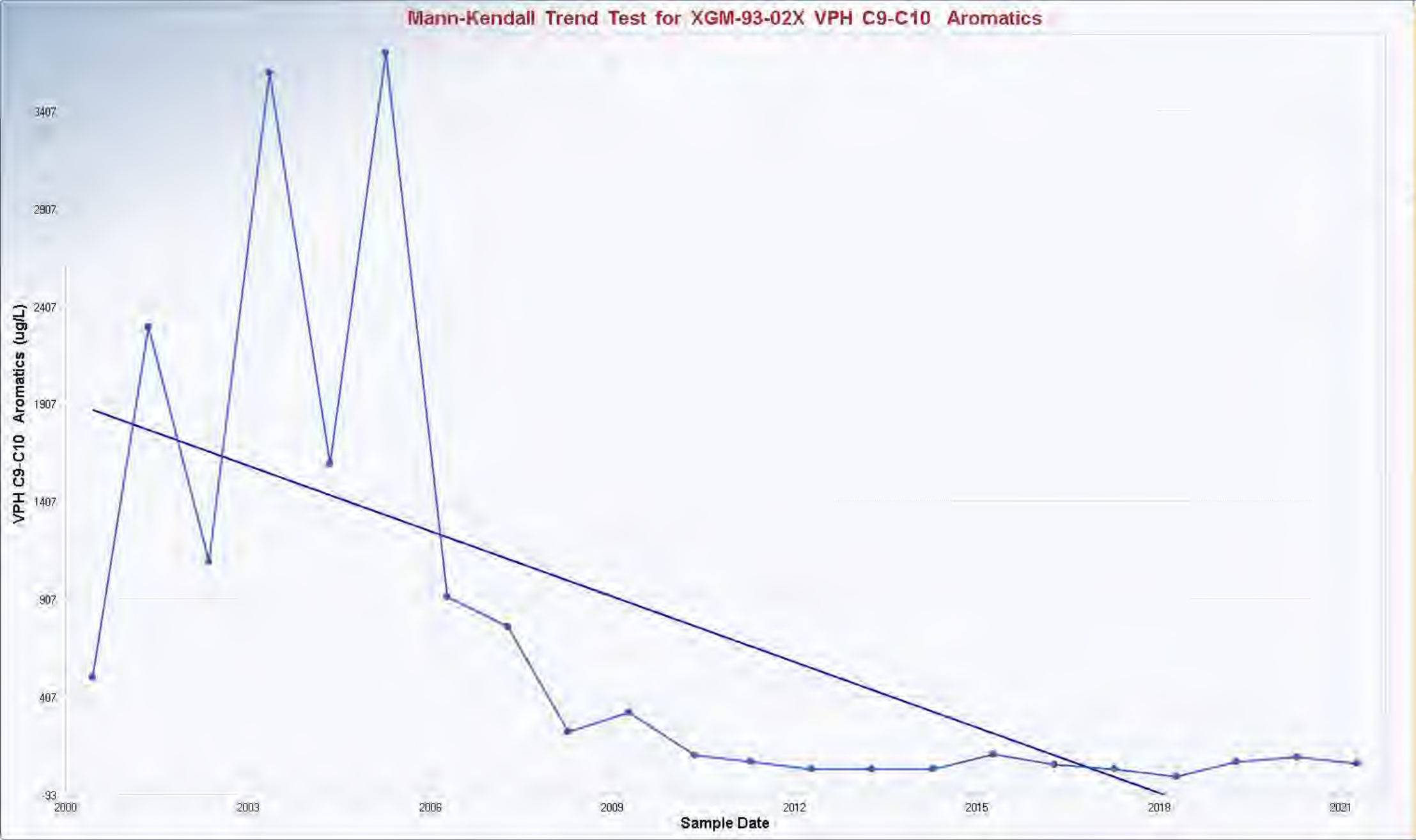
n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4495
Standardized Value of S	-4.8238
M-K Test Value (S)	-172
Tabulated p-value	0.0000
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-410.3379
OLS Regression Intercept	828,329.5633

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test for XGM-93-02X VPH C9-C10 Aromatics



Mann-Kendall Trend Analysis

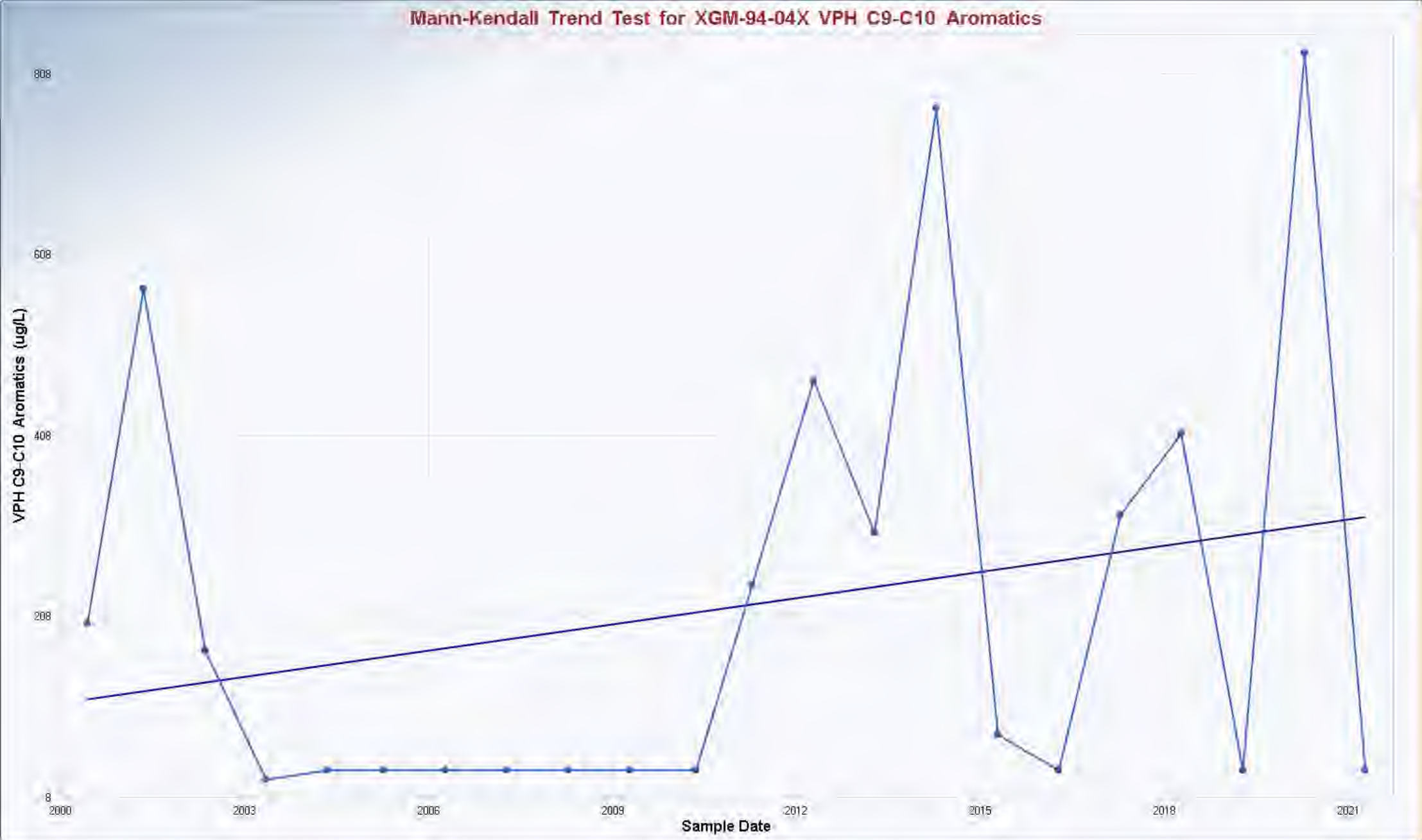
n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.3412
Standardized Value of S	-3.8482
M-K Test Value (S)	-137
Tabulated p-value	0.0000
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	-111.9290
OLS Regression Intercept	225,731.7014

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test for XGM-94-04X VPH C9-C10 Aromatics



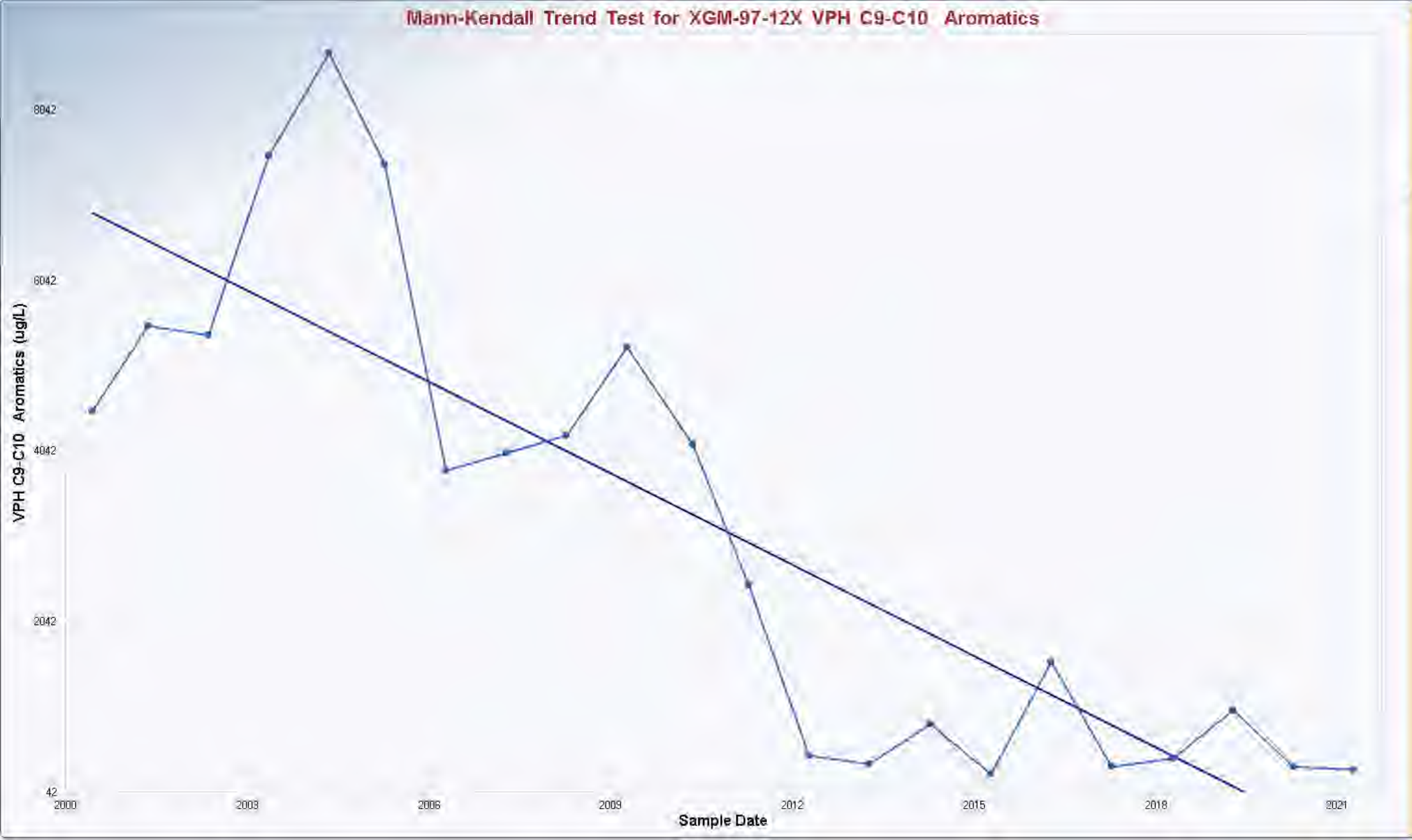
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	33.8551
Standardized Value of S	1.2182
M-K Test Value (S)	42
Tabulated p-value	0.1200
Approximate p-value	0.1116

OLS Regression Line (Blue)

OLS Regression Slope	9.6471
OLS Regression Intercept	-19,177.4335

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4495
Standardized Value of S	-4.2595
M-K Test Value (S)	-152
Tabulated p-value	0.0000
Approximate p-value	0.0000

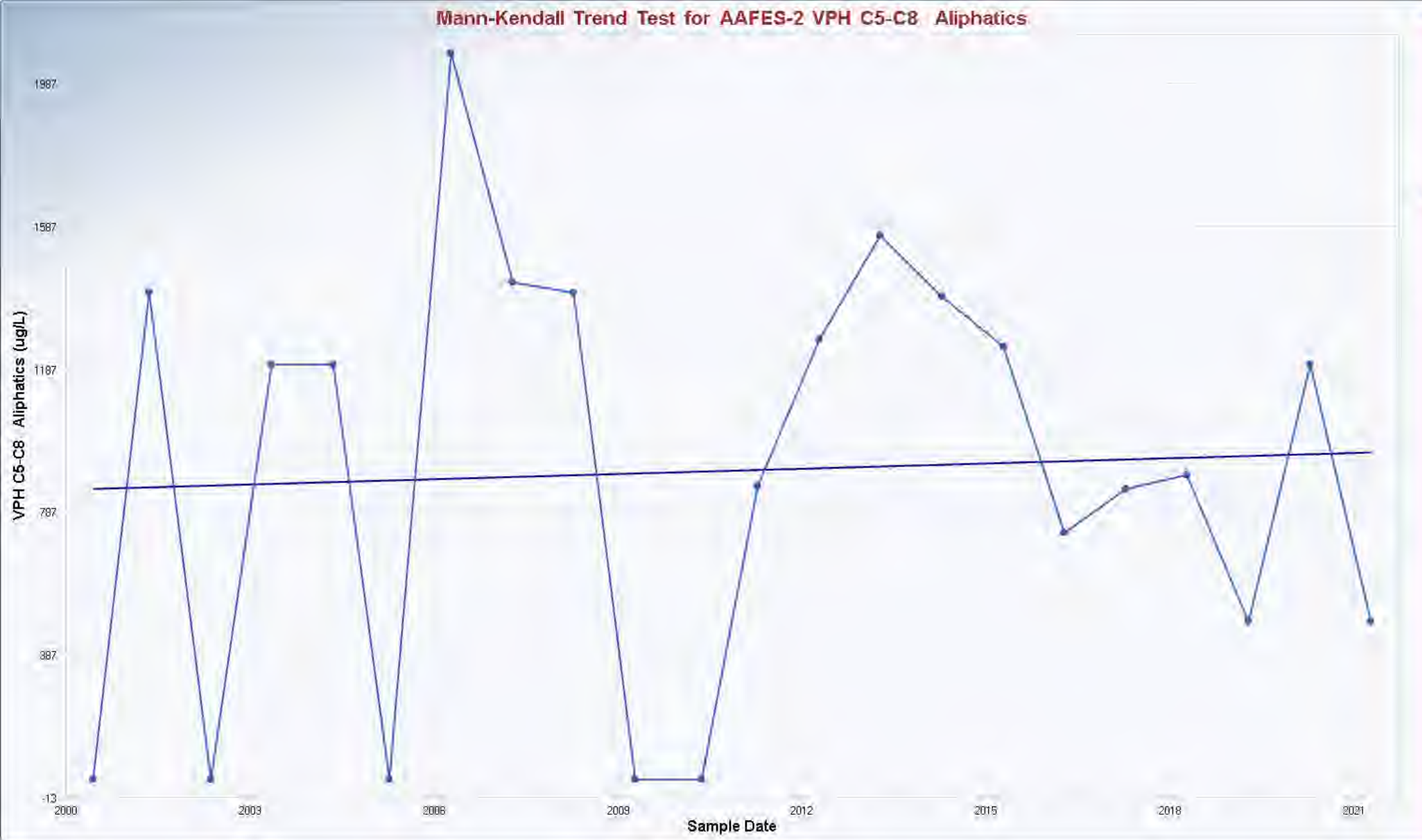
OLS Regression Line (Blue)

OLS Regression Slope	-357.2340
OLS Regression Intercept	721,282.6880

Statistically significant evidence of a decreasing trend at the specified level of significance.

AOC 43G
VPH C_5-C_8

Mann-Kendall Trend Test for AAFES-2 VPH C5-C8 Aliphatics



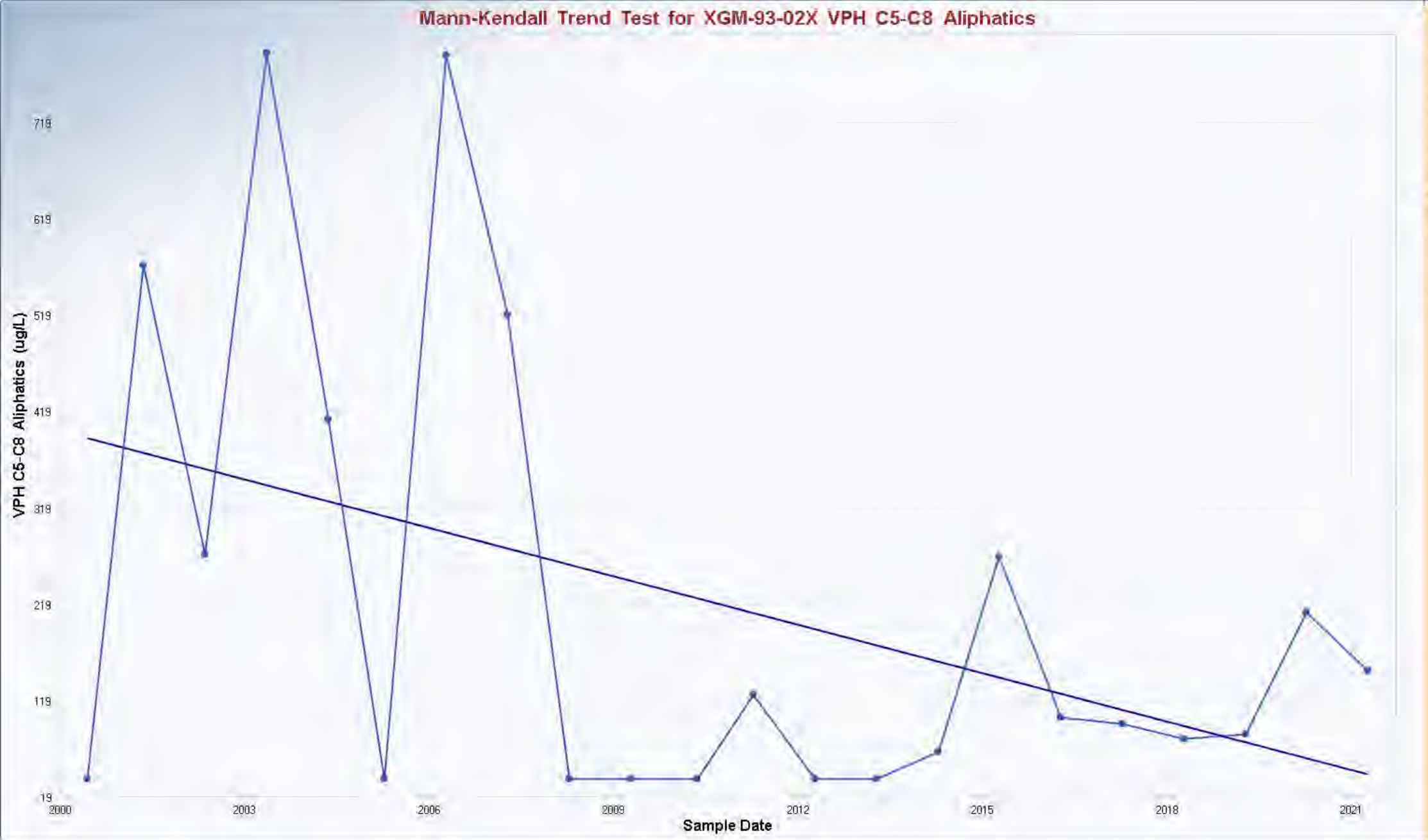
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.1473
Standardized Value of S	-0.2561
M-K Test Value (S)	-10
Tabulated p-value	0.3900
Approximate p-value	0.3990

OLS Regression Line (Blue)

OLS Regression Slope	4.9552
OLS Regression Intercept	-9,059.5177

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

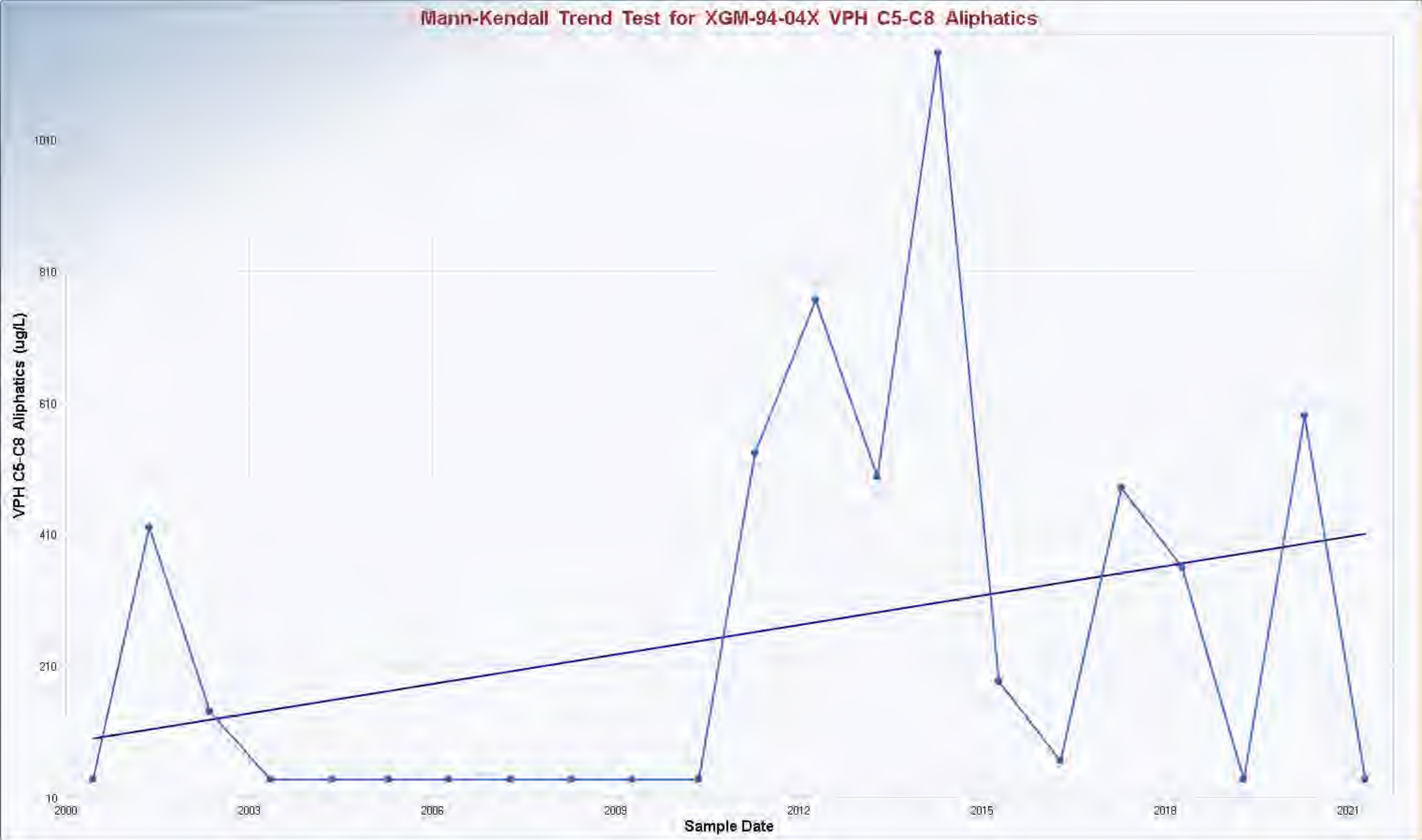
n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	34.8329
Standardized Value of S	-0.4880
M-K Test Value (S)	-18
Tabulated p-value	0.3080
Approximate p-value	0.3128

OLS Regression Line (Blue)

OLS Regression Slope	-16.7533
OLS Regression Intercept	33,896.9990

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test for XGM-94-04X VPH C5-C8 Aliphatics



Mann-Kendall Trend Analysis

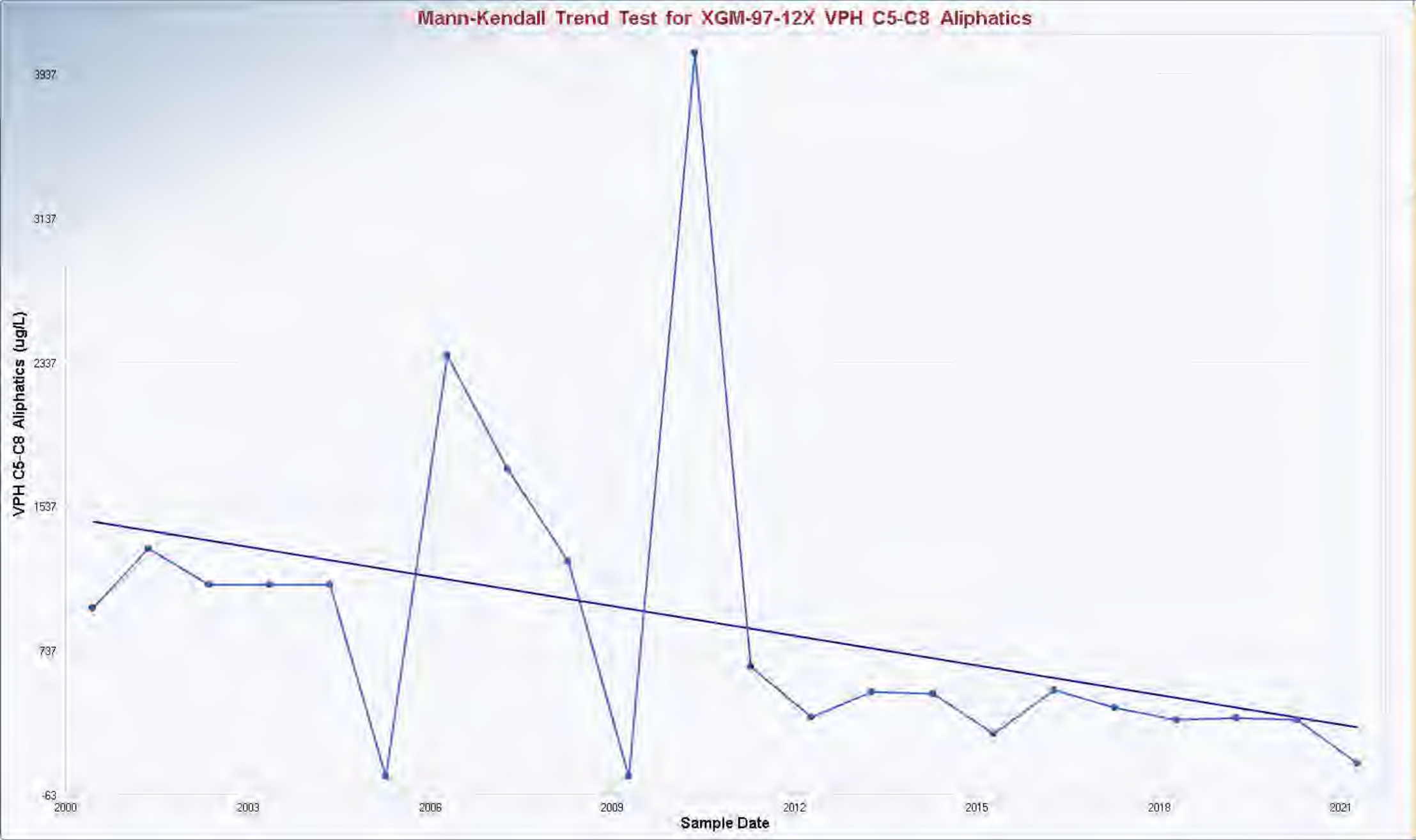
n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	33.0555
Standardized Value of S	1.4219
M-K Test Value (S)	48
Tabulated p-value	0.0890
Approximate p-value	0.0775

OLS Regression Line (Blue)

OLS Regression Slope	14.9630
OLS Regression Intercept	-29,826.4667

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test for XGM-97-12X VPH C5-C8 Aliphatics



Mann-Kendall Trend Analysis

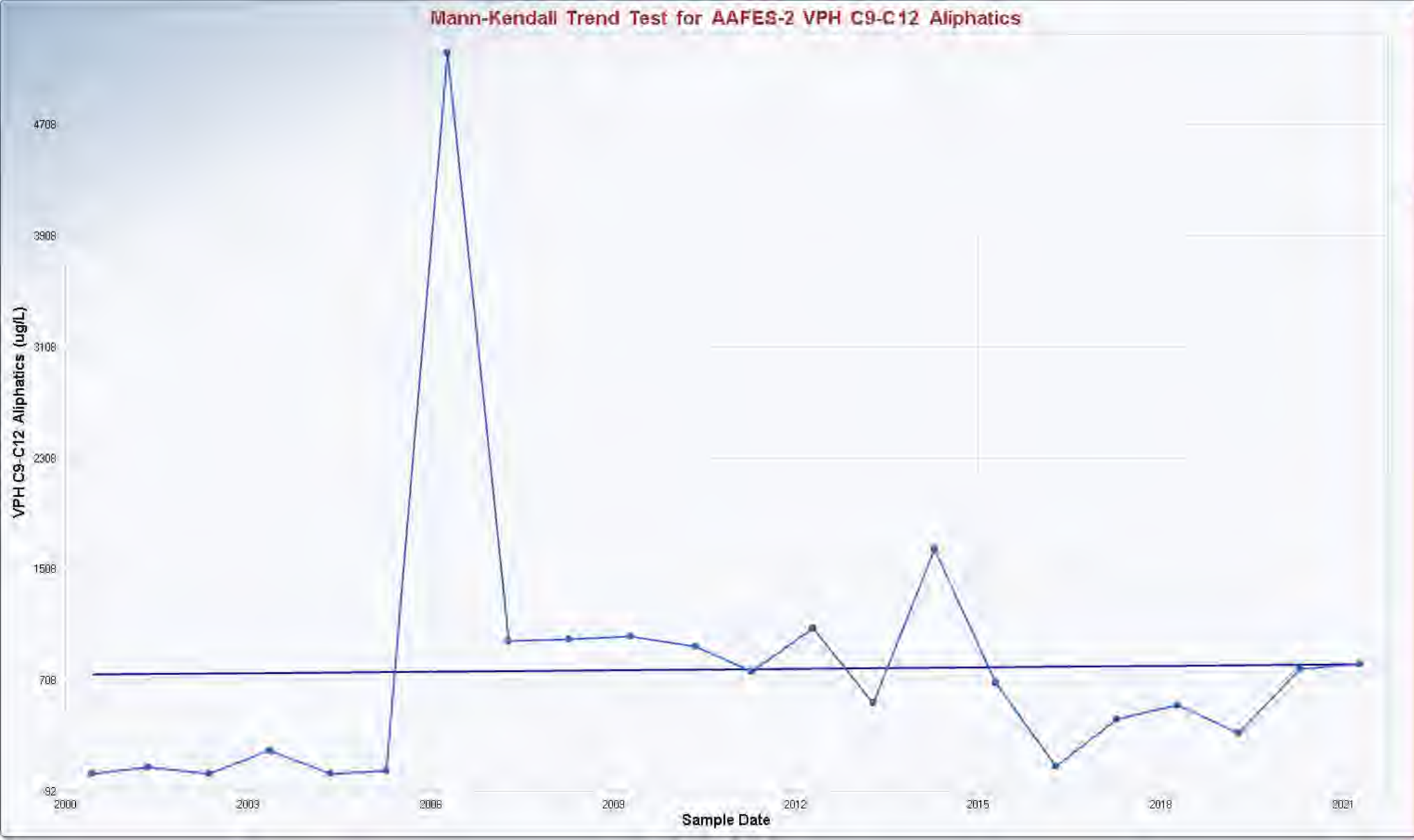
n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.3836
Standardized Value of S	-2.6849
M-K Test Value (S)	-96
Tabulated p-value	0.0030
Approximate p-value	0.0036

OLS Regression Line (Blue)

OLS Regression Slope	-54.9945
OLS Regression Intercept	111,439.6801

Statistically significant evidence of a decreasing trend at the specified level of significance.

AOC 43G
VPH C_9-C_{12}



Mann-Kendall Trend Analysis

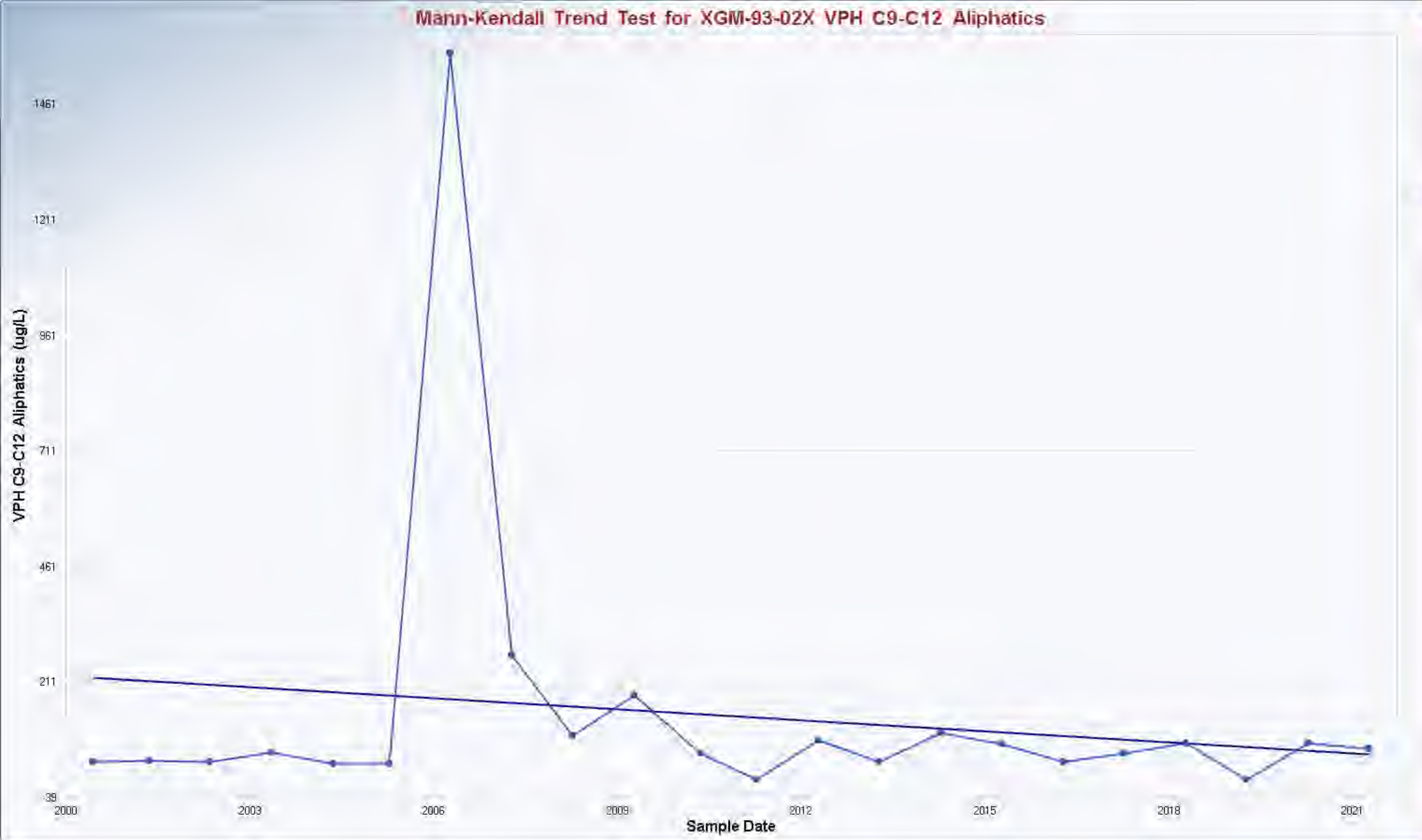
n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4119
Standardized Value of S	1.2708
M-K Test Value (S)	46
Tabulated p-value	0.0090
Approximate p-value	0.1019

OLS Regression Line (Blue)

OLS Regression Slope	3.5025
OLS Regression Intercept	-6,253.0053

Statistically significant evidence of an increasing trend at the specified level of significance.

Mann-Kendall Trend Test for XGM-93-02X VPH C9-C12 Aliphatics



Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.3270
Standardized Value of S	0.1981
M-K Test Value (S)	8
Tabulated p-value	0.4120
Approximate p-value	0.4215

OLS Regression Line (Blue)

OLS Regression Slope	-7.9780
OLS Regression Intercept	16,175.7633

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test for XGM-97-12X VPH C9-C12 Aliphatics



Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4119
Standardized Value of S	0.4236
M-K Test Value (S)	16
Tabulated p-value	0.3280
Approximate p-value	0.3359

OLS Regression Line (Blue)

OLS Regression Slope	-31.8843
OLS Regression Intercept	64,935.2449

Insufficient statistical evidence of a significant trend at the specified level of significance.

AOCs 32 & 43A

AOC 32 & 43A
1,3-Dichlorobenzene

Mann-Kendall Trend Test for 32M-01-18XBR 1,3-Dichlorobenzene



Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0238
Standardized Value of S	-3.9805
M-K Test Value (S)	-224
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

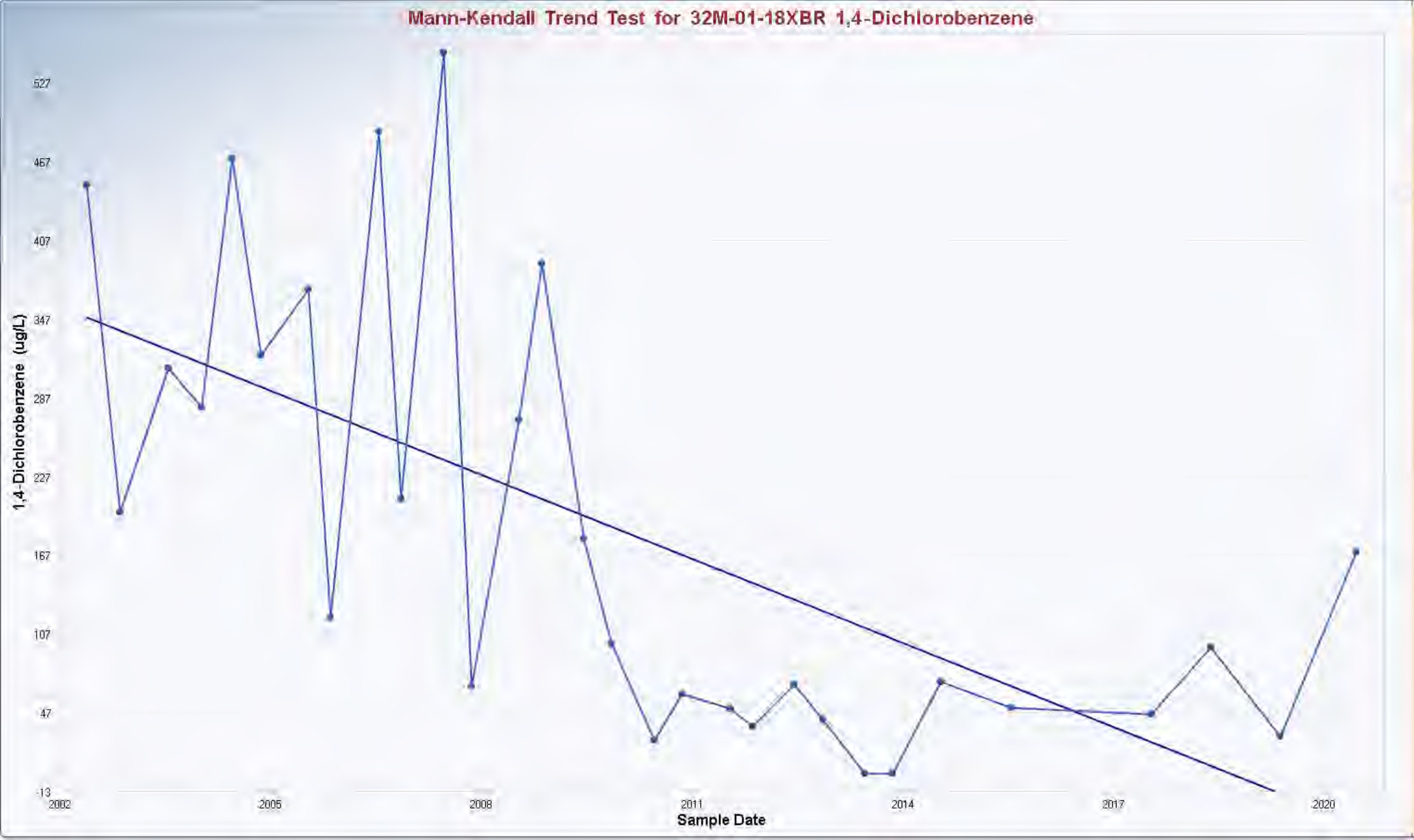
OLS Regression Line (Blue)

OLS Regression Slope	-33.2433
OLS Regression Intercept	67,107.6474

Statistically significant evidence of a decreasing trend at the specified level of significance.

AOC 32 & 43A
1,4-Dichlorobenzene

Mann-Kendall Trend Test for 32M-01-18XBR 1,4-Dichlorobenzene



Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0506
Standardized Value of S	-3.8180
M-K Test Value (S)	-215
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0001

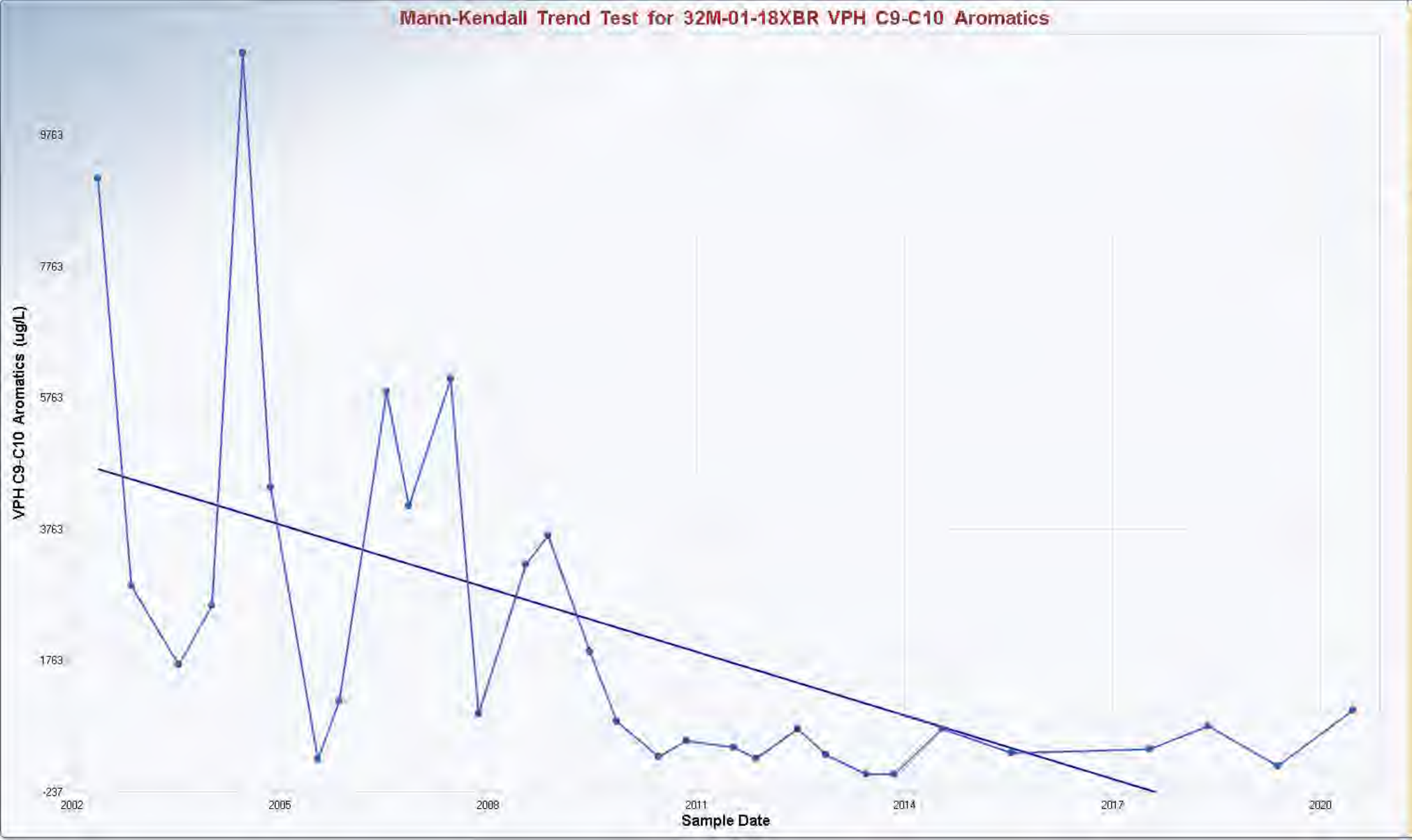
OLS Regression Line (Blue)

OLS Regression Slope	-21.3943
OLS Regression Intercept	43,187.0567

Statistically significant evidence of a decreasing trend at the specified level of significance.

AOC 32 & 43A
VPH C_9-C_{10}

Mann-Kendall Trend Test for 32M-01-18XBR VPH C9-C10 Aromatics



Mann-Kendall Trend Analysis

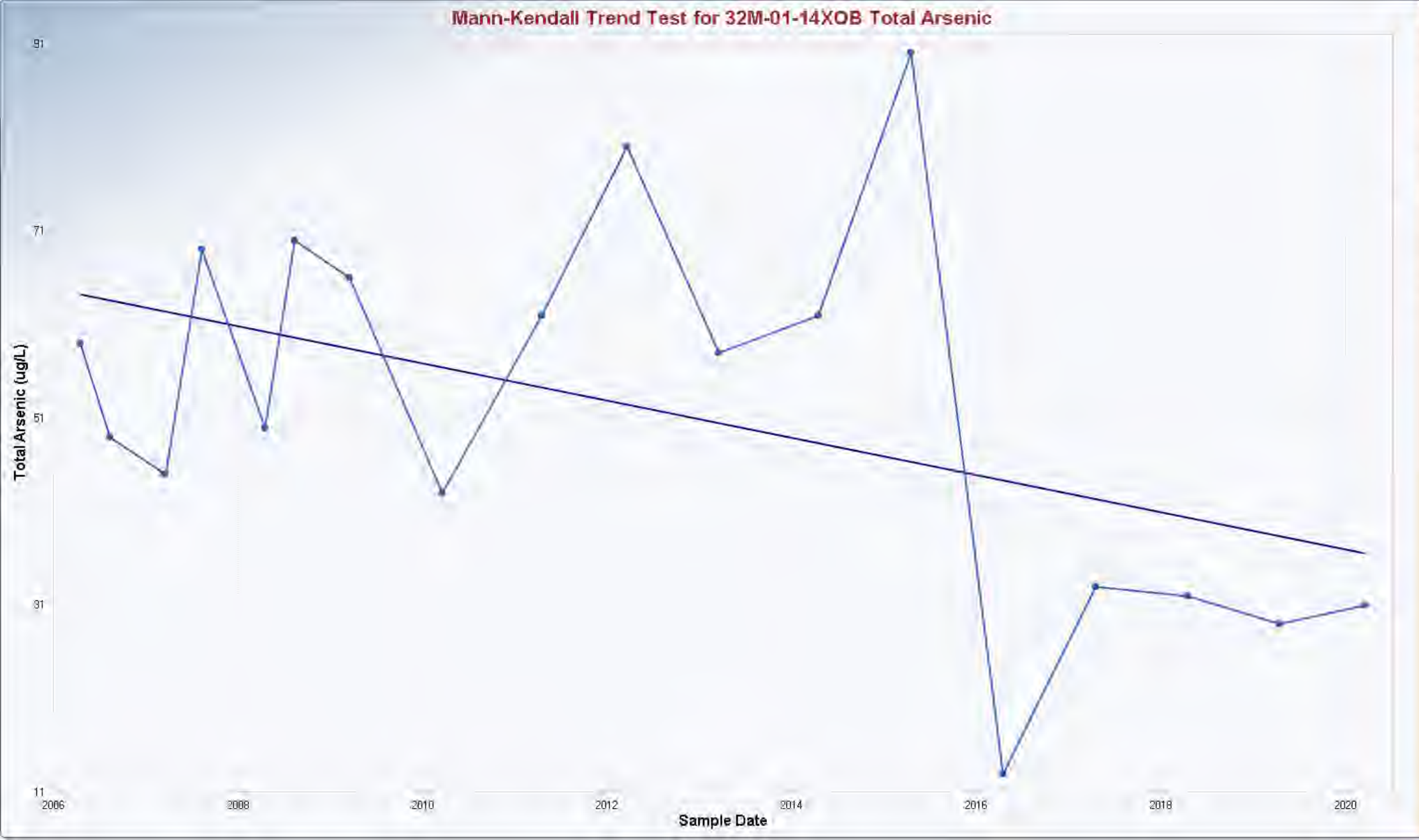
n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0417
Standardized Value of S	-3.6937
M-K Test Value (S)	-208
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0001

OLS Regression Line (Blue)

OLS Regression Slope	-323.8330
OLS Regression Intercept	653,101.5698

Statistically significant evidence of a decreasing trend at the specified level of significance.

AOC 32 & 43A
Total Arsenic



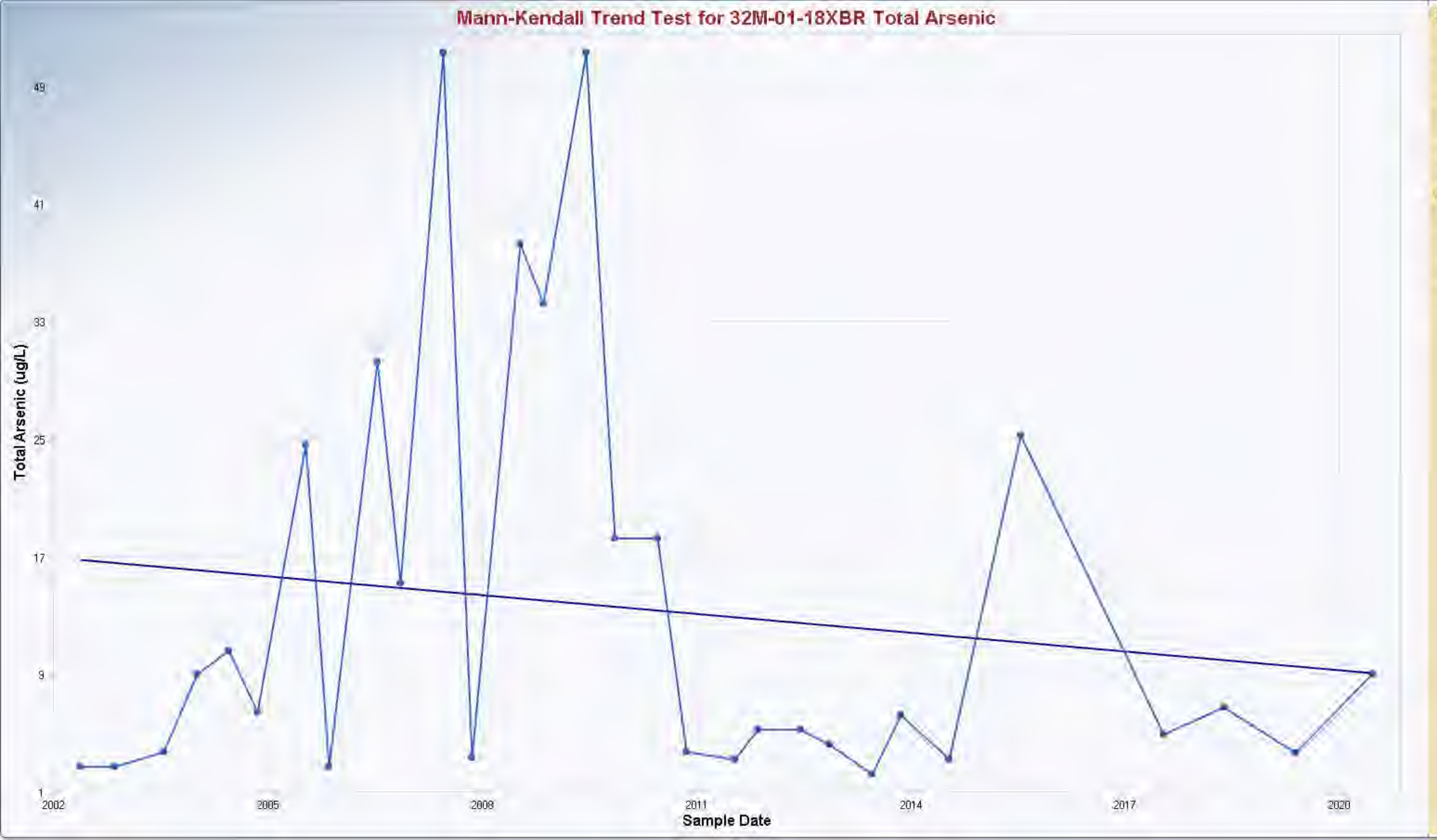
Mann-Kendall Trend Analysis

n	18
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	26.3818
Standardized Value of S	-1.5541
M-K Test Value (S)	-42
Tabulated p-value	0.0560
Approximate p-value	0.0601

OLS Regression Line (Blue)

OLS Regression Slope	-1.9917
OLS Regression Intercept	4,060.5859

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	55.9643
Standardized Value of S	-0.0536
M-K Test Value (S)	-4
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.4786

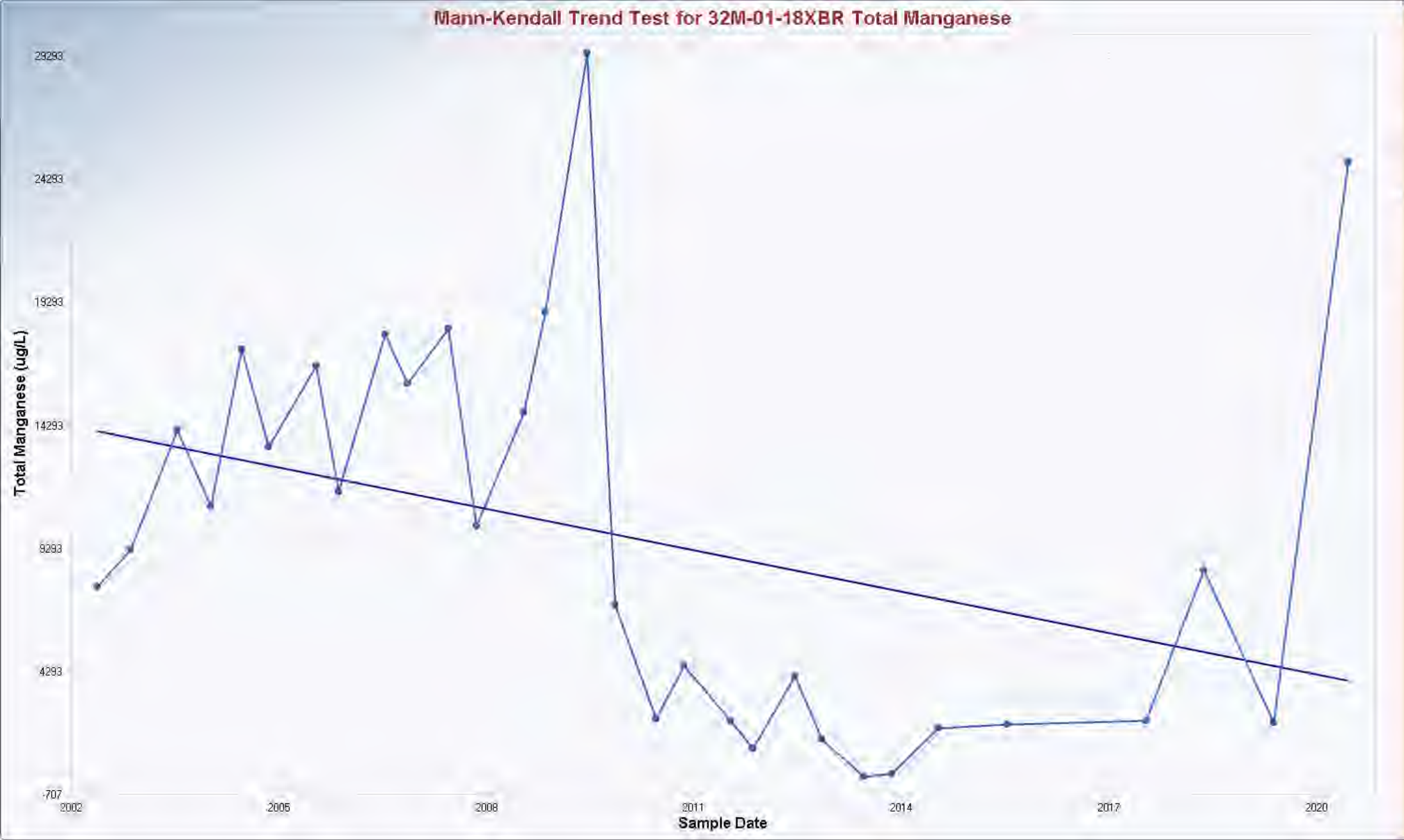
OLS Regression Line (Blue)

OLS Regression Slope	-0.4264
OLS Regression Intercept	870.3889

Insufficient statistical evidence of a significant trend at the specified level of significance.

AOC 32 & 43A
Total Manganese

Mann-Kendall Trend Test for 32M-01-18XBR Total Manganese



Mann-Kendall Trend Analysis

n	30
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	56.0417
Standardized Value of S	-2.4446
M-K Test Value (S)	-138
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0073

OLS Regression Line (Blue)

OLS Regression Slope	-559.8600
OLS Regression Intercept	1,135,052.3907

Statistically significant evidence of a decreasing trend at the specified level of significance

Appendix F

Annual Land Use Control Checklist Forms

Annual Land Use Control Plan Checklist for AOC 32 and 43A

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Draft Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually and submitted with the Main Post annual long-term monitoring report. The checklist will also be used to assist in compiling information for the five-year review.

I. Site Information			
Site Name/Location: AOC 32/43A		Name/Affiliation: Ian Martz / Arcadis	
Remedy Includes: Long Term Monitoring, Institutional Controls			
Inspection Date: December 9, 2020			
Participants: Desmond Bedard (Arcadis), Brent Smith (USACE)			
II. Documentation and Records			
Item	**Yes**	**No**	**Comments**
Any related notices filed with Devens Enterprise Commission?		X	
Any related Department of Public Works permits found?		X	
Any related zoning permits or variances found?		X	
Any related Conservation Commission findings, proposals or notices of intent found?		X	
III. Physical On-Site Inspection			
Item	**Yes**	**No**	**Comments**
Any evidence of new construction or excavation present in the area of the remedy?		X	
Is there evidence of damage to the remedy?		X	
Any groundwater extraction wells present?		X	
Is there sufficient access to the site for monitoring?	X		
Any signs of increased exposure potential?		X	
IV. Interview			
Name of Interviewer: Ian Martz (Arcadis)			
Name of Interviewee: Roy Herzig (MassDevelopment) and Neil Angus (Devens Enterprise Commission)			
Contact Information: rherzig@massdevelopment.com, 978-784-2917; neilangus@devensec.com, 978-772-8831 x3334			
Interview Notes: Emailed 2019 AR appendices to Roy Herzig, Jessica Strunkin and Neil Angus for review on 12/23/2020. Performed phone interview on 1/27/2021 with Roy Herzig and Neil Angus			
Site Update: The Army is currently investigating PFAS which have been detected at the Former Fort Devens. A record-of-decision has not been completed for PFAS.			

Annual Land Use Control Plan Checklist for AOC 32 and 43A

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Draft Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually and submitted with the Main Post annual long-term monitoring report. The checklist will also be used to assist in compiling information for the five-year review.

Item	Yes	No	Comments
Is interviewee familiar with the land use controls imposed upon the property & documentation of these controls?	X		
Are there any extraction wells at the property?		X	
Are there any proposed plans for property sale, future development, construction or demolition activities at the property?		X	
Are there any issues with site access for monitoring?		X	
V. Response Actions			
Item	**Yes**	**No**	**Comments**
Were violations of the LUCs present ?		X	
Are there Response Actions necessary based on the violations?		X	
Are modifications/ terminations of LUC's necessary?		X	
Have Enforcement Actions been taken during this reporting period?		X	
O'Reilly Auto Parts Warehouse is located within the footprint of AOC 32/43A. They are required to submit an annual Stormwater Management O&M Report to Devens Enterprise Commission. The facility also has two monitoring wells which are sampled annually: APEX-MW-OB-1 and APEX-MW-BR-2. The identity of the O'Reilly wells have been included at the request of the USACE. The annual reports are submitted to MassDEP and Devens Enterprise Commission.			
IV. Interview			
Name of Interviewer: Ian Martz / Arcadis			
Name of Interviewee: John Bounds - Environmental Health & Safety Manager - O'Reilly Auto Parts			
Contact information: jbounds2@oreillyauto.com, 417-520-4589			
Interview Notes: Sent email with interview questions to O'Reilly on 1/7/2021. John Bounds responded on 1/23/2021; his responses are recorded below.			
Item	**Yes**	**No**	**Comments**
Is interviewee familiar with the land use controls imposed upon the property & documentation of these controls?	X		
Are there any extraction wells at the property?	X		There are several monitoring wells monitored by Devens as well as two that are monitored by O'Reilly Auto Parts. The identification of the two O'Reilly wells are: APEX MW-OB-1 and APEX-MW-BR-2.
Are there any proposed plans for property sale, future development, construction or demolition activities at the property?		X	None at this point in time.

Annual Land Use Control Plan Checklist for AOC 32 and 43A

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Draft Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually and submitted with the Main Post annual long-term monitoring report. The checklist will also be used to assist in compiling information for the five-year review.

Are there any issues with site access for monitoring?		X	No access concerns noted.
V. Response Actions			
Item	**Yes**	**No**	**Comments**
Were violations of the LUCs present ?		X	
Are there Response Actions necessary based on the violations?		X	
Are modifications/ terminations of LUC's necessary?		X	
Have Enforcement Actions been taken during this reporting period?		X	

Annual Land Use Control Plan Checklist for AOC 43G

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually and submitted with the Main Post annual long-term monitoring report. The checklist will also be used to assist in compiling information for the five-year review.

I. Site Information			
Site Name/Location: AOC 43G		Name/Affiliation: Ian Martz / Arcadis	
Remedy Includes: Long Term Monitoring, Institutional Controls			
Inspection Date: December 9, 2020			
Participants: Desmond Bedard (Arcadis), Brent Smith (USACE)			
II.Documentation and Records			
Item	**Yes**	**No**	**Comments**
Any related notices filed with Harvard, MA?		X	
Any related Department of Public Works permits found?		X	
Any related zoning permits or variances found?		X	
Any related Conservation Commission findings, proposals, or notices of intent found?		X	
III.Physical On-Site Inspection			
Item	**Yes**	**No**	**Comments**
Any evidence of development present in the area of the remedy?		X	
Is there evidence of damage to the remedy?		X	
Any groundwater extraction wells present?		X	
Is there sufficient access to the site for monitoring?	X		
Any signs of increased exposure potential?		X	
IV. Interview			
Name of Interviewer: Ian Martz (Arcadis)			
Name of Interviewee: Robert Simeone - BRAC Environmental			
Contact Information: robert.j.simeone.civ@mail.mil, 978-615-6090			
Interview Notes: Emailed 2019 AR appendices to Robert Simeone on 1/7/2021. Received response on 1/11/2021, answers to interview questions are provided below.			
Site Update: The Army is currently investigating PFAS which have been detected at the Former Fort Devens. A record-of-decision has not been completed for PFAS.			

Annual Land Use Control Plan Checklist for AOC 43G

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually and submitted with the Main Post annual long-term monitoring report. The checklist will also be used to assist in compiling information for the five-year review.

Item	Yes	No	Comments
Is interviewee familiar with the land use controls imposed upon the property & documentation of these controls?	X		
Are there any extraction wells at the property?		X	
Are there any proposed plans for property sale, future development, construction, or demolition activities at the property?		X	None - property remains part of Fort Devens
Are there any issues with site access for monitoring?		X	
V. Response Actions			
Item	**Yes**	**No**	**Comments**
Were violations of the LUCs present ?		X	
Are there Response Actions necessary based on the violations?		X	
Are modifications/ terminations of LUC's necessary?		X	
Have Enforcement Actions been taken during this reporting period?		X	

Annual Land Use Control Plan Checklist for AOC 57

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually and submitted with the Main Post annual long-term monitoring report. The checklist will also be used to assist in compiling information for the five-year review.

I. Site Information			
Site Name/Location: AOC 57 - Area 2 and Area 3		Name/Affiliation: Ian Martz / Arcadis	
Remedy Includes: Long Term Monitoring, Institutional Controls, Wetlands protection			
Inspection Date: December 7, 2020			
Participants: Desmond Bedard (Arcadis), Brent Smith (USACE)			
II. Documentation and Records			
Item	**Yes**	**No**	**Comments**
Any related notices filed with Devens Enterprise Commission?		X	
Any related Department of Public Works permits found?		X	Some brush cutting performed to maintain trail area (no intrusive activities)
Any related zoning permits or variances found?		X	
Any related Conservation Commission findings, proposals or notices of intent found?		X	Wells and piezometers installed in 2020 by Army; permit not required under CERCLA exemption. Met substantive requirements for working in wetland area.
III. Physical On-Site Inspection			
Item	**Yes**	**No**	**Comments**
Any evidence of new construction or excavation present in the area of the remedy?		X	Wells and piezometers installed by USACE for ongoing PFAS investigation.
Is there evidence of damage to the remedy?		X	
Any groundwater extraction wells present?		X	
Is there sufficient access to the site for monitoring?	X		
Any signs of increased exposure potential?		X	
IV. Interview			
Name of Interviewer: Ian Martz (Arcadis)			
Name of Interviewee: Roy Herzig (MassDevelopment) and Neil Angus (Devens Enterprise Commission)			
Contact Information: rherzig@massdevelopment.com, 978-784-2917; neilangus@devensec.com, 978-772-8831 x3334			
Interview Notes: Emailed 2019 AR appendices to Roy Herzig, Jessica Strunkin and Neil Angus for review on 12/23/2020. Performed phone interview on 1/27/2021 with Roy Herzig and Neil Angus			
Site Update: The Army is currently investigating PFAS which have been detected at the Former Fort Devens. A record-of-decision has not been completed for PFAS.			

Annual Land Use Control Plan Checklist for AOC 57

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually and submitted with the Main Post annual long-term monitoring report. The checklist will also be used to assist in compiling information for the five-year review.

Item	Yes	No	Comments
Is interviewee familiar with the land use controls imposed upon the property & documentation of these controls?	X		
Are there any extraction wells at the property?		X	Irrigation well at 78 Barnum Road is being actively used, located outside of AOC boundaries
Are there any proposed plans for property sale, future development, construction, or demolition activities at the property?		X	Permit was issued for loading dock modifications and addition at 112 Barnum Road. No work took place outside of existing pavement area and ground disturbance was limited. Work is underway and is scheduled for completion in 2021.
Are there any issues with site access for monitoring?		X	
V. Response Actions			
Item	**Yes**	**No**	**Comments**
Were violations of the LUCs present ?		X	
Are there Response Actions necessary based on the violations?		X	
Are modifications/ terminations of LUC's necessary?		X	
Have Enforcement Actions been taken during this reporting period?		X	

Annual Land Use Control Plan Checklist for AOC 69W

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually and submitted with the Main Post annual long-term monitoring report. The checklist will also be used to assist in compiling information for the five-year review.

I. Site Information			
Site Name/Location: AOC 69W		Name/Affiliation: Ian Martz / Arcadis	
Remedy Includes: Long Term Monitoring, Institutional Controls			
Inspection Date: December 9, 2020			
Participants: Desmond Bedard (Arcadis), Brent Smith (USACE)			
II. Documentation and Records			
Item	**Yes**	**No**	**Comments**
Any related notices filed with Devens Enterprise Commission?		X	
Any related Department of Public Works permits found?		X	
Any related zoning permits or variances found?		X	
Any related Conservation Commission findings, proposals, or notices of intent found?		X	
III. Physical On-Site Inspection			
Item	**Yes**	**No**	**Comments**
Any evidence of new penetrations or repaved cut marks present in the ESMA?		X	
Is there evidence of damage to the remedy?		X	
Any groundwater extraction wells present?		X	
Is there sufficient access to the site for monitoring?	X		Overgrown conditions observed in the area of monitoring wells located to the north of the school building. The feasibility of completing a limited vegetation removal event will be assessed in 2021.
Any signs of increased exposure potential?		X	
IV. Interview #1			
Name of Interviewer: Ian Martz (Arcadis)			
Name of Interviewee: Roy Herzig (MassDevelopment) and Neil Angus (Devens Enterprise Commission)			
Contact Information: rherzig@massdevelopment.com, 978-784-2917; neilangus@devensec.com, 978-772-8831 x3334			
Interview Notes: Emailed 2019 AR appendices to Roy Herzig, Jessica Strunkin and Neil Angus for review on 12/23/2020. Performed phone interview on 1/27/2021 with Roy Herzig and Neil Angus			
Site Update: The Army is currently investigating PFAS which have been detected at the Former Fort Devens. A record-of-decision has not been completed for PFAS.			

Annual Land Use Control Plan Checklist for AOC 69W

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually and submitted with the Main Post annual long-term monitoring report. The checklist will also be used to assist in compiling information for the five-year review.

Item	Yes	No	Comments
Is interviewee familiar with the land use controls imposed upon the property & documentation of these controls?	X		
Are there any extraction wells at the property?		X	
Are there any proposed plans for property sale, future development, construction, or demolition activities at the property?	X		Retaining wall/sidewalk project planned by charter school, but is currently on hold (see Interview #2).
Any excavations, planned or emergency, that may have extended to soils below two feet in depth in ESMA?		X	
Are there any issues with site access for monitoring?	X		
V. Response Actions			
Item	**Yes**	**No**	**Comments**
Were violations of the LUCs present ?		X	
Are there Response Actions necessary based on the violations?		X	
Are modifications/ terminations of LUC's necessary?		X	
Have Enforcement Actions been taken during this reporting period?		X	
IV. Interview #2			
Name of Interviewer: Ian Martz / Arcadis			
Name of Interviewee: Michelle McKenna - Business Manager, Francis W. Parker Charter Essential School			
Contact information: mmckenna@theparkerschool.org, 978-772-3293			
Interview Notes: Sent email with interview questions to Ms. McKenna on 1/7/2021, received response on 1/8/2021; responses are recorded below.			
Item	**Yes**	**No**	**Comments**
Is interviewee familiar with the land use controls imposed upon the property & documentation of these controls?	X		
Are there any extraction wells at the property?		X	
Are there any proposed plans for property sale, future development, construction, or demolition activities at the property?	X		HVAC project noted previously has been completed (not near ESMA). Retaining wall/sidewalk project is planned, but on hold due to pandemic.
Any excavations, planned or emergency, that may have extended to soils below two feet in depth in the Excavated Soils Management Area (ESMA)?		X	

Annual Land Use Control Plan Checklist for AOC 69W

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually and submitted with the Main Post annual long-term monitoring report. The checklist will also be used to assist in compiling information for the five-year review.

Are there any issues with site access for monitoring?		X	

Inspection Checklist for DCL Contributor Sites

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will also be used to assist in compiling information for the five-year review.

I. Site Information	
Site Name/Location: DCL Contributor Site AOC 9 Filter Bed Road, Ayer, MA	**Name/Affiliation:** Ian Martz / Arcadis
Remedy Includes: No further Action. The site was transferred from the Army to MassDevelopment in 2006 as defined in the Finding of Suitability to Transfer (FOST) dated February 2005. Inspections are conducted to verify no change in site conditions since remedial action completion in 2002.	
Use Restrictions: AOC 9 (Lease parcel A2A) is limited to commecial and industrial uses.	
Inspection Date: December 7, 2020	
Participants: Desmond Bedard (Arcadis), Brent Smith (USACE)	

II. Documentation and Records			
Item	**Yes**	**No**	**Comments**
Any related notices filed with Devens Enterprise Commission?		X	
Any related Department of Public Works permits found?		X	
Any related zoning permits or variances found?		X	
Any related Conservation Commission findings, proposals or notices of intent found?		X	

III. Physical On-Site Inspection			
Item	**Yes**	**No**	**Comments**
Any evidence of new construction or excavation present in the area of the remedy?		X	
Is there evidence of damage to the remedy?		X	
Any groundwater extraction wells present?		X	
Is there sufficient access to the site for monitoring?	X		
Any signs of increased exposure potential?		X	

I. Site Information	
Site Name/Location: DCL Contributor Site AOC 40 Patton Road, Ayer, MA	**Name/Affiliation:** Ian Martz / Arcadis
Remedy Includes: No further Action. The site was transferred from the Army to MassDevelopment in 2006 as defined in the Finding of Suitability to Transfer (FOST) dated February 2005. Inspections are conducted to verify no change in site conditions since remedial action completion in 2002.	
Use Restrictions: AOC 40 (Lease parcel A4) is limited to open space and recreational uses.	
Inspection Date: December 7, 2020	
Participants: Desmond Bedard (Arcadis), Brent Smith (USACE)	

Inspection Checklist for DCL Contributor Sites

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will also be used to assist in compiling information for the five-year review.

II. Documentation and Records			
Item	**Yes**	**No**	**Comments**
Any related notices filed with Devens Enterprise Commission?		X	
Any related Department of Public Works permits found?		X	
Any related zoning permits or variances found?		X	
Any related Conservation Commission findings, proposals, or notices of intent found?		X	
III. Physical On-Site Inspection			
Item	**Yes**	**No**	**Comments**
Any evidence of new construction or excavation present in the area of the remedy?		X	
Is there evidence of damage to the remedy?		X	
Any groundwater extraction wells present?		X	
Is there sufficient access to the site for monitoring?	X		
Any signs of increased exposure potential?		X	
I. Site Information			
Site Name/Location: DCL Contributor Site SA13 Lake George Street, Harvard, MA		**Name/Affiliation:** Ian Martz / Arcadis	
Remedy Includes: No further Action. The site was transferred from the Army to MassDevelopment in 2006 as defined in the Finding of Suitability to Transfer (FOST) dated February 2005. Inspections are conducted to verify no change in site conditions since remedial action completion in 2001.			
Use Restrictions: SA13 (Lease parcel A8) is limited to commecial and industrial uses.			
Inspection Date: December 7, 2020			
Participants: Desmond Bedard (Arcadis), Brent Smith (USACE)			
II. Documentation and Records			
Item	**Yes**	**No**	**Comments**
Any related notices filed with Devens Enterprise Commission?		X	
Any related Department of Public Works permits found?		X	
Any related zoning permits or variances found?		X	
Any related Conservation Commission findings, proposals or notices of intent found?		X	

Inspection Checklist for DCL Contributor Sites

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will also be used to assist in compiling information for the five-year review.

III. Physical On-Site Inspection			
Item	**Yes**	**No**	**Comments**
Any evidence of new construction or excavation present in the area of the remedy?		X	
Is there evidence of damage to the remedy?		X	
Any groundwater extraction wells present?		X	
Is there sufficient access to the site for monitoring?	X		
Any signs of increased exposure potential?		X	

Annual Land Use Control Plan Checklist for DCL

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually and submitted with the Main Post annual long-term monitoring report. The checklist will also be used to assist in compiling information for the five-year review.

I. Site Information			
Site Name/Location: DCL		Name/Affiliation: Ian Martz / Arcadis	
Remedy Includes: Long Term Monitoring, Institutional Controls			
Inspection Date: December 9, 2020			
Participants: Desmond Bedard (Arcadis), Brent Smith (USACE)			
II.Documentation and Records			
Item	**Yes**	**No**	**Comments**
Any related notices filed with Devens Enterprise Commission?		X	
Any related Department of Public Works permits found?		X	
Any related zoning permits or variances found?		X	
Any related Conservation Commission findings, proposals, or notices of intent found?		X	
III.Physical On-Site Inspection			
Item	**Yes**	**No**	**Comments**
Any evidence of development present in the area of the remedy?		X	
Is there evidence of damage to the remedy?		X	
Any groundwater extraction wells present?		X	
Is there sufficient access to the site for monitoring?	X		
Any signs of increased exposure potential?		X	
IV. Interview			
Name of Interviewer: Ian Martz (Arcadis)			
Name of Interviewee: Roy Herzig (MassDevelopment) and Neil Angus (Devens Enterprise Commission)			
Contact Information: rherzig@massdevelopment.com, 978-784-2917; neilangus@devensec.com, 978-772-8831 x3334			
Interview Notes: Emailed 2019 AR appendices to Roy Herzig, Jessica Strunkin and Neil Angus for review on 12/23/2020. Performed phone interview on 1/27/2021 with Roy Herzig and Neil Angus			
Site Update: The Army is currently investigating PFAS which have been detected at the Former Fort Devens. A record-of-decision has not been completed for PFAS.			

Annual Land Use Control Plan Checklist for DCL

This checklist has been developed from the USEPA guidance document Comprehensive Five Year Review Guidance dated June 2001 (OSWER No. 9355.7-03B-P) and from Section 4.0 of the 2015 Long-Term Monitoring Plan, Devens, Massachusetts. The Checklist was modified to site-specific conditions as recommended by the guidance document. The checklist will be completed annually and submitted with the Main Post annual long-term monitoring report. The checklist will also be used to assist in compiling information for the five-year review.

Item	Yes	No	Comments
Is interviewee familiar with the land use controls imposed upon the property & documentation of these controls?	X		
Are there any extraction wells at the property?		X	
Are there any proposed plans for property sale, future development, construction, or demolition activities at the property?		X	
Are there any issues with site access for monitoring?		X	
V. Response Actions			
Item	**Yes**	**No**	**Comments**
Were violations of the LUCs present ?		X	
Are there Response Actions necessary based on the violations?		X	
Are modifications/terminations of LUC's necessary?		X	
Have Enforcement Actions been taken during this reporting period?		X	

Inspection Checklist for Housing Areas

I. Grant/Oak/Maple HA and Impact Area Annual Review Checklist			
Site Name/Location: Grant HA and Impact Area		Name/Affiliation: Ian Martz / Arcadis	
Remedy Includes: Long Term Monitoring, Institutional Controls			
Inspection Date: September 10, 2020			
Participants: Desmond Bedard (Arcadis), Brent Smith (USACE), Hugh Sease (ONEIDA)			
II. Physical On-Site Inspection (Impact Area)			
Item	**Yes**	**No**	**Comments**
Any UXO discovered? If yes, any surface or near surface UXO?		X	The physical inspection was conducted with a Schonstedt HeliFlux Magnetic Locator, Model GA-52Cx which has the capability to detect a 37mm round down to a depth of approximately 12-14 inches below ground surface. No surficial UXOs were detected. Several metallic items were encountered (tin can, nail, granite square, concrete block with rebar, fence wires, pin flags).
Is there evidence of damage to the fencing and signage?	X		A total of six locations were observed where fallen trees have or appear to have caused minor damage to the fencing. No major fence damage or breaches were observed. The access gates were observed to be in good condition. Signage was clearly visible and present along the perimeter of the fence line.
Any evidence of unauthorized access?		X	
III. Interview			
Name of Interviewer: Ian Martz (Arcadis)			
Name of Interviewee: Roy Herzig (MassDevelopment) and Neil Angus (Devens Enterprise Commission)			
Contact Information: rherzig@massdevelopment.com, 978-784-2917; neilangus@devensec.com, 978-772-8831 x3334			
Interview Notes: Emailed 2019 AR appendices to Roy Herzig, Jessica Strunkin and Neil Angus for review on 12/23/2020. Performed phone interview on 1/27/2021 with Roy Herzig and Neil Angus.			
Site Updates: LUCs for Grant Housing Area and 37-mm Impact Area are defined in the 2011 LUCIP. The Grant HA is currently zoned for residential reuse and the Impact Area is restricted for future use. The remedy for the Oak and Maple Housing Area was incorporated into the Grant HA and Impact Area site via a 2014 Explanation of Differences (ESD). The remedy included LUC interviews. Oak and Maple HA is zoned for commercial construction. A LUCIP addendum for the Oak and Maple HA is in process, activities have been completed in a conservative manner and the addendum is scheduled to be completed in 2021.			

Inspection Checklist for Housing Areas

Item	Yes	No	Comments
Impact Area Only			
Any UXO discovered?		X	
Was any work conducted or planned regarding utility repair or emergency work?		X	Impact Area is scheduled to be sold in 2021 as part of a land sale agreement. The area will continue to be fenced off and excluded from construction activities.
Grant HA Only			
Any UXO discovered?		X	
Is the Soil Management Plan and UXO information pamphlet available on the Devens Enterprise Commission website?	X		
Have the required UXO utility bill inserts been included in utility bill transfers?	X		Completed on an annual basis and for any new customers.
Has the utility bill insert been posted in a conspicuous location?	X		A total of six signs posted in the vicinity. There are plans for a semi-permanent kiosk to be constructed in 2021.
Did ground intrusive construction activities occur during the reporting period?	X		Geotechnical investigation (soil borings and test pits) performed in western area of Grant area and also Maple area, done pursuant to approved work plan and soil management plan. Construction work on a total of 34 additional homes was started and/or completed during the reporting period.
Were construction contractors provided with a current version of the soils management policy?	X		
Were all contractors required to attend the UXO awareness training prior to commencing ground intrusive activities?	X		
Was a supplemental deed notice included to contractors in deeds conveying portions of the Grant HA?	X		
Was a physical inspection conducted at the Grant HA?	X		Yes, several site walks and inspections completed by MassDev as a part of the geotechnical investigation and property redevelopment.

Inspection Checklist for Housing Areas

Former Oak and Maple HA			
Any UXO discovered?		X	
Is the Soil Management Plan and UXO information pamphlet available on the Devens Enterprise Commission website?	X		
Did ground intrusive construction activities occur during the reporting period?	X		Permit issues to remove existing pavement and some existing utilities to prepare for upcoming construction. Geotechnical investigation (soil borings and test pits) performed in western area of Grant area and also Maple area, done pursuant to approved work plan and soil management plan.
Were construction contractors provided with a current version of the soils management policy?	X		
Were all contractors required to attend the UXO awareness training prior to commencing ground intrusive activities?	X		
Was a physical inspection conducted at the Oak/Maple HA?	X		Yes, several site walks and inspections completed by MassDev as a part of the geotechnical investigation and property redevelopment.

Appendix G

DCL Inspection Report

United States Army Corps of Engineers

2020 GEOTECHNICAL ENGINEERING ANNUAL INSPECTION REPORT

Devens Consolidation Landfill

Former Fort Devens Army Installation

Devens, MA

Contract No. W912WJ-19-D-0014

December 2020

1 INTRODUCTION

The Resource Conservation and Recovery Act (RCRA) Subtitle C cap at the Devens Consolidation Landfill (DCL) was constructed with the following objectives:

- Eliminate the potential risk to human health and the environment associated with exposure to wastes;
- Minimize off-site migration of contaminants; and
- Limit infiltration to the underlying waste within the landfill area, thereby minimizing leachate generation.

The landfill cap system was completed during fall 2002 and restoration of site staging areas was completed during spring 2003. The RCRA cap consists of the following layers:

- 12-inch thick subgrade/leveling layer immediately above the waste materials;
- Geocomposite gas collection/vent layer;
- 40 mil very flexible polyethylene (VFPE) geomembrane;
- Geocomposite drainage layer; and
- 12-inch thick protective layer overlaid by an 18-inch thick vegetative support layer capped with 6-inches of topsoil.

The DCL landfill general plan is presented in **Figure 1**, and landfill features are displayed in the attached Photograph Log (**Appendix A**). Post-closure monitoring objectives and procedures are specified in the Operations and Maintenance (O&M) Manual included in the Post Closure Report. The United States Army Corps of Engineers (USACE) is responsible for operating, monitoring, and inspecting the facility. Annual O&M activities include landfill gas monitoring, groundwater sampling, and monthly inspections of the leachate system. Leachate wastewater is permitted to discharge to the Devens Wastewater Sewer System through the authorized industrial wastewater discharge permit.

2 LANDFILL CAP INSPECTION

Personnel from the Seres-Arcadis JV and the USACE New England District inspected the DCL on October 29, 2020. The cap and adjacent area vegetation were mowed the previous week from October 19-22, 2020 by Tantara Corporation of Worcester, MA. Observations were made regarding the site entry, vegetative cover, erosion, settlement, and general condition of the various features. **Appendix B** of this report contains the Inspection and Maintenance Checklist, and **Appendix C** contains the Landfill Gas Summary Table, which summarize the inspection findings.

During the October inspection event, the overall landfill cap and its surrounding perimeter drainage system were found to be in good condition, with no apparent overall settlement or significant erosion (**Appendix A;** Photos 1 through 4). Some surface vegetation was observed to be missing from five small areas on the landfill cap (each no larger than 50 square feet), the vegetation appears to have been mowed off or pulled out by the heavy equipment during the most recent mowing event (**Appendix A;**

Photos 5 and 6). These areas are all located on landfill slope embankments where some disturbance of the vegetative cap is unavoidable due the large size of the equipment used. These areas should be filled in with topsoil and reseeded to prevent further erosion. Extensive reworking and reseeding of the topsoil is not recommended at this time as there appears to be sufficient grass cover with no significant topsoil erosion.

In general, the vegetative cap appeared healthy and provides good coverage of the cap. As noted during previous inspections, some small, woody shrub species have invaded both the perimeter drainage system and the landfill cap itself (**Appendix A;** Photo 7). The woody vegetation gets cut low to the ground as part of the annual mowing program. However, the shrub stalks should continue to be cut as flush to the ground (or removed) as feasible during future annual maintenance to promote growth of the grass cover and to prevent deep rooted vegetation from forming.

An area on the eastern slope located north of gas vent #7 which may have settled slightly since the original construction appears to be unchanged since the last inspection and can continue to be monitored (i.e., no action required at this time as there are no apparent adverse impacts to the landfill cap or nearby gas vents).

No groundhog burrows were discovered on the landfill cap during the inspection. One small burrow was found on top of the detention basin's northern wall (northeast of the DCL), and was subsequently filled in.

2.1 Entries and Exit Inspection

Access roads are located on private property owned by MassDevelopment. The security gate at the Patton Road (southern) entrance was in good condition, though it has observed to be unlocked since personnel from the Seres-Arcadis JV began routine inspections of the DCL in May 2020 (**Appendix A;** Photo 8). The access road from the security gate extending to the leachate pump station was in good condition - no significant ruts, potholes, or eroded areas were observed.

2.2 Fence Inspection

The perimeter fence is in poor condition where it emanates from the security gate. Despite its condition, and it not encircling the landfill cap, the fence (along with the security gate and perimeter drainage system) help to minimize entry onto the landfill cap by motor vehicles. These access limitations appear to be adequate at the present time, as there were no signs of vandalism or other unauthorized entry around the west, north, or east perimeter of the landfill.

3 DRAINAGE SYSTEM INSPECTION

The perimeter drainage system is designed to drain surface water and infiltrated water off the cap system. It consists of the following components:

- Geocomposite drainage layer;
- Grass bench drains on the cap with gabion slope drains;
- A perimeter stone drain along the toe-of-slope;

- Perimeter drainage channels; and
- A sediment detention basin with a riprap lined outlet area (located at the northeast corner of the landfill).

During the October 2020 inspection, observations were made regarding the vegetative cover, vegetation types, erosion, and general condition of the drainage system (**Appendix A;** Photo 9). No maintenance activities were performed during the inspection, however vegetation removal was conducted as needed within the rip rap during the mowing event on October 19-22, 2020. **Appendix B** of this report contains the Inspection and Maintenance Checklist, which summarizes the findings of this inspection.

The cap drainage system was observed to be in good condition. Drainage channels were overall free of sediment and debris, with no significant settlement or stone displacement. The gabion slope drains were observed to be in good condition with minimal vegetation present (**Appendix A;** Photo 10). Remnants of a minor amount of vegetation were present within the riprap along both the southern and eastern toes of the landfill (cut during the previous mowing event). No significant vegetation remnants were present within the riprap along the northern and western toes of the landfill. The perimeter toe drains were in good condition and appeared to be functioning properly, with no visible signs of erosion or developing slope stability problems.

The detention basin (northeast of the DCL) was in good condition overall. Its pond drains, culvert and outfall areas were in good condition and generally free of both debris and vegetative growth. The area should continue to be monitored for potential future erosion. If significant erosion occurs, then the area should be regraded and reseeded as part of the annual landfill maintenance program.

4 GAS VENT SYSTEM INSPECTION

The DCL includes a passive gas venting system that was installed to facilitate the ventilation of any gases generated from the degrading waste material beneath the landfill cap system. The passive system consists of eleven 6-inch diameter gas vents integrated into the geocomposite gas collection layer immediately beneath the 40-mil VFPE geomembrane, and three landfill gas monitoring (LFGM) wells located between the landfill cap and the Taravista Behavioral Health building located at 85 Patton Road (**Figure 2**). The gas vent system was observed to be in good condition; all the gas vents were stable and upright, and all the bird/insect screens on the vents were in good condition. However, vent ID tags were missing from all vents except for vents V-2 and V-10.

On October 29, 2020, all gas vents and LFGM points were monitored via two instruments for parameters of interest. A MultiRAE+ multi-gas monitor was used to check levels of volatile organic compounds (VOCs), hydrogen sulfide (H_2S), carbon monoxide (CO), % lower explosive limit (LEL), and oxygen (O_2). A Landtec GEM 2000 landfill gas monitor was used to check levels of O_2, carbon dioxide (CO_2), methane (CH_4), and % LEL. As shown in **Appendix C,** gas monitoring showed the parameters of interest ranged as follows:

- Via the MultiRAE+:
    - VOCs – 0.0 to 0.2 ppm
    - H_2S – 0.0 ppm (non-detect) at all locations
    - CO – 0.0 ppm (non-detect) at all locations

  - LEL – 0.0% (non-detect) to >100% (max instrument reading)
    - Vents with LEL detections were locations V-3, V-5, V-6, and V-9.
  - O_2 – 1.9 to 20.9%

- Via the Landtec GEM 2000:
  - O_2 – 1.1 to 21.0%
  - CO_2 – 0.0% (non-detect) to 11.2%
  - CH_4 – 0.0% (non-detect) to 18.3%
    - Vents with CH_4 detections were locations V-3, V-5, V-6, and V-9.
  - LEL – 0.0% (non-detect) to >100% (max instrument reading)
    - Vents with LEL detections were V-3, V-5, V-6, and V-9.

A methane odor was noticed by the Seres-Arcadis JV and USACE inspectors emanating from gas vent V-5 – no odors were noticed from any other vent or LFGM point.

5 RECOMMENDATIONS AND CORRECTIVE ACTIONS

The following recommendations and corrective actions should be conducted for future maintenance of the landfill cap:

1. Continue the annual inspection of landfill cap components. The inspection should continue to be performed in the fall, soon after mowing is completed (i.e., within 1-2 weeks), and preferably within 48 hours after a precipitation event to help inspect the effectiveness of surface runoff in the drainage swales. Landfill gas monitoring should be performed on a dry day.
2. Continue mowing the landfill cap on an annual basis to control vegetative growth, as well as the adjacent stormwater detention pond to prevent woody and wetland plant species from encroaching onto the cap. Mowing should not take place until September, when ground-nesting songbirds are mature enough to avoid being harmed.
3. Continue general landfill maintenance, such as clearing large/woody vegetative growth from the cap, drainage channels, and riprap. Small shrubs growing on the landfill cap should continue to be cut low during the annual mowing, and/or cut as flush to the ground as feasible during the annual maintenance program.
4. The areas of topsoil damaged from heavy mowing equipment should be filled in with topsoil and reseeded to prevent further erosion.
5. Replace missing label tags from the noted gas vents.
6. Since the cap was completed in 2002, post-closure inspection and monitoring has been performed for 19 years. Planning should commence for the performance time and metrics to reduce long-term monitoring and sampling activities, or to perform them at a reduced frequency, after 30 years, in accordance with RCRA Subtitle C landfill cap regulations for post-closure monitoring periods of performance.

APPENDIX A

Photograph Log

Photograph Log

United States Army Corps of Engineers
Former Fort Devens Army Installation – Devens Consolidation Landfill (DCL)
Annual Landfill Inspection



Photograph: 1

Description: Photo taken on the access road looking southwest (towards the main entrance) displaying general Site conditions.

Location: DCL

Photograph taken by:
Desmond Bedard

Date:

October 29, 2020



Photograph: 2

Description: Photo taken on the access road looking west displaying general Site conditions

Location: DCL

Photograph taken by:
Desmond Bedard

Date:

October 29, 2020

Photograph Log

United States Army Corps of Engineers
Former Fort Devens Army Installation – Devens Consolidation Landfill (DCL)
Annual Landfill Inspection



Photograph: 3

Description: Photo taken on the access road looking northwest displaying general Site conditions.

Location: DCL

Photograph taken by: Desmond Bedard

Date:

October 29, 2020



Photograph: 4

Description: Photo taken at the cap's peak looking southwest displaying general Site conditions.

Location: DCL

Photograph taken by: Desmond Bedard

Date:

October 29, 2020

Photograph Log

United States Army Corps of Engineers
Former Fort Devens Army Installation – Devens Consolidation Landfill (DCL)
Annual Landfill Inspection



Photograph: 5

Description: Photo taken at the cap's peak looking northwest displaying rutting caused by mowing equipment.

Location: DCL

Photograph taken by: Desmond Bedard

Date:

October 29, 2020



Photograph: 6

Description: Photo taken at the cap's peak looking southeast displaying rutting caused by mowing equipment

Location: DCL

Photograph taken by: Desmond Bedard

Date:

October 29, 2020

Photograph Log

United States Army Corps of Engineers
Former Fort Devens Army Installation – Devens Consolidation Landfill (DCL)
Annual Landfill Inspection



Photograph: 7

Description: Photo taken on the cap's western face displaying evidence of small shrubs removed during mowing (8.5x11" clipboard shown for scale)

Location: DCL

Photograph taken by: Desmond Bedard

Date:

October 29, 2020



Photograph: 8

Description: Photo looking southeast displaying the entrance, unlocked gate, and emanating fence at Patton Rd.

Location: DCL

Photograph taken by: Desmond Bedard

Date:

October 29, 2020

Photograph Log

United States Army Corps of Engineers
Former Fort Devens Army Installation – Devens Consolidation Landfill (DCL)
Annual Landfill Inspection



Photograph: 9

Description: Photo taken at the northeastern corner of the stormwater basin looking west displaying the general drainage condition.

Location: DCL

Photograph taken by:
Desmond Bedard

Date:

October 29, 2020



Photograph: 10

Description: Photo taken at the northeast toe corner of the cap looking southwest displaying the condition of a gabion drain.

Location: DCL

Photograph taken by:
Desmond Bedard

Date:

October 29, 2020

APPENDIX B

Inspection & Maintenance Checklist

Devens Consolidation Landfill
Geotechnical Engineering Inspection Report
Fall 2020

US Army Corps of Engineers®
New England District

Inspection & Maintenance Check List
Devens Consolidation Landfill

Inspectors: Desmond Bedard (Arcadis); Brent Smith (USACE)
Date: 10/29/2020

Item	Description of Inspection Items	Checked (X)	Comments
Landfill Cap	Inspect for Eroded Areas	X	No evidence of erosion; some vegetation removal and exposed topsoil from mowing equipment present.
	Inspect for Settlement and Ponded Water	X	No evidence; settling noted in past years along the cap's eastern face does not appear to have changed.
	Inspect for Wetland Species Encroachment	X	No encroachment of wetland species were observed.
	Inspect Vegetated Areas	X	Landfill cap mowed on October 19-22, 2020. The vegetative cap appears healthy and provides good coverage of the cap. No evidence of large vegetation (roots >2-inches in diameter); small shrubs (roots <2-inches in diameter) removed by Tantara during mowing to the extent practical. No groundhog or other animal burrows were discovered on the landfill cap.
Drainage System	Inspect Stone Toe Drain	X	Good condition; small shrubs (roots <2-inches in diameter) removed during mowing
	Inspect Gabion Slope Drains	X	Good condition
	Inspect for Eroded Areas	X	No evidence of significant erosion.
	Inspect for Debris & Unwanted Vegetation in Drainage Channels	X	Good condition; small shrubs roots <2-inches in diameter) removed during mowing by Tantara
	Inspect Rip-Rap Areas	X	Good condition; small shrubs roots <2-inches in diameter) removed during mowing.
Gas Vent System	Gas Monitoring Vents V-1 through V-11	X	The gas vent system was observed to be in good condition. All gas vents and LFGM points were measured for landfill gas parameters.
	Inspect Vent Pipe and Bird Screen	X	All gas vents were stable and screens were in good condition. Vent ID tags were missing from all vents except for locations V-2 and V-10.
Security Fence	Inspect for Damage to or Breaches in Fencing	X	The security gate was observed to be unlocked and should be secured at a future date. The perimeter gate is in poor conditions but does help to minimize entry onto the landfill cap.
Access Road	Inspect for Erosion, Potholes and Rutting	X	Good condition - no significant ruts, potholes, or eroded areas observed.

Description of Maintenance Activities Performed (as necessary):

1. Conducted landfill mowing on October 19-22, 2020, including removal of vegetation within the rip rap areas.
2. Inspected gas vents and collected landfill gas readings.

The following maintenance and monitoring activities are recommended:

1. Continue mowing the landfill cap on an annual basis to control vegetative growth, as well as the adjacent stormwater detention pond to prevent woody and wetland plant species from encroaching onto the cap.
2. Continue annual inspections and general landfill maintenance, such as clearing large/woody vegetative growth from the cap, drainage channels, and rip rap areas.
3. The areas of topsoil damaged from heavy mowing equipment should be filled in with topsoil and reseeded to prevent further erosion.
4. Replace missing label tags from the noted gas vents

APPENDIX C

Landfill Gas Monitoring Log

Landfill Gas Monitoring
Devens Consolidated Landfill - Devens, Massachusetts

Date: 10/29/2020
Sampler(s): Desmond Bedard
Weather: ~6^{0}C, Overcast & Raining
Barometer (in-Hg): 29.49 **Time:** 10:05 AM
29.49 11:52 AM

Location ID	Time	VOC	H_2S	CO	LEL	O_2	O_2	CO_2	CH_4	LEL	Remarks
		ppm Multi RAE+	**ppm** Multi RAE+	**ppm** Multi RAE+	**%** Multi RAE+	**%** Multi RAE+	**%** GEM 2000	**%** GEM 2000	**%** GEM 2000	**%** GEM 2000	
V-1	10:15 AM	0.0	0.0	0.0	0.0	20.9	21.0	0.0	0.0	0.0	ID Tag Missing
V-2	10:05 AM	0.1	0.0	0.0	0.0	20.8	20.8	0.3	0.0	0.0	
V-3	11:03 AM	0.0	0.0	0.0	10.0	14.2	13.6	4.2	0.4	8.0	ID Tag Missing
V-4	11:33 AM	0.0	0.0	0.0	0.0	18.9	18.5	2.7	0.0	0.0	ID Tag Missing
V-5	11:22 AM	0.0	0.0	0.0	98.0	5.2	5.9	7.7	6.3	>100	ID Tag Missing; Could Smell Methane
V-6	11:13 AM	0.0	0.0	0.0	>100	3.2	1.1	3.9	18.3	>100	ID Tag Missing
V-7	10:20 AM	0.0	0.0	0.0	0.0	20.7	20.9	0.0	0.0	0.0	ID Tag Missing
V-8	10:26 AM	0.0	0.0	0.0	0.0	18.5	18.6	2.4	0.0	0.0	ID Tag Missing
V-9	10:52 AM	0.0	0.0	0.0	>100	1.9	1.6	11.2	13.6	>100	ID Tag Missing
V-10	10:45 AM	0.0	0.0	0.0	0.0	15.1	15.4	4.3	0.0	0.0	
V-11	10:38 AM	0.0	0.0	0.0	0.0	18.5	18.5	2.0	0.0	0.0	ID Tag Missing
LFGM-18-01	12:08 PM	0.2	0.0	0.0	0.0	20.8	20.8	0.0	0.0	0.0	ID Tag Missing
LFGM-18-02	12:01 PM	0.0	0.0	0.0	0.0	20.8	20.7	0.1	0.0	0.0	
LFGM-18-03	11:52 AM	0.0	0.0	0.0	0.0	19.2	19.1	1.3	0.0	0.0	

Calibration Information:

1. Instrument: **MultiRAE+** (Serial Number: 68QA)
Calibrated with: C_4H_8, O_2, CO, H_2S, LEL
Calibrated by: Desmond Bedard (Arcadis) & Marisol Alejandro (Palms Environmental)
Calibration Check Performed by: Brent Smith (USACE)

2. Instrument: **Landtec GEM 2000** (Serial Number: 13970)
Calibrated with: C_4H_8, O_2, CO_2, H_2S, CH_4, LEL
Calibrated by: Desmond Bedard (Arcadis) & Marisol Alejandro (Palms Environmental)
Calibration Check Performed by: Brent Smith (USACE)

FIGURE



Legend

- Gas Vent
- Monitoring Well - Destroyed
- LTM Sample Well
- LTM Well - Gauge Only
- Landfill Gas Monitoring Well
- Topographic Contour (ft AMSL)

Notes:

LFM-03-07 was paved over by asphalt during parking lot construction for the neighboring Building. In July 2017 LFM-03-07 was uncovered.

LFM-99-06A was replaced by LFM-99-06A-RP in September 2015.

Gas vent locations were approximated based upon the locations displayed in Figure 2 of USACE New England District's Devens Consolidation Landfill 2004 Annual Report.

ft AMSL = feet above mean sea level
LTM = long term monitoring

0 200 400
Feet

2020 Main Post Annual Report
Former Fort Devens Army Installation and Sudbury Annex
Devens, Massachusetts

Site Layout
Devens Consolidated Landfill

SERES
ARCADIS
a joint venture

Figure
F-1

File: Figure 17 - DCL_SITE.mxd

Appendix H

Responses to Comments

Response to Comments
2020 Annual Operations, Maintenance, and Monitoring Report
Main Post
Fort Devens, MA
July 2021

Comment No.	Reviewer	Section & Page Number	Comment	Response
1	David Chaffin / MassDEP	Section 6.5	Recommendations presented in Appendix G (DCL Inspection Report) should be noted here, including the recommendation to backfill and reseed areas damaged by heavy mowing equipment and the recommendation to replace missing gas vent tags.	The text has been revised per the comment.
2a	David Chaffin / MassDEP	Figure 12	Should include sample results from well XGM-94-07X, and the results from well XGM-94-08X should be linked to the correct location.	The figure has been revised per the comment.
2b	David Chaffin / MassDEP	Figure 12	Bold font should be used to highlight VPH “monitoring criteria” exceedances.	The figure has been revised per the comment.
3a	David Chaffin / MassDEP	Figure 16	Please confirm/correct concentrations listed for C9–C10 aromatics and ethylbenzene at well 32M-01-18XBR (concentrations transposed?).	The figure has been revised per the comment.
3b	David Chaffin / MassDEP	Figure 16	Bold font should be used to highlight chlorobenzene, ethylbenzene, and VPH “monitoring criteria” exceedances at well 32M-01-18XBR.	The figure has been revised per the comment.
4	David Chaffin / MassDEP	Table 5	Some well screen elevations listed here are inconsistent with well screen elevations listed in Table 1-5 of the 2019 annual report. All elevations presented in the table should be reviewed and corrected as necessary to ensure accuracy.	The table has been revised per the comment.
5a	David Chaffin / MassDEP	Table 6	Please confirm/correct the MCP GW-1 standards listed for cis-1,2-DCE at AOC 32/43A and C19-C36 aliphatics at DCL.	The table has been revised per the comment.
5b	David Chaffin / MassDEP	Table 6	For AOC 32/43G, chlorobenzene should be listed under the VOCs heading, rather than the VPH heading.	The table has been revised per the comment.
6	David Chaffin / MassDEP	Table 11	Please confirm/correct concentrations listed for C9-C12 aliphatics and naphthalene (lab reports indicate that most of these results are non-detects).	The table has been revised per the comment.
7a	David Chaffin / MassDEP	Appendix A	Many sample logs do not list purge rates and purge volumes, and many sample logs list 0-gallon purge volumes – are these logs accurate and complete?	The logs have been revised per the comment.
7b	David Chaffin / MassDEP	Appendix A	Duplicate May DCL sample logs should be deleted from the report.	Duplicate sampling logs were removed from Appendix A.
7c	David Chaffin / MassDEP	Appendix A	The May 2020 Groundwater Gauging Log appears to be incomplete and include errors: (1) “October” is listed in the third row (instead of “May”), (2) the depth to water listed for well 57M-96-11X is inconsistent with Table 1 and Figure 5, and (3) water levels are not listed for wells LFM-03-07, SHL-15, or SHL-25 (refer to Table 1). Please review field notes to ensure that the Gauging Log is complete and accurate.	The log and figure have been revised per the comment.
8	David Chaffin / MassDEP	Appendix B	Appendix B should include lab reports for AOC 32/43A VPH analyses and DCL VPH and EPH analyses.	These reports have been added to Appendix B.
9	David Chaffin / MassDEP	Appendix D	2020 C9-C12 aliphatics data for well AAFES-2 at AOC 43G are inconsistent with data shown in Figure 12. Please confirm/correct as necessary to ensure accuracy.	Data on Figure 12 is correct. Data in Appendix D table was revised.

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Comment No.	Reviewer	Section & Page Number	Comment	Response
			EPA Comments	
		General Comments		
1	EPA	General	As discussed in EPA comments on prior Annual Operations, Maintenance and Monitoring Reports (ARs), several of the Areas of Contamination (AOCs) evaluated in the draft 2020 AR are located in MassDEP-designated Zone II Wellhead Protection Areas (WPAs). Because groundwater associated with these AOCs is within the established zone of capture for nearby water supply wells, closer scrutiny of site-specific data is critical to ensuring that the quality of groundwater in these areas remains suitable for drinking water purposes.	Reponse to be provided under separate cover.
2	EPA	General	The scope of the 2020 AR has been significantly scaled back from prior Main Post ARs. The 2020 AR sticks to reporting the results of the monitoring at the various sites, with little or no interpretation or discussion of implications for the CSM. While this approach may minimize technical comments, discussion, and disagreements in the short term, it represents a departure from ongoing discussions regarding some of the Main Post LTM sites. While EPA has been frustrated by the pace of progress and delays in agreed-upon investigations, it notes that some progress was being made and should continue. As stated above, site specific information is crucial, especially where the LTM sites are within Zone II WPAs (i.e. within zone of contribution for public drinking water wells) (See General Comment (GC) 1.)). Delaying discussion of the ongoing issues from prior and present comments may result in slower disposition of the sites and may be hinder evaluation and resolution of proposed amendments to the 2018 Main Post LTMMP.	Reponse to be provided under separate cover.

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Comment No.	Reviewer	Section & Page Number	Comment	Response
3	EPA	General	In comments on the 2018 and 2019 ARs (i.e. PSC 1 on the 2018 AR and GC 4 on the 2019 AR), EPA pointed out the need to expand monitoring networks at AOC 57 and AOC 43G to obtain site-specific information to assure that contamination is not migrating off-site. Based on Army's refusal to install additional downgradient, off-site monitoring wells, EPA identified the issue as a deficiency in the recent (2020) Devens Five-Year Review (FYR). Although EPA's September 29, 2020 Additional Work letter requested that Army prepare and issue a draft, revised LTMMP for these (and other) sites to confirm/deny possible off-site migration (and verify attainment of ROD-specified RAOs and cleanup goals throughout the groundwater plume), Army opted instead to perform a supplemental RI prior to updating the site-specific LTMMPs. While EPA remains perplexed by Army's decision to perform a site-wide, supplemental investigation instead of installing several downgradient monitoring wells, it is more concerned about the time it will take to plan, commence and complete the necessary field work and the continued unabated, migration of contamination beyond previously-established, now obsolete, contaminant compliance boundaries. While the Supplemental Sampling Report (SSR) included in Appendix G of the revised 2019 AR (coordinated with the ongoing PFAS RI) provided a better understanding of groundwater flow and contaminant transport at the two aforementioned AOCs and satisfied some of the additional requirements identified by EPA in its comments on 2018 and 2019 ARs, the results were not incorporated into the body of the 2019 AR nor considered in CSM discussions or 2019 AR conclusions. EPA requests that these data be incorporated into and discussed within the draft final 2020 AR, with specific consideration to extensive EPA comments on the draft SSR included with EPA's notes on Army's December 2020 RTCs on the 2019 AR.	Reponse to be provided under separate cover.
4	EPA	General	Figures showing brooks, especially where impacted groundwater flows toward the brook and/or where the AOC is within a Zone II for a public well, should include arrows showing the direction of brook flow.	Reponse to be provided under separate cover.
		Page Specifc Comments		
1	EPA	Page 7, § 2.1, ¶¶ 2 and 3 and Figure 3	As part of the historical discussion in these paragraphs, please add a brief description of the sumps and containment dam that are shown on Figure 3. Do these features have any impact on groundwater flow, surface water flow, or contaminant transport? It would be helpful to add the information provided by Army in response to a similar comment on the 2019 AR to this year's report; please also reference Conti, 2004 and/ or other relevant previous reports.	Reponse to be provided under separate cover.
2	EPA	Page 7, § 2.1, ¶ 5	EPA appreciates the additional information provided in the 2020 AR on the irrigation wells at 87 Barnum Road (adjacent to AOC 57). EPA also understands that the well is not metered. Please obtain and provide a copy of the pump curve for the irrigation well or include the make, model, and specifications for the irrigation well pump in the draft final 2020 AR. This will provide a better understanding of the gallons that may be pumped from this well. Also, it would be useful to ask the property manager how many hours per day or per week the irrigation well typically pumps during the irrigation season. Please include any information gained in the next iteration of the 2020 AR.	Reponse to be provided under separate cover.

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Comment No.	Reviewer	Section & Page Number	Comment	Response
3	EPA	Page 7, § 2.1, ¶ 6	EPA notes the discussion of the large area of buried drums, vehicle parts, spent containers, other metal scraps, tires, and concrete slabs, discovered during EPA's temperature profiling work along Cold Spring Brook on March 18, 2019. As discussed during the next (March 25, 2019) BCT meeting, the buried wastes were discovered essentially between Areas 2 and 3 in an area estimated to be at least 200 feet X 30 feet X 6 feet. Please amend the discussion to mention that EPA included the evaluation of this area in its September 2020 Additional Work letter and discuss Army's plans to address it in conjunction with similar disposal areas identified at AOC 50 and	Reponse to be provided under separate cover.
4	EPA	Pages 7–9, §§ 2.2 and 2.3	In its 3/26/20 response to EPA's GC 2 (3/5/20) on Army submittals, Army stated that "The drilling on the east side of Cold Spring Brook will occur after the field work on the west side of the brook has been conducted, the samples analyzed by the laboratory, and the results reviewed by the technical team. The field work on the west side of Cold Spring Brook is scheduled to be completed by the end of April 2020. It is anticipated that the work for the east side of Cold Spring Brook will be planned and executed in 2020." Please amend the discussion to provide an update on the status of this agreed-upon work.	Reponse to be provided under separate cover.
5	EPA	Page 8, § 2.3.1, Figure 6, Table 6	Both Area 3 wells monitored (57M-95-03X and 57M-96-11X) had arsenic exceedances; the three-dimensional extent of the exceedances is unbounded, based on data presented. In order to delineate the nature and extent of the contamination, both laterally and with depth, data from additional wells are needed. Results from the PFAS investigation may partially address this issue and should be included. Alternatively, or in addition, sampling wells 57M-96-10X, 57M-96-12X, and a new well down-gradient of 57M-96-11X is likely needed to bound the area of exceedances laterally (depending on the screen depths).	Reponse to be provided under separate cover.
6	EPA	Page 9, § 2.4, ¶ 3	The third sentence mentions the AOC 57 LUC boundaries; please provide a figure reference that shows these boundaries.	Reponse to be provided under separate cover.
7	EPA	Page 13, § 3.3.3, ¶ 1	The second sentence refers to a sidewalk/retaining wall project that is planned; is this the work that was performed last year? Please update the discussion to provide current information and discuss the deficiencies identified in EPA's Additional Work letter and Army's plan to complete the required tasks.	The work completed last year was the HVAC project described in the report text. The sidewalk/retaining wall project is on hold and has not been started.
8	EPA	Page 13, § 3.4, ¶ 1	The last two sentences should be deleted as they provide generalizations regarding aquifer reducing conditions and metals concentrations that have not been substantiated with site-specific data. Also, please include a discussion of the Additional Work requested by EPA to resolve this deficiency and a tentative schedule for completion of this task.	Reponse to be provided under separate cover.
9	EPA	Page 14, § 4.2	The second sentence states that groundwater flows toward surface water to the southeast Please be more specific. Does groundwater flow toward the small pond shown on Figure 11 east of piezometers 43GPZ-19-05 and 06? If there is a larger surface water body beyond the map view that is believed to be the destination, please reference it or expand the map view to show it.	Section 4.2 of the report has been updated with some additional information on groundwater flow direction.

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Comment No.	Reviewer	Section & Page Number	Comment	Response
10	EPA	Page 15, § 4.3.1, In-Text Table 3	What is the significance of the two manganese data points in the Detected Results column for XGM-94-06X; are they duplicates?	Yes - a duplicate sample was collected from this location.
15	EPA	Page 17, § 5.2, Figures 14 and 15	There are partial inconsistencies between text and figures and technical errors in contouring for both overburden (Figure 14) and bedrock (Figure 15) groundwater. The text describes southeasterly flow on the east side of the area in both overburden and bedrock. However, based on the contouring shown, a flow reversal, with groundwater flowing to the northwest, occurs near the southern ends of the B-B' gradient profile on figure 14 and in the same area on Figure 15. Technically, the contouring is incorrect in the southern and southeastern portions of both figures; at least one contour must be looped in order to accommodate the changing flow direction. Data points in these areas are a bit sparse, so it may be best to simply eliminate the contours in the southeastern corners of the figures where the gradient direction reverses. This is not simply an academic exercise but is a situation with somewhat complex and undetermined groundwater flow patterns with potential transport implications in and near a Zone II wellhead protection area. The groundwater gradient calculations should be based on areas where there is no gradient reversal. For example, the eastern profile (B-B') on Figure 14 could stop at the 233-foot contour line near former Building 214. Please redo the gradient calculations on profiles where there is no reversal or clearly state that a reversal is indicated and the calculation is meant to be a site-scale average.	Reponse to be provided under separate cover.
16	EPA	Figure 14	Overburden groundwater level contours cannot extend across an area of bedrock outcrop. Please remove the contours in this area.	Figure 14 has been updated as requested.
17	EPA	Page 17, § 5.2 and Figure 15	Unless bedrock in this area is highly weathered or so densely fractured that the bedrock behaves as a porous medium, groundwater flow and contaminant transport in the bedrock is confined to bedrock fractures that are connected to overburden recharge, other fractures, or both. This means that groundwater does not necessarily flow perpendicular to groundwater level contours. Further, hydraulic gradient has a different meaning than for overburden. While bedrock groundwater flow will be driven by gradients and head differences, the flow only occurs along connected fractures, making predictions as to contaminant transport more uncertain. Understanding that constructed bedrock contour maps with flow arrows and gradient concentrations may be required and may be useful for comparison with previous years' results, please add appropriate cautionary statements to the text.	Reponse to be provided under separate cover.
18	EPA	Page 20, § 5.5, ¶ 2	The apparently isolated occurrence of relatively high concentrations of COCs at source area well 32M-01-18XBR is interesting and has conceptual site model implications. Perhaps this well is located in a relatively unfractured rock mass with little fracture connection to nearby portions of the aquifer. Alternatively, water-bearing fractures that intersect this well may trend in directions so that they miss the other wells that were sampled in 2020. A review of the drilling record for this well may reveal information as to the depths and flow amounts from water-bearing fracture(s) that may have been encountered during drilling. EPA recommends at least one re-sampling of the nearest wells in each direction that were not sampled in 2020: 32M-01-13XBR, 16 XBR, and 18XBR to confirm that contaminants are not being transported away from the source area well in these directions. This is important because a Zone II wellhead protection area for the Grove Pond wellfield is immediately down-gradient of the source area well. EPA appreciates that Army did sample the source area well in 2020; this should continue until/unless sampling is agreed (e.g. in an approved LTMMP) to no longer be needed.	Reponse to be provided under separate cover.

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Comment No.	Reviewer	Section & Page Number	Comment	Response
19	EPA	Figures 17, 18, and 19	Please indicate, either by symbol (preferred) or by note, which of these wells are screened in overburden and which are bedrock wells. Please also indicate this in the Section 6 text. Also, please show the leachate sample collection location on one of the figures.	A note has been added to Figures 17, 18, and 19 regarding the location of bedrock wells. Section 6.4 of the report has been updated with a description of the leachate sample collection.
20	EPA	Page 23, § 6.5, 3rd bullet	Please include Army's plans and schedule for repairing the fence.	Reponse to be provided under separate cover.
21	EPA	Profiling Data Collected for Purge Requirements on Monitoring Well Screens > 10 ft	The file "Fort Devens Downhole Screening" and the purge records from the 2020 annual reports were examined to assess low-flow purging procedures for long screened wells greater than 10 ft. The variability in capture intervals of groundwater for these wells are subject to a number of factors including pump rates, pump intake, duration, well construction, bulk hydraulic conductivity, and patterns of heterogeneity. If the primary sampling objective is to sample contaminant concentrations of high-permeability zones or high-transport zones then the positioning of the pump intake in relation to these zones is important. The data collected were designed to understand the location of the high-permeability zones and the flushing capability of the wells (removal of wellbore water and exchange with inflowing groundwater) by vertically profiling under pre- and post-pumping field parameters, such as specific conductance. These data are readily available and profiling can be done quickly. Wells that show a change in pre- and post-profiles suggest purging has induced groundwater into the well. Comparisons of the field-parameter values of the pumped water and the post-pumped profiles, and particularly field-parameter values adjacent (intervals coincident) to the high-permeability zones can identify whether the pumped water is likely derived from the high-permeability zones.	Reponse to be provided under separate cover.
22	EPA	Profiling Data Collected for Purge Requirements on Monitoring Well Screens > 10 ft	The review focused on the type of data collected and individual well data sets were examined fairly quickly to expedite the review. It is suggested that a more thorough analysis of the data sets be done. One well, SHM-10-14, was examined in more detail. The profiling data and purge record data for that well are attached. The well log for this well showed a generally homogeneous condition according to the contractor records. Therefore, no distinct high-permeability zone was identified. A PAT simulation for this well was done to compare the purge effects on flushing the well and what capture interval was likely achieved (also attached). Overall, the detail of the purge records, and the data sets collected for profiling were well done and comprehensive. Specific comments are listed below:	
22	EPA	Profiling Data Collected for Purge Requirements on Monitoring Well Screens > 10 ft	Purge records should include the tubing diameter of the pump to account for travel time between the pump and sample port. In the PAT simulation I assumed 3/8-inch inner diameter.	Reponse to be provided under separate cover.
23	EPA	Profiling Data Collected for Purge Requirements on Monitoring Well Screens > 10 ft	Figure 1 shows the purge record for SHM-10-14. Overall, well done with a lot of detail. Some discrepancies and confusion are noted. Note the purge start says 0935 but at 0957 on the log it says 0 for elapsed time. Perhaps the 0935 represents the time arrived or static water level time. The other somewhat confusing note is that it says 101 gal purged but 6.5 volumes purged and 15.5 gal in well. I think they mean volumes purged as number of wellbores evacuated? Further, unsure of the note saying 101 gallons was purged unless they pumped before this. At 95 mins at 250 ml/min that equals 6.27 gallons. Suggest adding some explanations to the purge record sheets.	Reponse to be provided under separate cover.