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October 4, 2022

Ms. Erica K. Shuhler
Solid and Hazardous Waste Specialist
Montana Department of Environmental Quality
Permitting and Compliance Division
Air and Waste Management Bureau
P.O. Box 200901
Helena, MT 59620-0901

RE: AOC-16 Interim Measure 2nd Quarter 2022 Monitoring Report No. 2

Submitted via Montana File Transfer Service with Hard Copy to follow

Dear Ms. Shuhler,

Please find attached Calumet Montana Refining LLC's (CMR) AOC-16 Interim Measure (IM) 2nd Quarter 2022 Monitoring Report (QMR) No. 2 for review and approval. The report documents the operations, maintenance, and monitoring activities completed for the dual phase extraction (DPE) remediation system, passive treatment trench, and light non-aqueous phase liquid (LNAPL) recovery trench between April 2022 and June 2022. In addition, this report presents an evaluation of AOC-16 IM remediation system performance during this period and discusses continued system optimization and monitoring activities.

Please contact me at your earliest convenience if you have any questions.

Sincerely,

Mike Gipson
Environmental Specialist

cc: Joe Dauner, CMR Environmental Manager

Attachments: AOC-16 Interim Measure 2nd Quarter 2022 Monitoring Report No.2

AOC-16 INTERIM MEASURE 2ND QUARTER 2022 MONITORING REPORT NO. 2

CALUMET MONTANA REFINING, LLC
GREAT FALLS, MONTANA

October 4, 2022

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ACRONYMNS AND ABBREVIATIONS

AOC-16	Area of Concern-16
BOD	biochemical oxygen demand
BTEX	benzene, toluene, ethylbenzene, and xylene
CMR	Calumet Montana Refining, LLC
COC	constituent of concern
DEQ-7 HHS	Montana Department of Environmental Quality-7 Human Health Standards
DO	dissolved oxygen
DPE	dual-phase extraction
EPH	extractable petroleum hydrocarbon
gpm	gallons per minute
IM	Interim Measures
in-Hg	inches of mercury
LEL	lower explosive limit
LNAPL	light non-aqueous phase liquid
µg/L	microgram per liter
MDEQ	Montana Department of Environmental Quality
mg/L	milligrams per liter
mL/min	milliliters per minute
MS/MSD	matrix spike/matrix spike duplicate
mV	millivolts
NTu	nephelometric turbidity unit
OM&M	operations, maintenance, and monitoring
ORP	oxidation reduction potential
Pace	Pace Analytical Services, LLC
PID	photoionization detector
PLC	programmable logic controller
PRT	primary recovery trench
PTT	passive treatment trench
QAPP	Quality Assurance Project Plan
QA/QC	quality assurance/quality control
QMR	Quarterly Monitoring Report
RBSL	Risk-Based Screening Levels
RCRA	Resource Conservation Recovery Act
RFI	RCRA Facility Investigation
Ramboll	Ramboll US Consulting, Inc.
ROI	radius of influence
SCFM	standard cubic per minute
SRCO	Self-Recuperative Catalytic Oxidizer
SVOC	semi-volatile organic compound
TPH	total petroleum hydrocarbons
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
VPH	volatile petroleum hydrocarbon
WWTP	wastewater treatment plant

SIGNATORY PAGE

I certify under penalty of law that this document and all attachments were prepared under my direct supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:	
Name:	Wayne Leiker
Title:	Vice President – Calumet Montana Refining, LLC
Date:	October 4, 2022

EXECUTIVE SUMMARY

Ramboll US Consulting, Inc. (Ramboll), on behalf of Calumet Montana Refining, LLC (CMR), has prepared this Area of Concern-16 (AOC-16) Interim Measure (IM) 2nd Quarter 2022 Monitoring Report (QMR) No. 2 to summarize the operations of the AOC-16 Dual Phase Extraction (DPE) system and the Passive Treatment Trench (PTT). This QMR has been prepared in accordance with Section 6.2 of the Operations Maintenance and Monitoring (OM&M) Plan for the AOC-16 IM.

During the 2nd quarter of routine operation, the DPE system operated approximately 87% of the available time and extracted and discharged approximately 69,879 gallons of total fluids to CMR's wastewater treatment plant (WWTP). During this reporting period the DPE system also removed approximately 1,032 pounds of petroleum vapors. It also removed approximately 6.7 pounds of volatile organic compounds (VOCs), 6.9 pounds of semi-volatile organic compound (SVOCs), 1,591 pounds of volatile petroleum hydrocarbons (VPH), and 22.5 pounds of extractable petroleum hydrocarbon (EPH) in the form of liquid effluent. Initial mass removal rates indicate that the DPE system is accomplishing the AOC-16 IM objectives of recovering free phase Light Non-Aqueous Phase Liquids (LNAPL) mass and reducing the LNAPL within the vadose and saturated zone soil matrix.

An estimated volume of 20 gallons of LNAPL was recovered from the trench via passive skimmers during the reporting period. Due to measurable amounts of LNAPL in the wells located within the western end of the trench, the LNAPL recovery trench will be extended 25 feet to the west and six additional LNAPL recovery wells will be installed in the third quarter of 2022 to protect the PTT from potential LNAPL infiltration.

Quarterly groundwater sampling was conducted at the PTT performance monitoring wells on June 20 and 22, 2022. Sampling was conducted at upgradient well MW-41S, PTT well MW-106, and downgradient compliance well MW-105. Samples collected from these monitoring wells were analyzed for petroleum constituents of concern (COCs) – VOCs, SVOCs, VPH, and EPH.

The monitoring well upgradient of the passive treatment trench (MW-41S) and the monitoring well downgradient of the PTT (MW-105) reported benzene concentrations exceeding the DEQ-7 Human Health Standards – Groundwater (DEQ-7 HHS) and the Risk-Based Screening Levels (RBSLs). Concentrations remain within historical ranges at both of these wells. VOCs including benzene, SVOCs, VPH, and EPH were not detected from the location (MW-106) installed within the trench.

OM&M of the IMs will continue to document the performance of the IM's and will include periodic performance reporting to the Montana Department of Environmental Quality (MDEQ) to ensure the IM objectives are being met. Further investigation/evaluation of the petroleum impacts at the AOC-16 Truck Rack Area will be completed as part of the upcoming Resource Conservation Recovery Act (RCRA) Facility Investigation (RFI) activities. The results from the RFI and ongoing IM performance monitoring will be evaluated to determine if operational modifications are necessary or if a request to the MDEQ to cease recovery and place the DPE system in standby mode is warranted.

1. INTRODUCTION

Ramboll US Consulting, Inc. (Ramboll), on behalf of Calumet Montana Refining, LLC (CMR), has prepared this Area of Concern-16 (AOC-16) Interim Measure (IM) Quarterly Monitoring Report (QMR) No. 2 for the Calumet Great Falls Montana Refining facility located at 1900 10th Street NE, Great Falls, Montana to summarize the second quarter of operations (April 1 through June 30, 2022) for the AOC-16 IM remedy selected to address petroleum releases at AOC-16.

The CMR refinery is comprised of 82.7 acres of industrial/refinery operations and office buildings. The refinery produces gasoline, middle distillates, and asphalt for distribution in Washington, Montana, Idaho, and Alberta, Canada. AOC-16, referred to as the "Gasoline and Light Oil Loading Rack" or "truck loading rack," is located within an approximately 7.6-acre parcel to the east of the active refinery and is owned by CMR (Figure 1).

Activities were completed in accordance with the Corrective Action Order on Consent issued to Montana Refining Company, Inc. by the Montana Department of Environmental Quality (MDEQ) to govern the performance of Resource Conservation Recovery Act (RCRA) corrective action activities at the site. In 2016, petroleum related vapors were detected in an offsite residential property along 11th Street NE. The MDEQ issued an IM letter on October 11, 2016, directing CMR to address imminent threats to human health and/or the environment stemming from petroleum release near CMR's Loading Rack (MDEQ, 2016). Immediate action consisting of relocating and filling an existing sanitary sewer to prevent migration of contaminants was undertaken. Between 2016 and 2019, in coordination with the MDEQ, investigation activities were undertaken, and alternative remedies were evaluated to address the petroleum release near the Loading Rack. Ultimately, an IM remedy approach was recommended consisting of dual-phase extraction (DPE) in the existing primary recovery trench (PRT) in the Truck Rack Area and Light non-aqueous phase liquid (LNAPL) recovery and a passive treatment trench (PTT) just north of North River Road.

Construction of the AOC-16 IM remedies commenced in July 2021 and were completed in October 2021 as documented in the *AOC-16 Interim Measures AOC-16 IM Construction Documentation Report* (CMR, 2022). Construction activities included the installation of following IM remedies:

- DPE remediation system in the Truck Rack Area, and
- LNAPL recovery trench and PTT utilizing colloidal activated carbon at an area along North River Road.

Commissioning of the AOC-16 IM was conducted from October 2021 through December 2021 and routine operations of the DPE system commenced on January 1, 2022.

Corrective action remedial goals were developed as part of the AOC-16 Interim Measures Evaluation Report (CMR, 2019) to protect human health and the environment. The AOC-16 IM goals specific to each treatment area include:

- Truck Rack Area (DPE System)
  - Recover free phase LNAPL mass present in the area south of the Truck Rack to stabilize the LNAPL plume.
  - Reduce LNAPL within the vadose and saturated zone soil matrix to stabilize the dissolved phase plume.

- North River Road Area (LNAPL recovery trench and PTT)
  - Mitigate dissolved phase groundwater impacts migrating from the Truck Rack Area towards the Missouri River.

This AOC-16 IM 2nd Quarter 2022 Monitoring Report No. 2 summarizes the sampling results, operations, and performance monitoring data that were gathered for the AOC-16 IM from April 1 through June 30, 2022, and presents: 1) system runtime for the DPE System; 2) DPE system operational data; 3) identification of operational problems, the length of any shutdowns, and a summary of actions taken to rectify or prevent these problems; 4) influent vapor and liquid sampling results and estimated contaminant mass removal rates for the DPE system; 5) fluid levels, including LNAPL thickness measurements in the LNAPL recovery trench upgradient of the PTT; and 6) groundwater concentrations of constituents of concern (COC) and biological parameters in the PTT point of compliance well (MW-105) and PTT well (MW-106). The activities outlined in this report were performed in accordance with the OM&M Plan (CMR, 2021b).

2. DPE SYSTEM OPERATIONS SUMMARY

2.1 System Runtime

During the period of April 1, 2022 through June 30, 2022, the DPE system was in operation approximately 87% of the time and extracted and discharged approximately 69,879 gallons of total fluids to CMR's wastewater treatment plan (WWTP). A summary of the routine and non-routine system shutdowns is discussed below.

2.1.1 Planned Shutdowns for Routine and Corrective Maintenance

Brief shutdowns of the DPE system were performed to conduct maintenance activities, including filter and level switch cleaning, monthly preventative maintenance, and inspection of equipment.

2.1.2 Non-Routine/Unplanned Shutdowns

A summary of the non-routine system shutdowns is presented below:

- On March 17, 2022, LNAPL was observed in vapor effluent piping (post knock-out tank). To avoid the damage to the system components the system was temporarily shut down. CMR performed troubleshooting and determined that the demister filter and blower inline filter were saturated with LNAPL. These filters were replaced, and the knock-out tank was cleaned. The DPE system was restarted on April 4, 2022.
- The system was not operational from June 22, 2022 to June 30, 2022 for preventative maintenance as well as for troubleshooting low vacuum at wellheads (details in Section 2.2.4).

2.2 System Operation and Monitoring

DPE system performance monitoring and sampling were conducted in accordance with the OM&M Plan (CMR, 2021b and CMR, 2021c) to document system operation effectiveness. It included monitoring of operations data, periodic vapor and effluent sampling to document contaminant mass recovery, monitoring well gauging, and sub-surface vacuum measurements. These parameters are discussed in the following sections.

2.2.1 DPE Influent and Effluent Sampling Results

Monitoring of contaminant mass removal is the primary metric for optimizing DPE system performance and gauging the AOC-16 IM objective of free-phase LNAPL mass recovery and LNAPL plume stabilization.

Vapor

Vapor/air extraction flow rates were continuously monitored and recorded by the system programmable logic controller (PLC) and influent vapor sampling was periodically conducted to evaluate mass removal.

The concentrations of volatile organic compound (VOCs) in the vapor phase were measured periodically on each DPE influent line (DPE-1 through DPE-8) using a photoionization detector (PID) to measure relative vapor concentrations from each DPE well. PID measurements were also collected from sample port SP-301 on the inlet side of the blowers. PID measurements from the DPE wells and SP-301 port are summarized on Figures 2A and 2B.

Vapor samples were also collected monthly from SP-301 and submitted to Pace Analytical Services (Pace) located in Minneapolis, Minnesota. These samples were analyzed for VOCs by the United States Environmental Protection Agency (USEPA) Method TO-15. Analytical results for detected compounds from the influent vapor samples are summarized in Table 2. Laboratory reports are included in Appendix A1.

The combination of vapor flow rates, system runtime, and vapor VOC concentrations were used to calculate the mass of contaminants removed. During the reporting period, the DPE system removed approximately 1,032 pounds of VOCs in the vapor phase.

Concentrations of benzene, toluene, ethylbenzene, and xylene (BTEX), n-hexane, and n-heptane in effluent vapor over time are shown on Figure 3. These compounds were selected to evaluate vapor effluent concentration trends as their concentrations were the highest as compared to other VOCs during the start-up sampling. As expected, concentrations of BTEX, n-hexane, and n-heptane decreased approximately one to two orders magnitude between startup in October 2021 and June 2022.

Both, the inlet piping to the vacuum blowers and the Self-Recuperative Catalytic Oxidizer (SRCO) unit, are equipped with dilution valves to dilute soil vapor entering the system and to control the temperature of the catalyst bed and process inlet and outlet air temperature. During the reporting period, dilution of the influent vapor feed was required (dilution valve position to the blowers ranging from 0% to 85% open and dilution valve position to the SRCO between 55 and 100% open) to maintain the post-catalyst process air temperature within the operating limits of 650 and 950 degrees (°F). Although influent VOC concentrations have decreased overtime, the need for continued dilution of the process vapor serves as a line of evidence that influent vapor VOC concentrations remain reasonably high. As influent vapor concentrations remain high, continued full-time operation of all eight DPE wells is recommended.

Liquid

Monthly effluent samples of groundwater were collected from the discharge side of the transfer pump and submitted to Pace located in West Columbia, South Carolina for analysis of VOCs, semi-volatile organic compounds (SVOCs), volatile petroleum hydrocarbons (VPH), and extractable petroleum hydrocarbons (EPHs). Analytical results from the effluent sampling are summarized in Table 3. Laboratory reports are included in Appendix A2.

The combination of fluid recoveries and contaminant concentrations were used to calculate the mass of contaminants removed in the dissolved phase. In the dissolved phase during the reporting period, the DPE system removed approximately 7.3 pounds of VOCs, 1.6 pounds of SVOCs, 15.1 pounds of VPH, and 236.1 pounds of EPH.

Separate phase LNAPL recovery is not quantified as total fluids (LNAPL and water) in the effluent are pumped to the refinery's on-site WWTP where oil-water separation occurs. However, visual observations of LNAPL in the DPE system knockout tank (T-23100) sight glass serve as a qualitative indicator of LNAPL recovery. During the reporting period, approximately 6 to 12 inches of LNAPL was observed within the knock-out tank sight glass.

As shown on Figure 4, total VOC, SVOC, VPH, and EPH mass removed in the vapor and dissolved phase since DPE system startup in October 2021 and through June 30, 2022, is calculated to be approximately 2,578 pounds, 4.0 pounds, 59 pounds, and 357 pounds, respectively.

2.2.2 Groundwater Elevations

Monitoring wells in AOC-16 area (MW-22, MW-41S, MW-41D, MW-53, MW-57, MW-59S, MW-59D, MW-63, MW-64, MW-102, MW-103, MW-104, MW-105, and MW-106) were gauged periodically during the second quarter of 2022. The depth to water and if observed, separate-phase LNAPL thickness measurements, were recorded. These measurements are presented in Table 4.

During the second quarter of operation, groundwater levels at the Truck Loading Rack Area (MW-53, MW-57, MW-63, MW-64, MW-102, MW-103, and MW-104) dropped by approximately 1.5 feet whereas at the North River Area (MW-41S, MW-41D, MW-59S, MW-59D, MW-105, and MW-106) groundwater levels were stable (0.03 – 0.4 feet change in elevation). Groundwater contours are provided on Figure 5. Based on these observations, the drawdown in the Truck Loading Rack Area is likely attributed to DPE system.

2.2.3 Sub-Surface Vacuum

Sub-surface vacuum measurements were recorded monthly at three monitoring wells (MW-22 located 26 feet from DPE-3, MW-64 located 21 feet from DPE-6, MW-104 located 13 feet from DPE-3, and 22 feet from DPE-4). These measurements are shown on Figure 6. Based on the measurements, vacuum was not observed at any monitoring wells during this period, so the current radius of influence (ROI) appears to be less than 13 feet. Due to high influent VOC concentrations (Table 2 and Figure 3), the system continues to be operated in a controlled manner so that the influent LEL and SRCO operating temperature could be maintained at a safe operating point. By operating the system in a controlled manner, the observed vapor influent flow and applied vacuum were lower than the design parameters. As influent vapor concentrations continue to decrease, the applied system vacuum will be increased which will increase the ROI. Subsurface vacuum will continue to be monitored to document the estimated zone of influence of the DPE system.

2.2.4 Overall System Performance and Optimization

This section compares the primary design parameters to the observed/measured values during the reporting period to evaluate the system performance. These parameters are discussed in detail in following sections and summarized in Table 1.

Liquid Extraction Rate

The average design flow rate for the DPE system is between 0.25 gallons per minute (gpm) during steady-state operation and 21 gpm during rainfall events. The combination of fluid recoveries and system run time was used to calculate liquid flow rate during the reporting period. The DPE system extracted fluids at an average rate of 0.62 gpm which is within the design flow rate.

DPE System ROI

Based on the design, DPE system ROI is between 20 and 30 feet. As discussed in Section 2.2.3, the current ROI appears to be less than 13 feet. However, the system has been operating in a controlled manner with a lower applied vacuum than the design parameters. As influent vapor concentrations continue to decrease, the applied system vacuum will be increased which will increase the ROI.

Vapor Influent Flow Rate and Applied Vacuum

The design vapor influent flow rate and applied vacuum are 200 standard cubic per minute (SCFM) and 17 inches of mercury (in-Hg) respectively. During the reporting period, the observed vapor influent flow was approximately 131 SCFM and the applied vacuum was approximately 8.6 in-Hg.

Over the course of the reporting period, the dilution valves were incrementally closed, the vacuum relief valve was tightened, and blower capacity was increased from 60% to 65% as the influent vapor VOC concentrations decreased. As a result, total influent vapor flow rate increased from approximately 100 SCFM in April 2022 to 170 SCFM in June 2022 approaching the design flow rate of 200 SCFM. As the DPE system continues to operate, vapor influent concentrations are expected to continue to decline, and the system influent flow rates and applied vacuum will continue to be optimized.

During this reporting period wellfield vacuum at DPE wells DPE-2 (5 in-Hg) and DPE-7 (4 in-Hg) remained within the historical range, whereas at DPE wells DPE-1, DPE-3, DPE-4, and DPE-6 wellfield vacuum dropped from approximately 3.8 in-Hg to below 2 in-Hg. Vacuum at DPE-5 (1.2 in-Hg) stayed low and DPE-8 did not have any measured vacuum. During the second quarter of operation, system extracted significantly higher volume of total fluids (Quarter 1 – 13,346 gallons vs Quarter 2 – 69,879 gallons) due to higher average liquid extraction rates (0.24 gpm to 0.62 gpm). The higher liquid volume potentially filled the headers and caused lower vacuums at above mentioned wells. The system was turned off from June 22 thru June 30, 2022 to drain the liquids from the headers. After this brief shutdown, vacuum at DPE-1 and DPE-4 increased significantly from approximately 1 in-Hg to 4.9 in-Hg. No significant changes were observed at DPW-3, DPE- 5, DPE-6, and DPW-8. Additional troubleshooting, including verification of the pressure instrumentation calibration and manual draining of the headers, is ongoing to address the low vacuum measurements at these wells.

SRCO Performance Monitoring

The SRCO has a design destruction efficiency of 99% per manufacturer's specifications. To show compliance with the air permit, the SRCO pre- and post-catalyst process air temperature is monitored. The process air temperature across the catalyst must be greater than 650°F to ensure a destruction efficiency of 99%. The SRCO temperature monitoring results during the reporting period is shown on Figure 7. As shown on Figure 8, the post-catalyst process air temperature remained above 650°F while the system was in operation.

Overall, the system is operating as designed. DPE system optimization will be conducted, as needed, based on DPE well vapor concentrations, mass removal, and liquid extraction rates.

3. LNAPL RECOVERY TRENCH AND PTT

3.1 LNAPL Monitoring

The 11 LNAPL collection wells located in the LNAPL recovery trench were gauged periodically throughout this reporting period (Figure 1). Fluid levels collected from the LNAPL wells are summarized in Table 5.

3.1.1 Passive LNAPL Skimmer Installation

In February 2022, CMR deployed passive skimmers in five LNAPL recovery wells - LNAPL-5, LNAPL-7, LNAPL-8, LNAPL-10, and LNAPL-11. Passive skimmers were drained periodically and the LNAPL volume recovered at each location was recorded. During the reporting period, approximately 20 gallons of LNAPL was removed from the LNAPL trench via passive skimmers. Since installation of the LNAPL recovery wells in October 2021 through June 30, 2022, a total of 91.5 gallons of LNAPL has been passively recovered from the LNAPL trench.

3.1.2 Proposed LNAPL Trench Extension

LNAPL has been recorded in the LNAPL recovery wells located in the western half of the existing 50-foot-long LNAPL trench, including at LNAPL-11 located at the current western edge of the LNAPL trench. Given the presence of LNAPL having measurable thicknesses along the western half of the trench, a data gap exists to the west as no monitoring or LNAPL wells are currently present to determine the extent of the LNAPL in this area. As the existing groundwater PTT extends farther to the west than the LNAPL trench, any LNAPL beyond the western end of the trench could compromise the integrity of the PTT. To protect the remaining western portion of the PTT from LNAPL infiltration, installation of a 25-foot-long LNAPL trench extension to the west is planned for the third quarter of 2022. Six additional 6-inch-diameter LNAPL recovery wells will be installed at 4- to 5-foot spacings within the trench extension. Passive skimmers will also be installed if LNAPL is observed in the wells following installation. The trench extension will be installed using the means and methods used to install the initial LNAPL trench (CMR, 2022).

3.2 Groundwater Monitoring

The primary goal of the PTT is to mitigate dissolved phase groundwater impacts from migrating towards the Missouri River. Quarterly groundwater sampling was conducted on June 20 and June 22, 2022 at upgradient well MW-41S, PTT well MW-106, and compliance well MW-105 (Figure 1).

3.2.1 Monitoring Well Sampling

Monitoring wells MW-41S and MW-106 were purged dry on June 20, 2022. Approximately 4 to 5 well volumes were purged from MW-106. The wells recharged over a 48-hour period and a groundwater sample was collected on June 22, 2022. During the purge, field measurements were collected for water quality parameters, including dissolved oxygen (DO), pH, specific conductance, temperature, turbidity, and oxidation reduction potential (ORP). The field measurements were recorded every 5 minutes during well purging. The physical and chemical field measurements collected when purging the monitoring wells are summarized in the groundwater sampling logs in Appendix B.

Due to the low recovery observed at MW-41S and MW-105, only a partial bottle set was collected following the 48-hour recovery period. A full sample set was collected at monitoring well MW-106, located within the PTT.

After all the samples were collected, they were sealed, labeled, and placed on ice, pending delivery under chain-of-custody procedures to Pace located in West Columbia, South Carolina. The groundwater sample were analyzed for VOCs (via USEPA Method SW8260D), SVOCs (via USEPA Method SW 8270D), MDEQ VPH (via Method MDEQ VPH), and MDEQ EPH (via Method MDEQ EPH) (MW-41S and MW-106 only due to low recovery at MW-105). Samples from MW-106 (PTT well) were also analyzed for the following parameters to assess the biodegradation dynamics of the COCs: filtered and unfiltered total iron, total manganese, dissolved iron, and dissolved manganese (via USEPA Method 6020B), sulfate and nitrate (via USEPA Method 9056A), biological oxygen demand (BOD) (via USEPA Method 5210B), alkalinity (via USEPA Method 2320B), methane (via method RSK - 175), and carbon dioxide (via USEPA Method 4500-CO2).

The wells did not yield enough volume to facilitate the collection of field duplicate samples or matrix spike/matrix spike duplicate (MS/MSD) samples. One trip blank was submitted along with each laboratory cooler for quality assurance/quality control (QA/QC) purposes. Methods and procedures for collecting, handling, and analyzing samples are provided in the Quality Assurance Project Plan (QAPP) (CMR, 2018). Treatment and disposal of purge water generated during monitoring well sampling was handled consistent with existing project procedures.

3.2.2 Groundwater Analytical Results – June 2022

The groundwater analytical results for detected compounds from June 2022 sampling event are provided in Table 6. Baseline groundwater sampling results from October 2021, and March 2022 are also provided in Table 6 for comparison purposes. Analytical compounds that met or exceeded the respective MDEQ -7 HHS (May 2017) and/or MDEQ Tier 1 Groundwater Risk-Based Screening Levels (RBSLs) are bolded and/or shaded, respectively, for reference. Laboratory reports are included in Appendix A3.

The following subsections provide a summary of the analytical parameters detected in the monitoring wells in June 2022 and compare those detections to the DEQ-7 HHS in groundwater and RBSLs.

VOCs

Of the VOCs detected during the June 2022 groundwater sampling event at AOC-16, only benzene was detected more than the respective groundwater screening standard.[1]

The monitoring well upgradient of the passive treatment trench (MW-41S) reported benzene at 1,200 micrograms per liter (µg/L) and the monitoring well (MW-105) installed downgradient of the passive treatment trench reported benzene at 110 µg/L. The benzene detections at both MW-41S and MW-105 exceeded the DEQ-7 HHS and RBSL. Prior to the installation of the IM, both wells have historically had benzene detections exceeding the DEQ-7 HHS and RBSLs. Benzene was not detected from the location (MW-106) installed within the trench. The remaining VOC detections identified from MW-41S and MW-105 were below their respective DEQ-7 HHSs and RBSLs.

SVOCs

All SVOCs were detected at concentrations less than the DEQ-7 HHS and RBSLs. The low-level exceedances of benzo(a)pyrene within the PTT recorded in March 2022 were not recorded during the June 2022 sampling event.

[1] All VOC results reported in this section are from USEPA Method 8260B.

TPH, VPH, and EPH

The monitoring well (MW-41S) upgradient of the passive treatment trench and the monitoring well (MW-105) installed downgradient of the trench had detectable concentrations of total petroleum hydrocarbons (TPH) of 9,800 µg/L and 1,100 µg/L, respectively. The well installed within the passive treatment trench did not report detectable concentrations of TPH. At upgradient well MW-41S, C5-C8 Aliphatics (990 µg/L), C9-C10 Aliphatic (3,100 µg/L), and C11-C22 Aromatics (4,000 µg/L) exceeded the RBSLs, and naphthalene (100 µg/L) exceeded the DEQ-7 HHS and RBSLs. At downgradient well MW-105, C5-C8 Aliphatic exceeded the RBSLs. There were no hydrocarbon fractions detected above laboratory detection limits from the monitoring well (MW-106) installed within the trench.

3.2.3 Evaluation of Concentration Trends Over Time

To evaluate concentration trends over time, the concentrations of benzene and TPH were plotted for each of the three passive treatment trench monitoring wells. Baseline sampling data from June 2020 through October 2021 are included on Figures 9A through 9C along with post-remediation data. This historical data was previously reported in 2020/2021 Annual Groundwater Sampling Summary Report (CMR, 2021a) and Construction Documentation Report (CMR, 2022). Benzene and C5-C8 Aliphatics were selected as indicator compounds because they were the two compounds that exceed DEQ-7 HHSs and/or RBSLs during the baseline sampling event in October 2021. While there are no DEQ-7 HHSs and RBSLs for TPH, TPH represents a range of hydrocarbons and serves as an overall indicator of contaminant loading to the PTT.

Relative to the baseline October 2021 monitoring event, the benzene, C5-C8 Aliphatics and TPH sampling results at upgradient well MW-041S and compliance point MW-105 showed a decline between October 2021 and June 2022 as follows:

- Benzene decreased from 1,900 µg/L to 1,200 µg/L at MW-41S and from 250 µg/L to 110 µg/L at MW-105.
- C5-C8 Aliphatics decreased from 1,500 µg/L to 990 µg/L at MW-41S and from 1200 to 830 µg/L at MW-105.
- Benzene, C5-C8 Aliphatics, and TPH concentrations have been below analytical method detection levels in the PTT monitoring well MW-106.

Analytical results from groundwater samples collected from monitoring wells located up-gradient, down-gradient and from within the PTT indicate that the concentration of dissolved phase petroleum constituent of concern (COCs) decreased across the PTT initially meeting the goal of the PTT to mitigate the dissolved phase groundwater impacts from migrating from the Truck Rack to the Missouri River. Initial indications show decreasing concentrations at both up-gradient and down-gradient monitoring wells. Given the limited available data, additional quarterly sampling will be performed to monitor these trends over time.

Given the low hydraulic conductivities in the vicinity of the PTT, reductions in contaminant concentrations at the performance monitoring well MW-105 location are expected to occur over time as a result of the PTT installation.

Biodegradation Parameters

Field parameters including pH, conductivity, turbidity, ORP, and dissolved oxygen are provided in Table 7. Low dissolved oxygen (generally less than 0.5 mg/L) and low or negative ORP values serve as indicators of the presence of reducing conditions. The lower the ORP and DO, the greater the

potential for a reducing and anaerobic environment. At the PTT well (MW-106), ORP remained low and constant (13 mV in October 2021, 14 mV in March 2022, and 16 mV in June 2022) indicative of reducing conditions. In the down gradient well (MW-105), ORP also remained negative (values of -107, -81, and –113 mV, respectively) indicative of reducing conditions. Dissolved oxygen readings have been variable at both wells (less than 0.5 mg/L in October 2021 and March 2022 but greater than 0.5 mg/L in June 2022). However, dissolved oxygen can be difficult to field measure and elevated dissolved oxygen concentrations, especially when other parameters indicate reducing conditions, can be caused by the introduction of air during the sampling process.

The groundwater analytical results for detected biodegradation parameters from June 2022 sampling event are provided in Table 8. Baseline groundwater sampling results from October 2021, immediately following installation of the PTT are also provided in Table 8 for comparison purposes. Laboratory reports are included in Appendix A3.

As noted above, the PTT remediates groundwater utilizing a two-step process. As groundwater flows through the PTT, hydrocarbons and BTEX will partition from the dissolved phase by adsorption to the activated carbon particles. The contaminants are then anaerobically biodegraded through chemical oxidation stimulated by the added bio-stimulating electron acceptors (nitrate and sulfate). The order that petroleum degrading microbes utilize electron acceptors follows with their redox potential in the following order 1) aerobic degradation; 2) denitrification; 3) manganese reduction; 4) iron reduction; 5) sulfate reduction; and 6) methanogenesis.

Relative to the baseline October 2021 monitoring event, the following parameters indicate ongoing biodegradation within the trench between October 2021 and June 2022 as follows:

- Nitrate concentrations decreased from 210,000 µg/L in October 2021 to 4,700 ug/L in June 2022 and sulfate decreased from 2,900,000 µg/L in October 2021 to 210,000 µg/L in June 2022. This reduction in the amended electron acceptor concentration was expected and serves as a positive indicator that biodegradation is occurring via denitrification and sulfate reduction. While nitrate and sulfate concentrations have decreased, concentrations remain elevated indicating that the amended electron acceptor is still available to continue to promote biodegradation.
- The concentration of dissolved iron increased from 36 µg/L to 130 µg/L and the concentrations of dissolved manganese decreased from 1300 µg/L to 890 µg/L. As iron and manganese are reduced, concentrations in groundwater are anticipated to increase, as the reduced forms of these compounds have greater solubility than do the oxidized forms. While slight increases in dissolved iron concentrations were observed, the iron and manganese concentration trends between October 2021 and June 2022 indicate that manganenese and iron reduction are not the current predominant degredation pathways.
- Carbon dioxide increased from 470,000 µg/L to 810,000 µg/L and alkalinity increased from 500 mg/L to 830 mg/L between October 2021 and June 2022. These compounds are byproducts of biodegradation reactions and increases over time serve as positive indicators of ongoing biodegradation.
- Methane concentrations remained relatively low (5.8 µg/L in October 2021 and 62 µg/L in June 2022). Increases in methane concentration are expected when the aquifer reaches methanogenic conditions. Given the remaining low concentrations of methane, it appears the PTT has not reached methanogenic conditions and there likely remains more favorable electron acceptors in the PTT.

4. CONCLUSION

During this reporting period from April 1, through June 30, 2022, the DPE system operated approximately 87% of the available time.

DPE System Performance

Initial mass removal rates indicate that the DPE system in the Truck Rack Area is meeting the AOC-16 IM goals of recovering free phase LNAPL mass and reducing the LNAPL within the vadose and saturated zone soil matrix.

During the reporting period, the DPE system removed approximately 1032 pounds of VOCs in the vapor phase, and 7.3 pounds of VOCs, 1.6 pounds of SVOCs, 16.1 pounds of VPH, and 236.1 pounds of EPH in the liquid phase. Since startup in October 2021, total VOC, SVOC, VPH, and EPH mass removed in the vapor and dissolved phase since DPE system startup in October 2021 and through June 30, 2022, is calculated to be approximately 2,578 pounds, 4.0 pounds, 59 pounds, and 357 pounds, respectively. Also, 6 to 12 inches of LNAPL was observed in the sight glass of the knock-out tank. Total influent vapor VOC concentrations of representative remained high in the reporting period and dilution air continues to be required to maintain the SRCO temperature. As influent vapor concentrations remain high and asymptotic mass recovery has not been observed, continued full-time operation of all eight DPE wells is recommended. Continued operation of the DPE system is expected to further reduce LNAPL mass leading to stabilization of the dissolved phase plume.

During the reporting period DPE system was operated in a manner to control vapor concentrations in the influent process vapor stream so that the influent LEL and SCRO operating temperature could be maintained at a safe operating point. The high vapor concentrations necessitating dilution was expected and indicates that the system is targeting the zone of contamination. As the DPE system continues to operate, vapor influent concentrations have been decreasing and less dilution air has been needed. Over the course of the reporting period, the dilution valves were incrementally closed, the pressure control valve was tightened, and blower capacity was increased. This optimization process will continue going forward.

The SRCO temperature remained greater than 650°F indicating at least 99% destruction efficiency of the extracted petroleum vapors prior to being discharged to the atmosphere.

During operation, maintenance activities will be performed and documented to ensure optimal performance of the system. DPE system optimization will be performed based on DPE well vapor concentrations, mass removal, and liquid extraction rates. As influent vapor concentrations decrease, it is recommended that the volume of dilution air be further reduced, thereby increasing the overall applied vacuum and recovery of LNAPL mass.

LNAPL Trench Performance

The LNAPL trench installed upgradient of the PTT is successfully recovering and preventing the migration of LNAPL into the PTT.

For more effective LNAPL recovery, CMR deployed passive skimmer in the LNAPL recovery wells with measurable LNAPL in February 2022. An estimated volume of 20 gallons of LNAPL was recovered via passive skimmers during the reporting period. Since installation, an estimated volume of 91.5 gallons

of LNAPL have been recovered from the LNAPl recovery trench. LNAPL collection and monitoring at the LNAPL trench will continue to maximize LNAPL recovery upgradient of the PTT.

The LNAPL recovery trench will be extended 25 feet to the west and six additional LNAPL recovery wells will be installed within the trench extension to protect the western half of the PTT from potential LNAPL infiltration. The LNAPL trench extension will be completed in the third quarter of 2022.

PTT Performance

Analytical results from groundwater samples collected from monitoring wells located up-gradient, down-gradient and from within the PTT indicate that the concentration of dissolved phase petroleum COCs decreased across the PTT initially meeting the goal of mitigating the dissolved phase groundwater impacts from migrating from the Truck Rack to the Missouri River. COCs continue to remain undetected at PTT well MW-106. Initial indications show decreasing concentrations at both up-gradient monitoring well MW-41S and down-gradient compliance monitoring well MW-105. Given the low hydraulic conductivities in the vicinity of the PTT, reductions in contaminant concentrations at the performance monitoring well MW-105 location are expected to occur over time as a result of the PTT installation.

OM&M of the interim measures will continue to document the performance of the IM's and will include periodic performance reporting to the MDEQ to ensure the IM objectives are being met. Further investigation/evaluation of the petroleum impacts at the AOC-16 Truck Rack Area will be completed as part of the upcoming RCRA RFI activities. The results from the RFI and ongoing IM performance monitoring will be evaluated to determine if operational modifications are necessary or if a request to the MDEQ to cease recovery and place the DPE system in standby mode is warranted.

5. REFERENCES

CMR. 2018. Quality Assurance Project Plan (QAPP), Calumet Montana Refinery. November.

CMR. 2021a. 2020/2021 Annual Groundwater Sampling Summary Report. June.

CMR. 2021b. AOC-16 Interim Measure Operations, Maintenance, and Monitoring Plan. October.

CMR. 2021c. AOC-16 Interim Measure Self-Recuperative Catalytic Oxidizer Operations, Maintenance, and Monitoring Plan. October.

CMR. 2022a. AOC-16 IM Construction Documentation Report. March.

CMR. 2022b. AOC-16 Interim Measures Quarterly Monitoring Report No. 1 (January 1, 2022 to March 31, 2022). July 21.

MDEQ. 2016. Immediate Interim Measures Petroleum Release Near CMR's Loading Rack. October 11.

FIGURES

Figure 1: AOC-16 Site Layout

Figure 2A-B: DPE system Influent Vapor PID Readings

Figure 3: DPE System Influent Vapor Concentration Trend

Figure 4: Vapor and Liquid Effluent Mass Removal

Figure 5: Groundwater Contours

Figure 6: Sub-surface Vacuum Readings

Figure 7: DPE System Operational Parameters

Figure 8: SRCO Operational Parameters

Figure 9A-C: Groundwater Concentration Trend Graphs

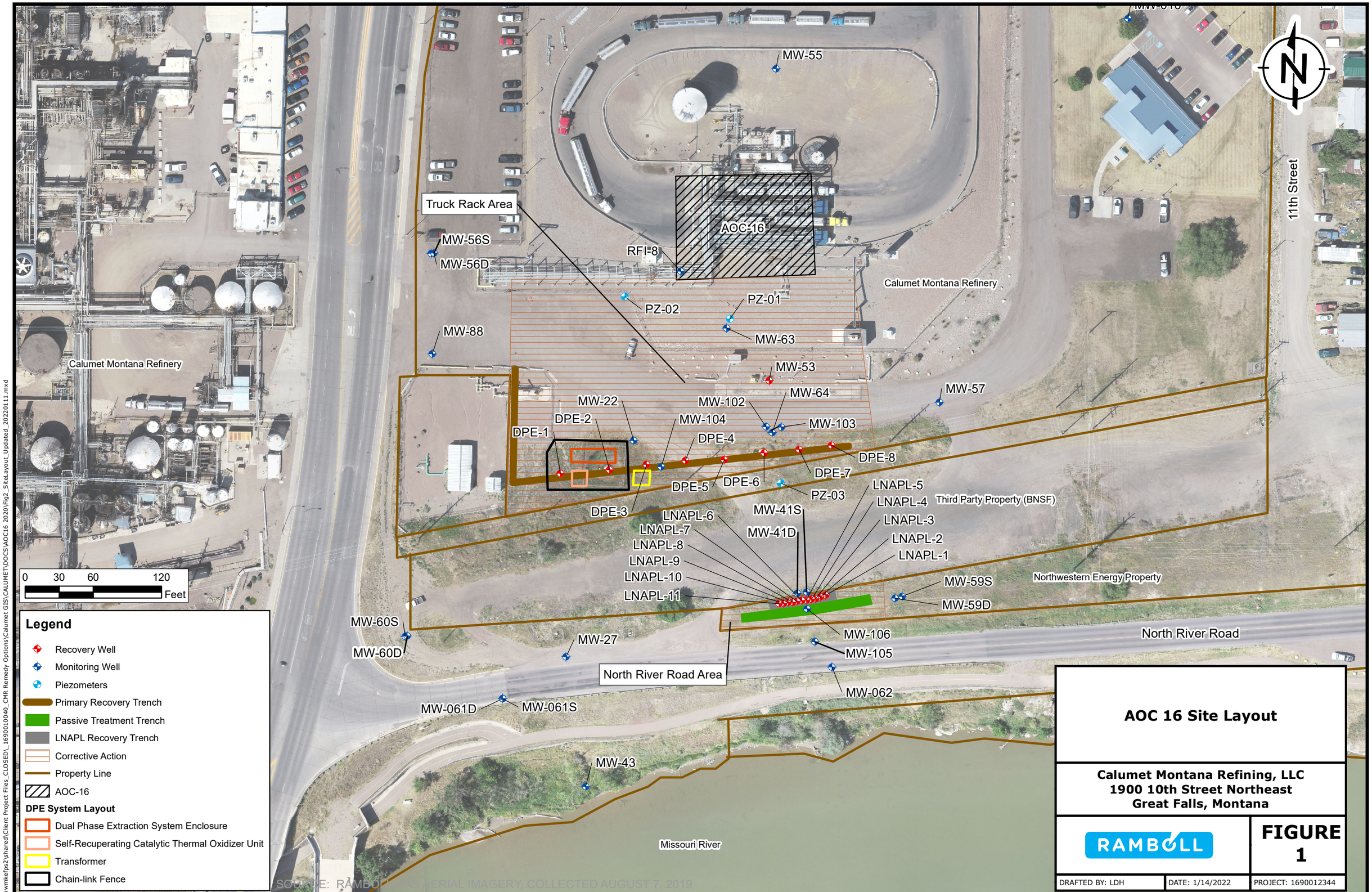

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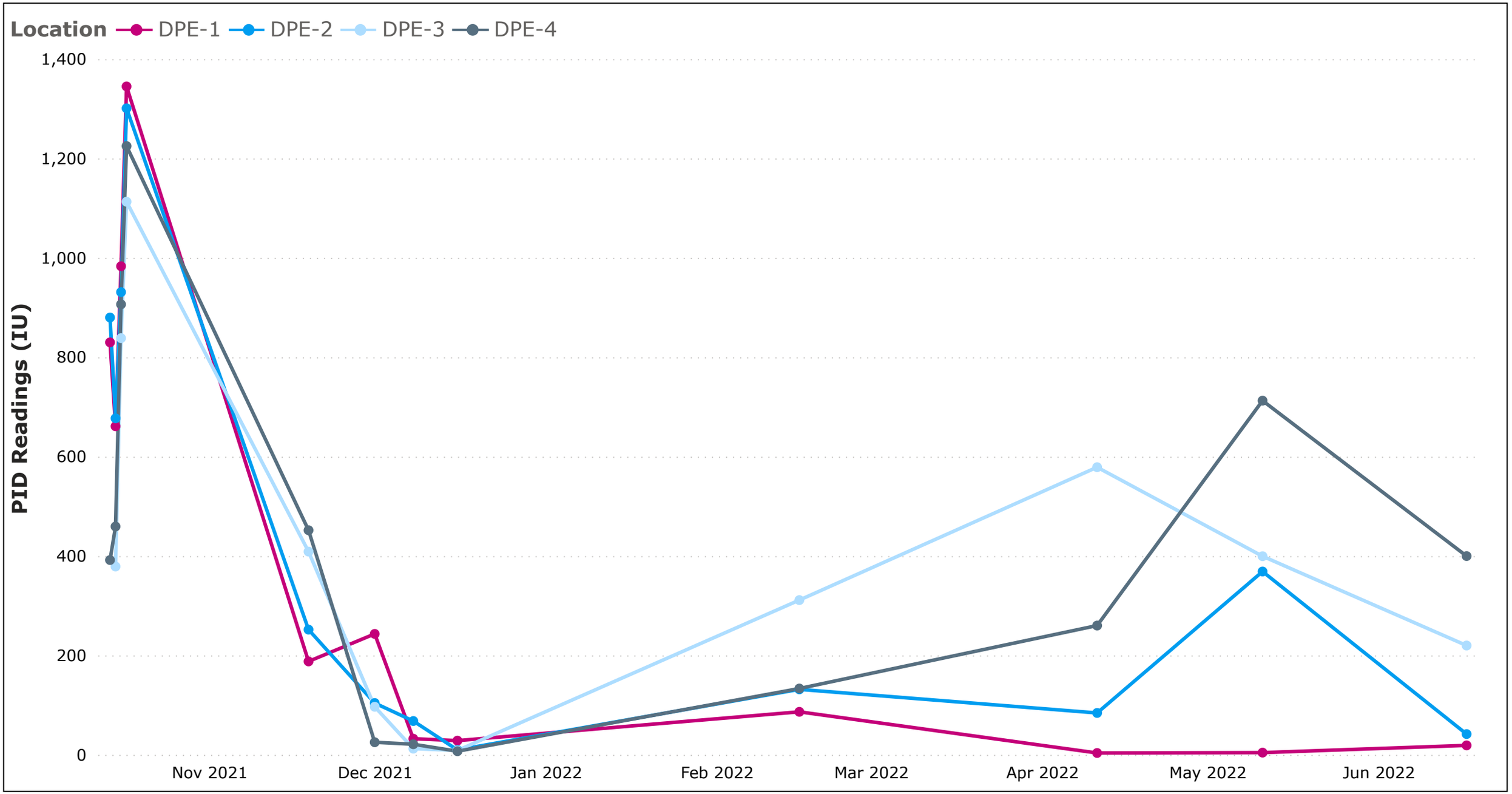
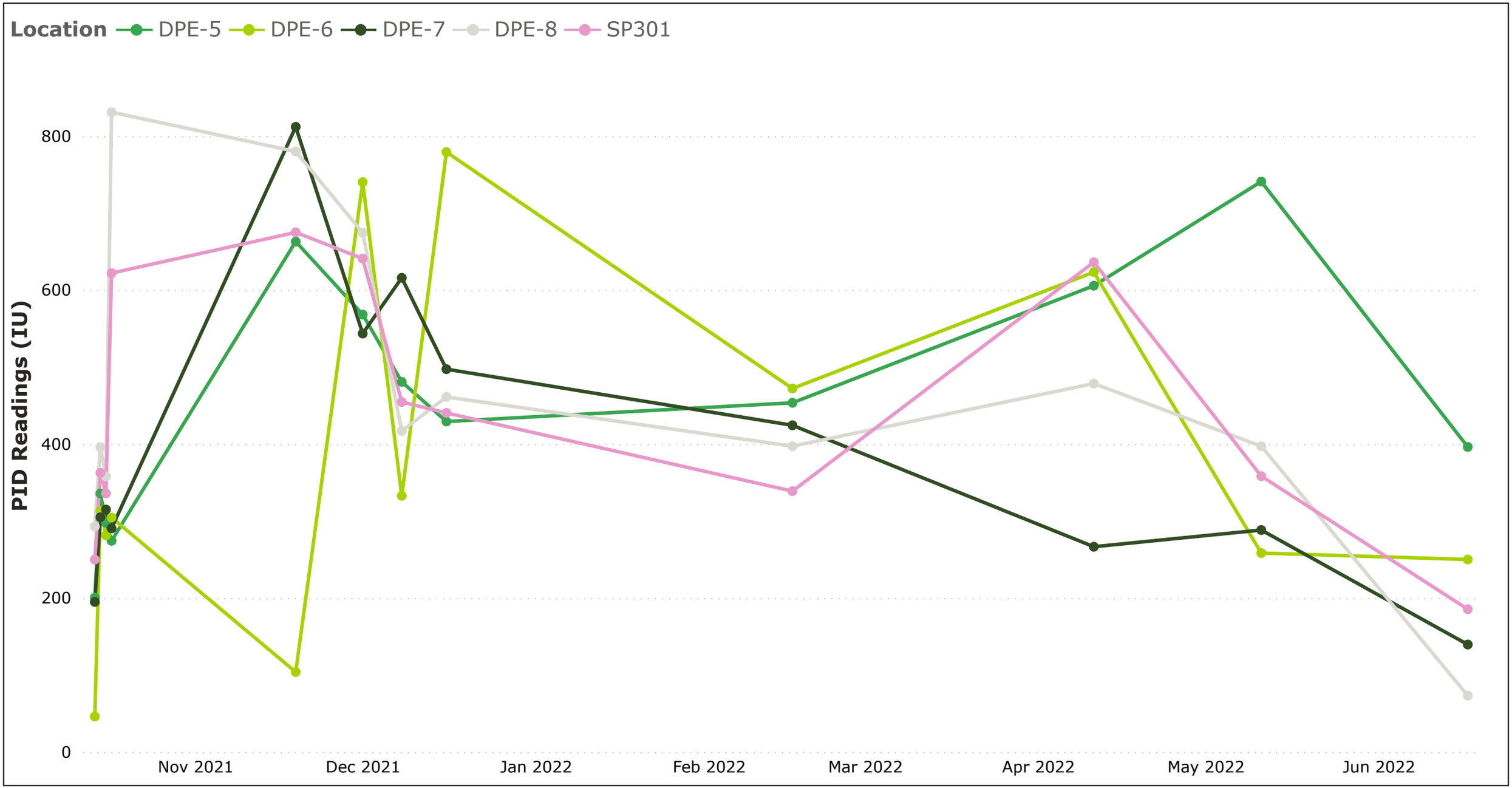
Figure 2A: DPE system Influent Vapor PID Readings (DPE-1 through DPE-4)



Notes:
IU: Instrument Units
PID: photoionization detector

Figure 2B: DPE system Influent Vapor PID Readings (DPE-5 through DPE-8 and SP-301)



Notes:
IU: Instrument Units
PID: photoionization detector

Figure 3: DPE System Influent Vapor Concentration Trend

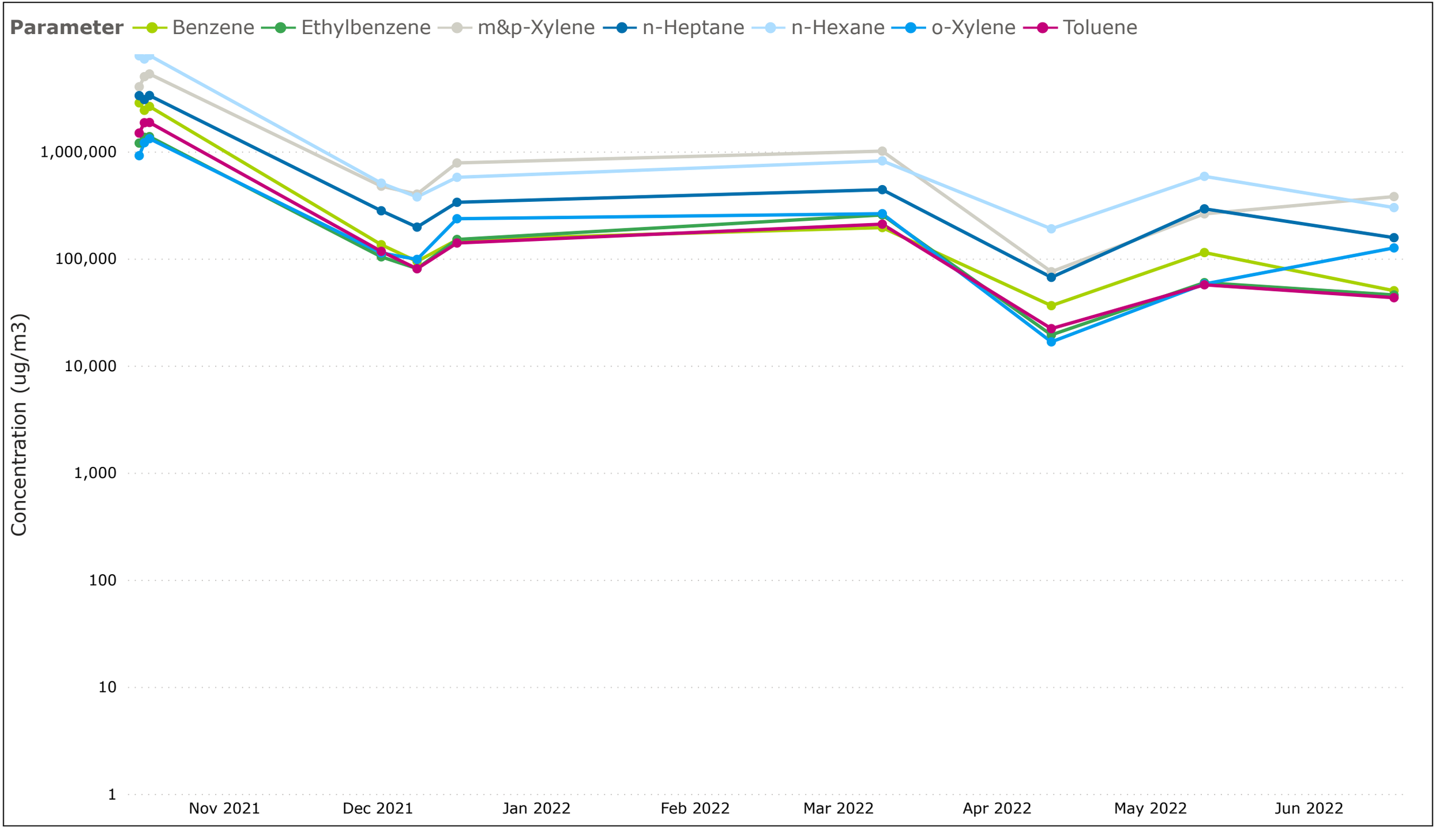
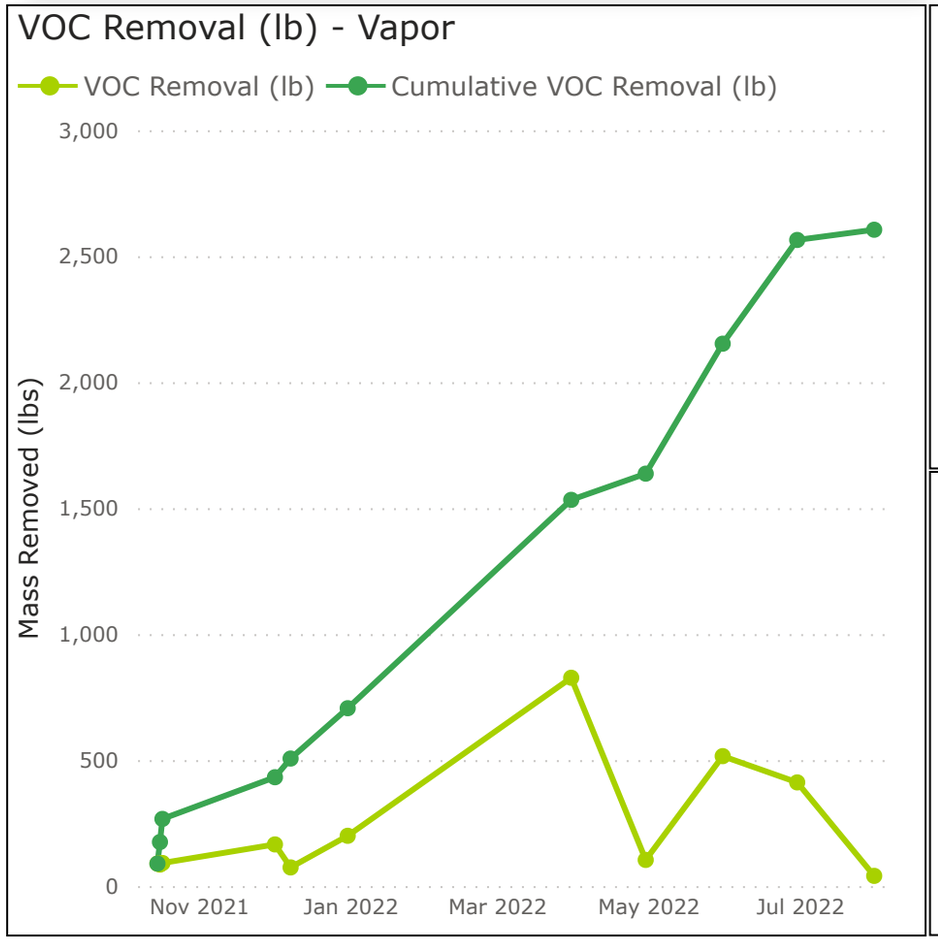
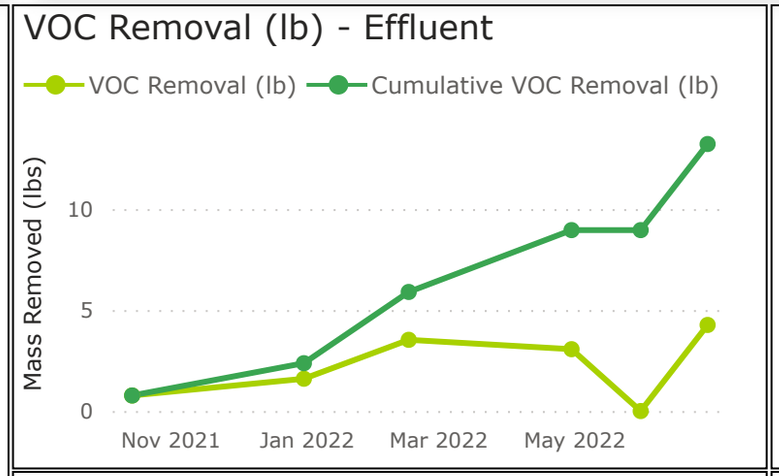


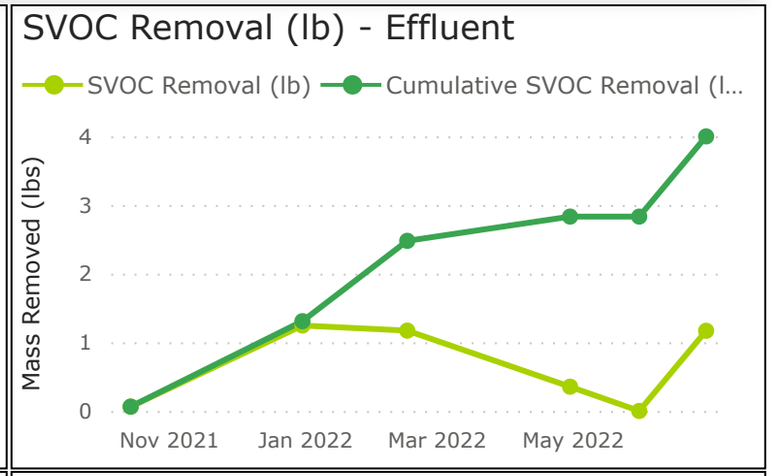
Figure 4: Vapor and Liquid Effluent Mass Removal

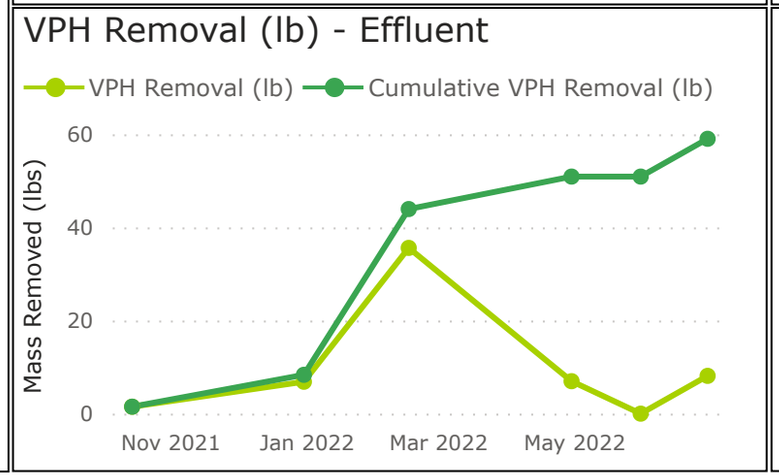
Vapor Mass Removal

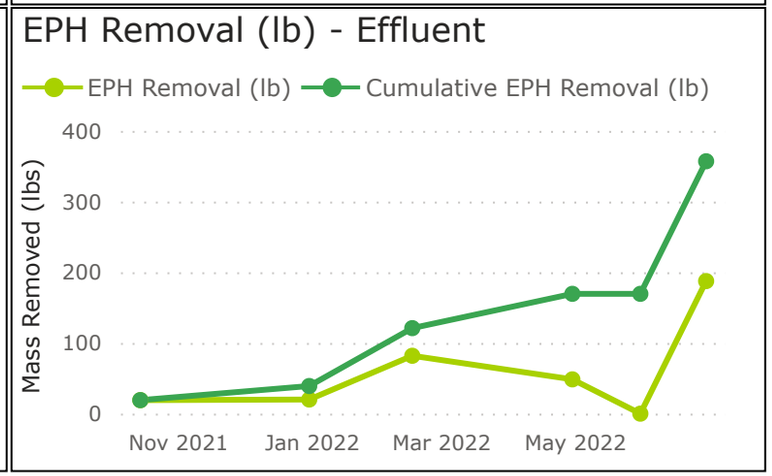


Liquid Effluent Mass Removal





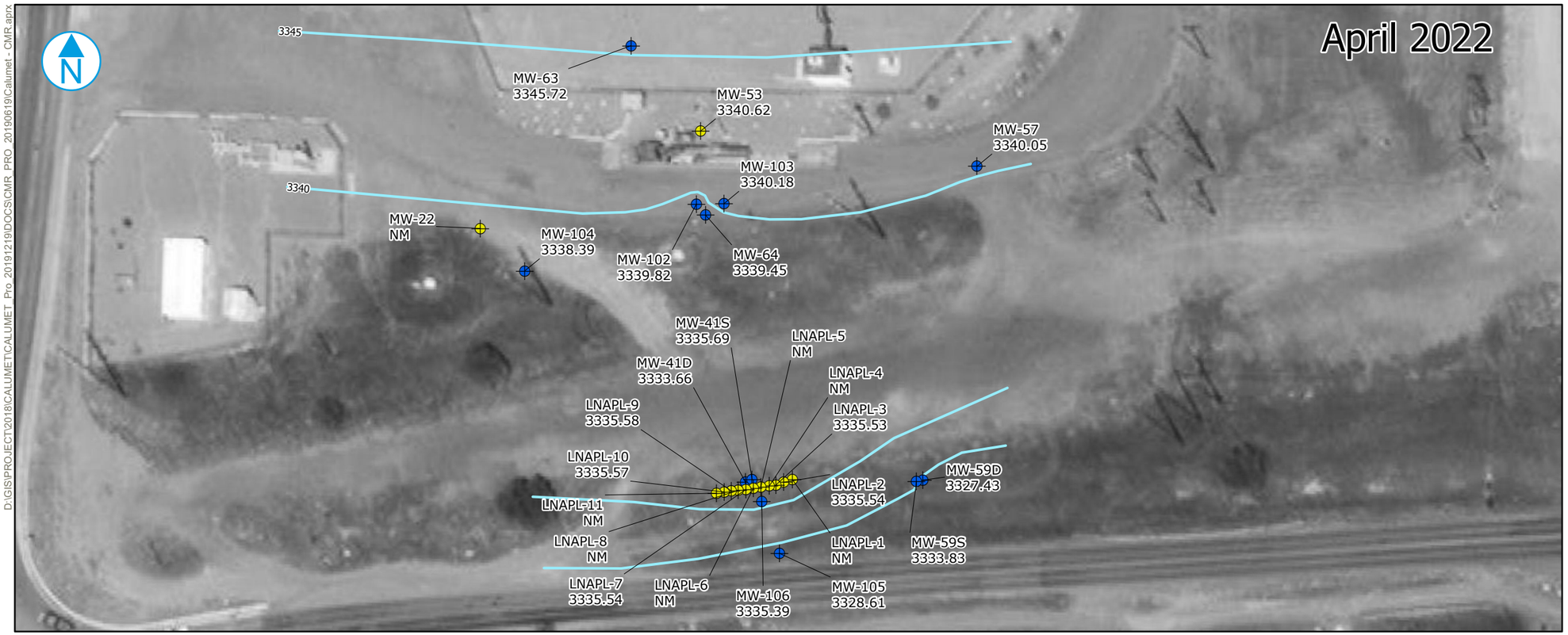


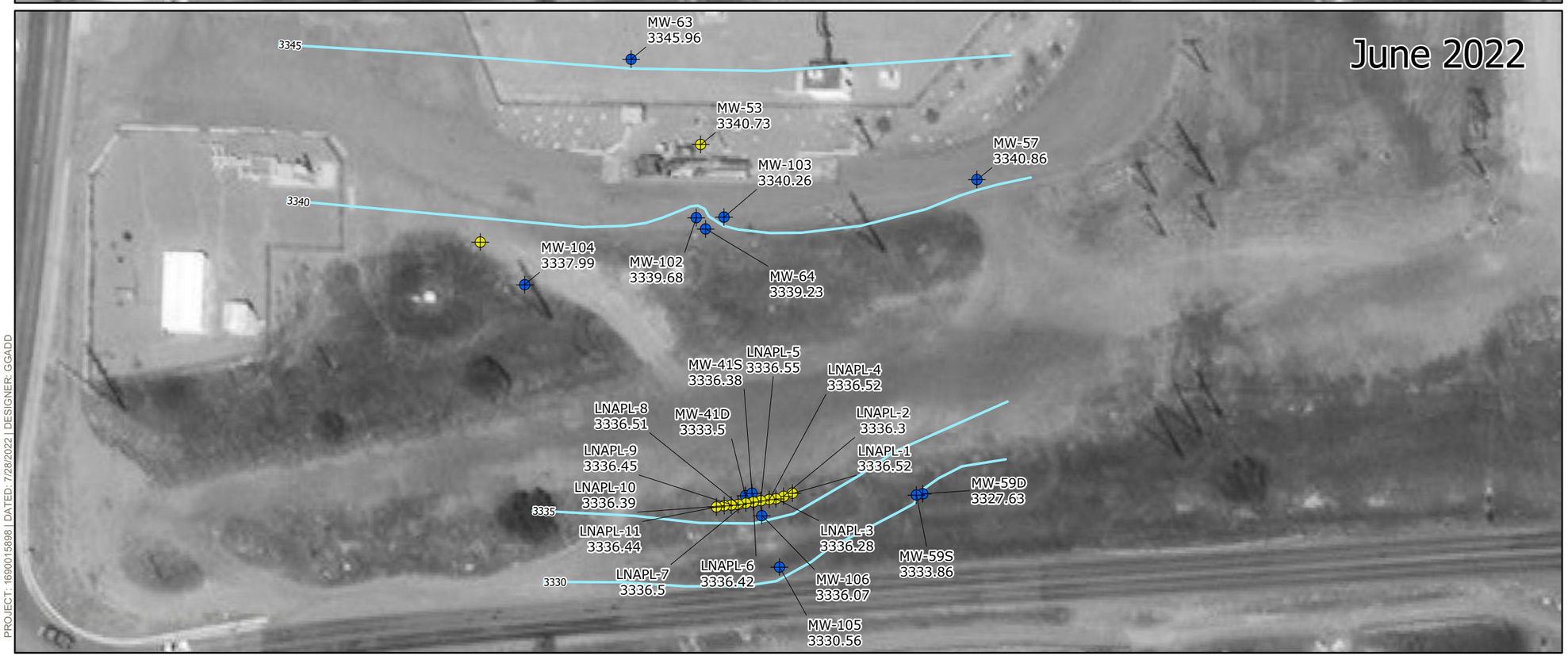


Total VOCs Removed (lbs)	Total SVOCs Removed (lbs)	Total VPHs Removed (lbs)	Total EPHs Removed (lbs)
2,618	4.0	59	357

Notes:

- Vapor samples were collected from SP-301. The combination of vapor flow rates, system runtime, and vapor VOC concentrations were used to calculate the mass of contaminants removed.
- Liquid effluent samples were collected from the discharge side of the transfer pump (SP-200). The combination of fluid recoveries and contaminant concentrations were used to calculate the mass of contaminants removed.





Monitoring Well
Recovery Well
Groundwater Contours (5 ft)

0 75 150 Feet

Notes
1) April 2022 measurements collected on April 11, 2022
2) June 2022 measurements collected on June 5 and 8, 2022
3) The shallow most screen interval at well cluster MW-41S/D was used to generate the potentiometric surface contour map (i.e. MW-41S)

GROUNDWATER CONTOURS - APRIL AND JUNE 2022

Calumet Montana Refining, LLC
1900 10th Street Northeast
Great Falls, Montana

FIGURE 5

RAMBOLL US CORPORATION
A RAMBOLL COMPANY

RAMBOLL

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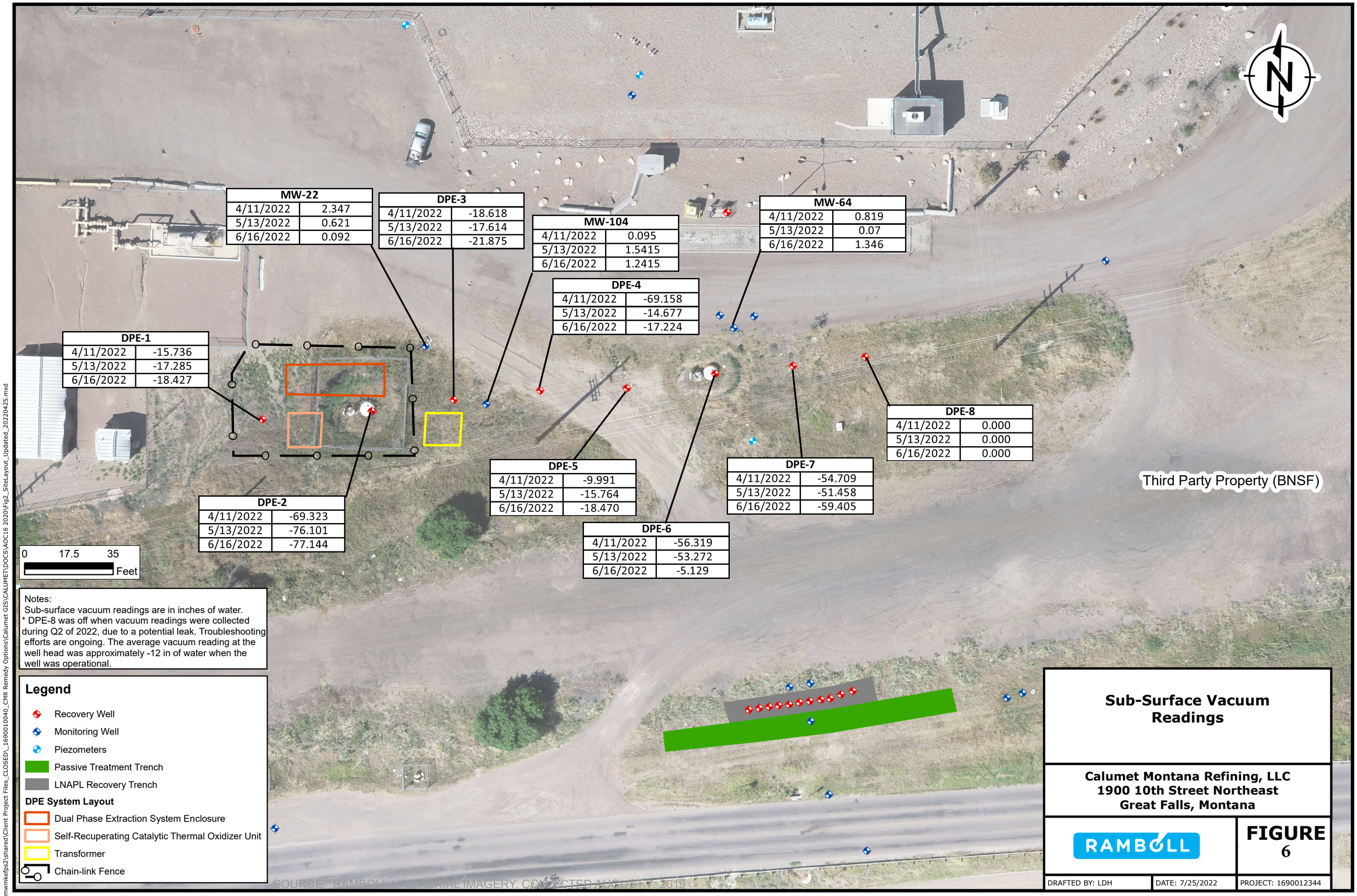
PROJECT: 1690015898 | DATED: 7/28/2022 | DESIGNER: GGADD



MW-22	
4/11/2022	2.347
5/13/2022	0.621
6/16/2022	0.092

DPE-3	
4/11/2022	-18.618
5/13/2022	-17.614
6/16/2022	-21.875

MW-104	
4/11/2022	0.095
5/13/2022	1.5415
6/16/2022	1.2415

MW-64	
4/11/2022	0.819
5/13/2022	0.07
6/16/2022	1.346

DPE-4	
4/11/2022	-69.158
5/13/2022	-14.677
6/16/2022	-17.224

DPE-1	
4/11/2022	-15.736
5/13/2022	-17.285
6/16/2022	-18.427

DPE-8	
4/11/2022	0.000
5/13/2022	0.000
6/16/2022	0.000

DPE-5	
4/11/2022	-9.991
5/13/2022	-15.764
6/16/2022	-18.470

DPE-7	
4/11/2022	-54.709
5/13/2022	-51.458
6/16/2022	-59.405

DPE-2	
4/11/2022	-69.323
5/13/2022	-76.101
6/16/2022	-77.144

DPE-6	
4/11/2022	-56.319
5/13/2022	-53.272
6/16/2022	-5.129

Notes:
Sub-surface vacuum readings are in inches of water.
* DPE-8 was off when vacuum readings were collected during Q2 of 2022, due to a potential leak. Troubleshooting efforts are ongoing. The average vacuum reading at the well head was approximately -12 in of water when the well was operational.

Legend

- Recovery Well
- Monitoring Well
- Piezometers
- Passive Treatment Trench
- LNAPL Recovery Trench

DPE System Layout

- Dual Phase Extraction System Enclosure
- Self-Recuperating Catalytic Thermal Oxidizer Unit
- Transformer
- Chain-link Fence

Sub-Surface Vacuum Readings

Calumet Montana Refining, LLC
1900 10th Street Northeast
Great Falls, Montana

RAMBOLL

FIGURE 6

DRAFTED BY: LDH | DATE: 7/25/2022 | PROJECT: 1690012344

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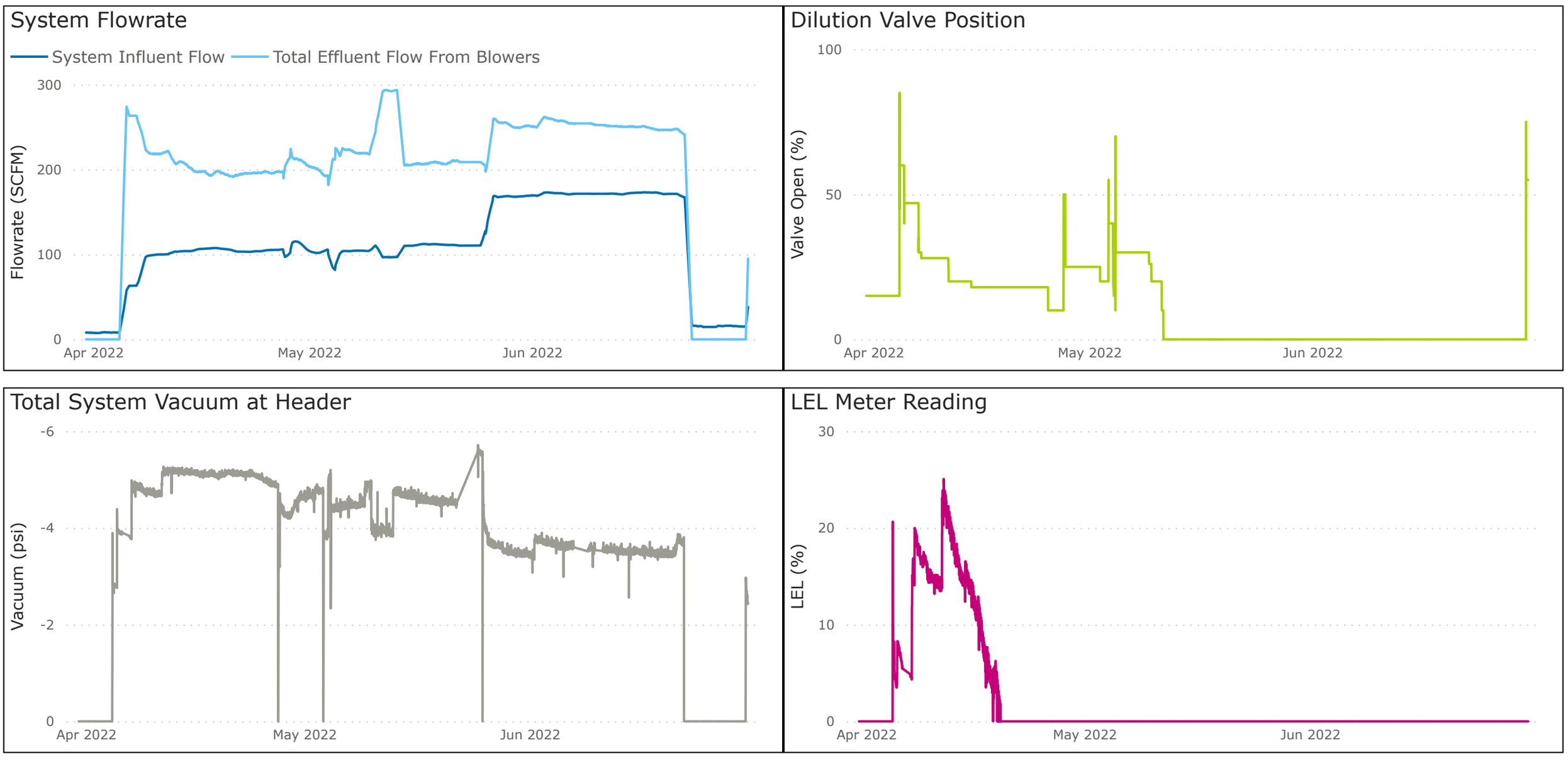
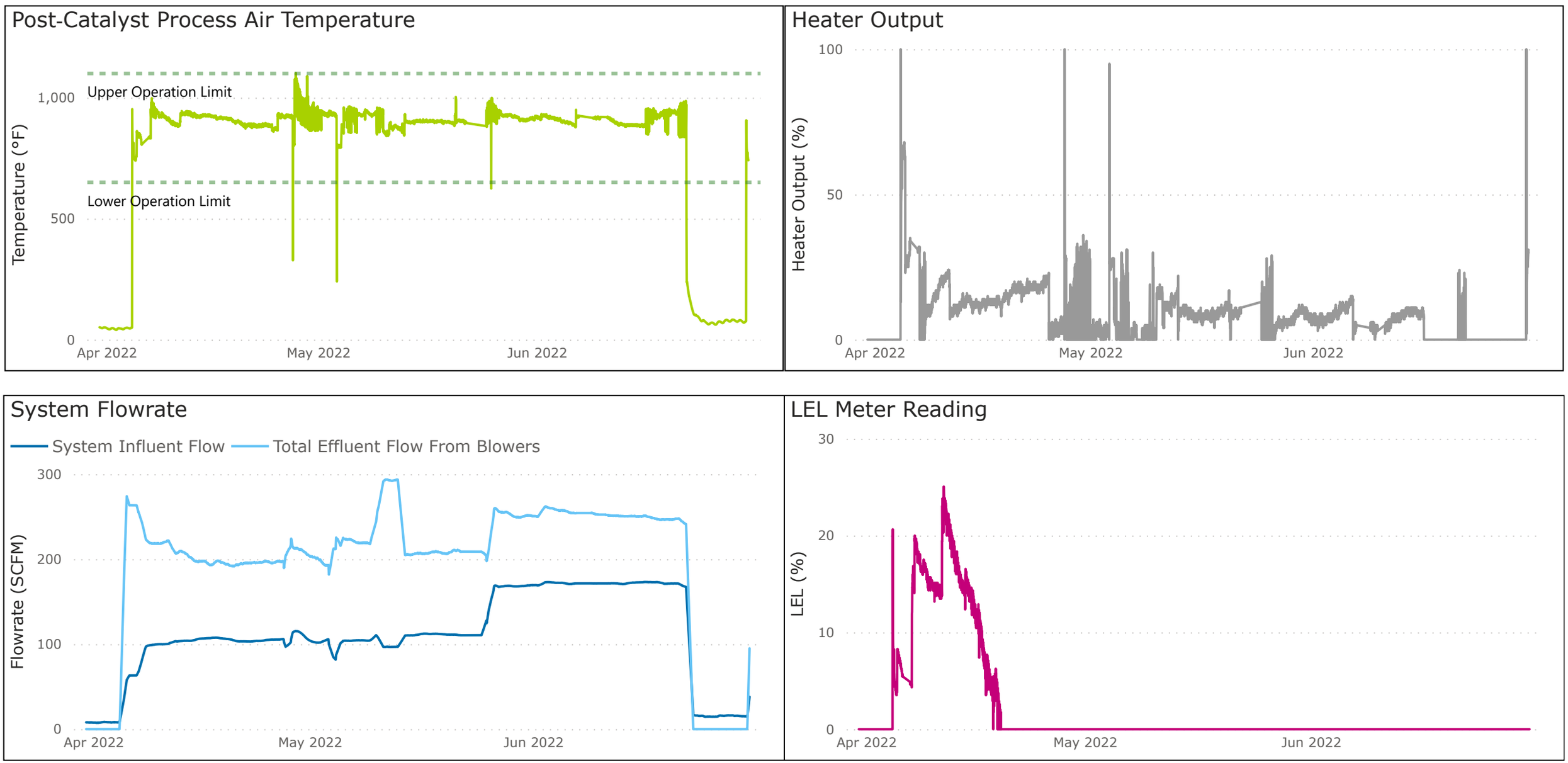
Figure 7: DPE System Operational Parameters



Notes:

- System flow is from FT-23401 (prior to dilution). Total Flow from blowers is based on readings from FT-23405 and FT-2306.
- Dilution valve position represents FV23904 valve position (% open).
- Total System Vacuum is measured at PT23623.
- LEL meter readings are from AT23904 LEL meter. LEL meter readings are not available from 1/1/2022 - 1/20/2022 due to LEL meter malfunction.

Figure 8: SRCO Operational Parameters



Notes:

- Post-catalyst process air temperature is based on TT-23702 reading.
- System flow is from FT-23401 (prior to dilution). Total Flow from blowers is based on readings from FT-23405 and FT-2306.
- Heater Output is based on H-2303 and H-2304 readings.
- Heater Output represents % energy supplied by CATOX to maintain catalyst temperature.
- LEL meter readings are from AT23904 LEL meter. LEL meter readings are not available from 11/14/2021 - 1/20/2022 due to LEL meter malfunction.

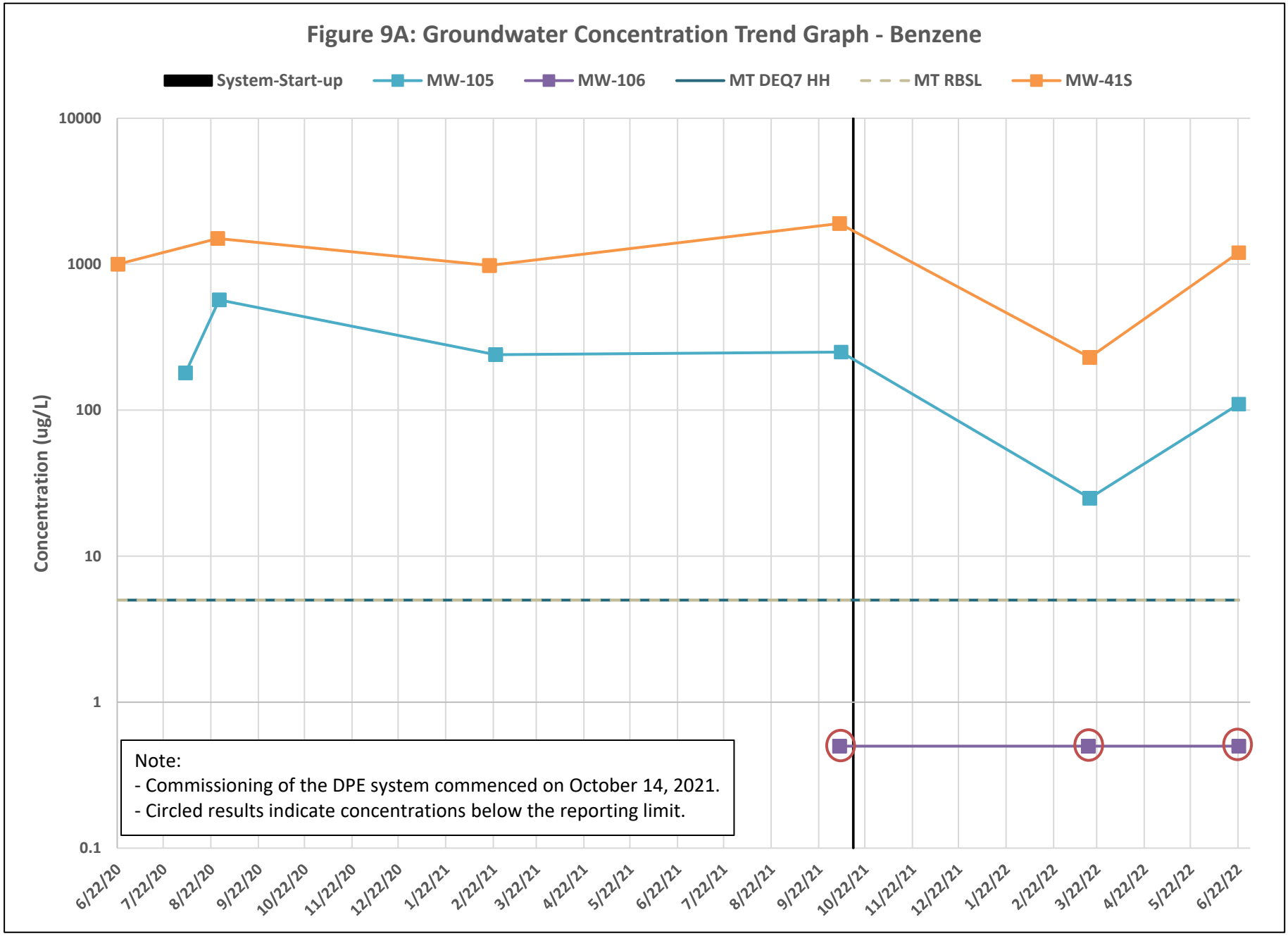


Figure 9A: Groundwater Concentration Trend Graph - Benzene
System-Start-up
MW-105
MW-106
MT DEQ7 HH
MT RBSL
MW-41S
Concentration (ug/L)
10000
1000
100
10
1
0.1
6/22/20
7/22/20
8/22/20
9/22/20
10/22/20
11/22/20
12/22/20
1/22/21
2/22/21
3/22/21
4/22/21
5/22/21
6/22/21
7/22/21
8/22/21
9/22/21
10/22/21
11/22/21
12/22/21
1/22/22
2/22/22
3/22/22
4/22/22
5/22/22
6/22/22
Note:
- Commissioning of the DPE system commenced on October 14, 2021.
- Circled results indicate concentrations below the reporting limit.

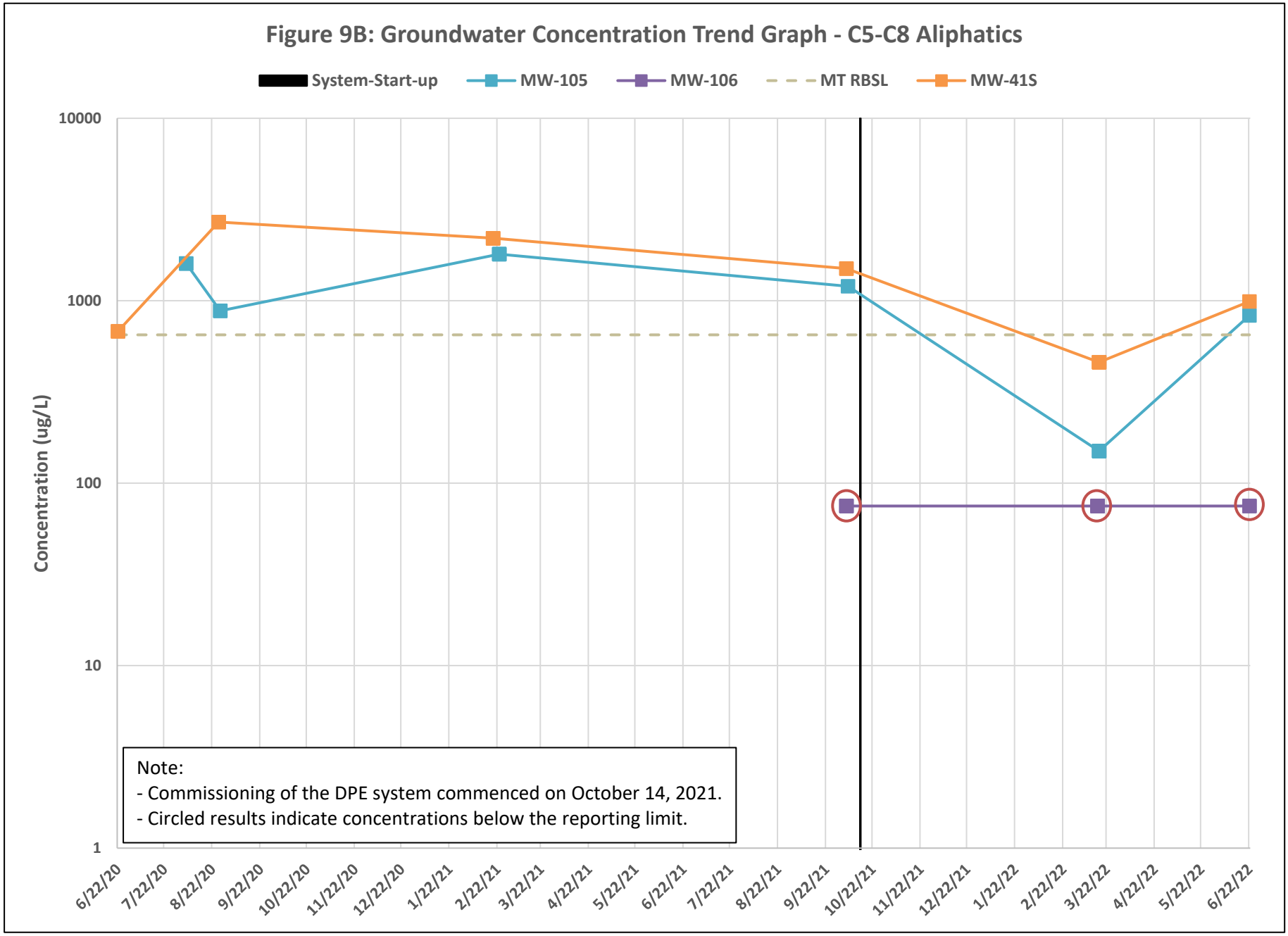


Figure 9B: Groundwater Concentration Trend Graph - C5-C8 Aliphatics
System-Start-up
MW-105
MW-106
MT RBSL
MW-41S
Concentration (ug/L)
10000
1000
100
10
1
6/22/20
7/22/20
8/22/20
9/22/20
10/22/20
11/22/20
12/22/20
1/22/21
2/22/21
3/22/21
4/22/21
5/22/21
6/22/21
7/22/21
8/22/21
9/22/21
10/22/21
11/22/21
12/22/21
1/22/22
2/22/22
3/22/22
4/22/22
5/22/22
6/22/22
Note:
- Commissioning of the DPE system commenced on October 14, 2021.
- Circled results indicate concentrations below the reporting limit.

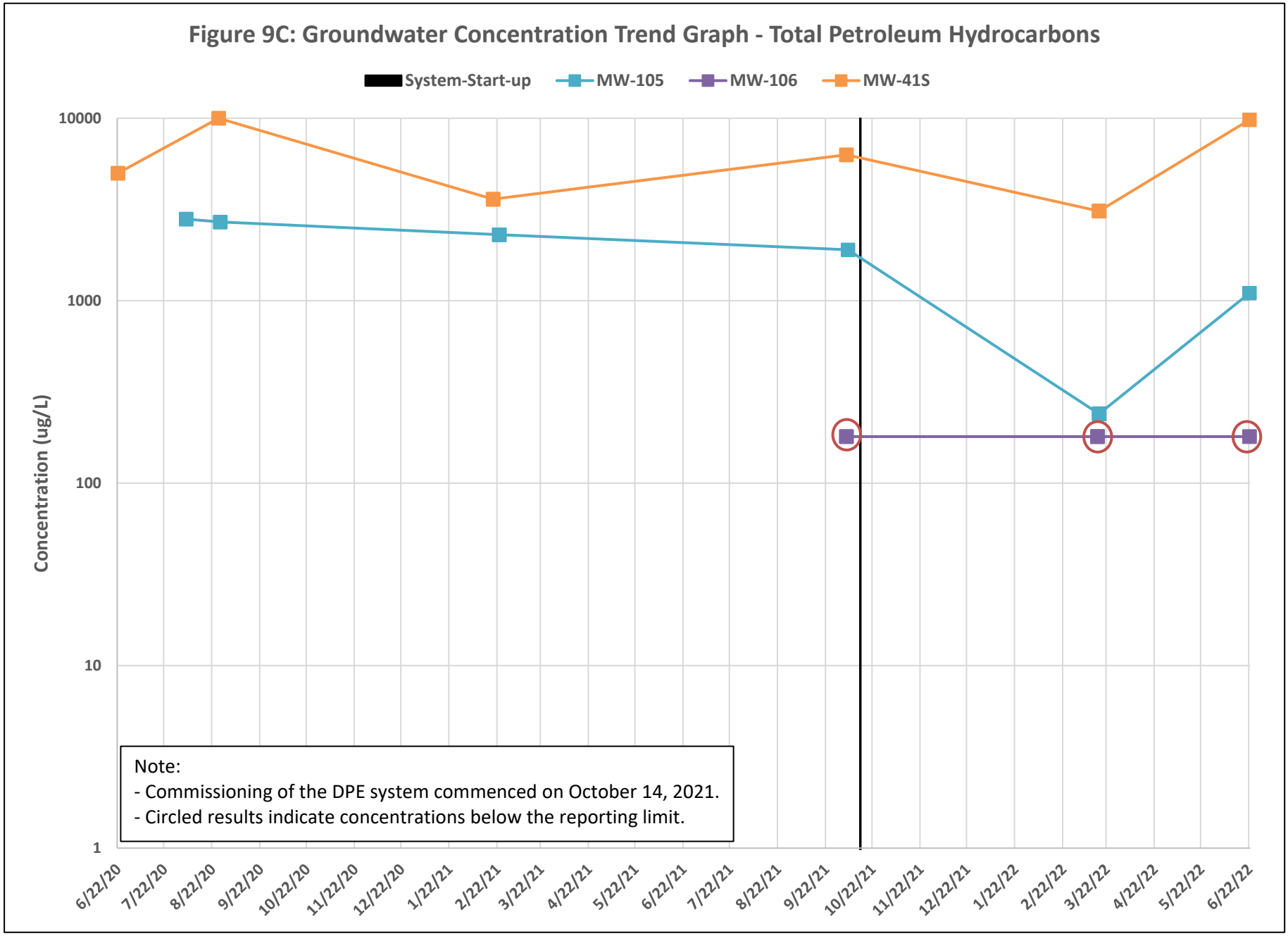


Figure 9C: Groundwater Concentration Trend Graph - Total Petroleum Hydrocarbons
System-Start-up
MW-105
MW-106
MW-41S
Concentration (ug/L)
10000
1000
100
10
1
6/22/20
7/22/20
8/22/20
9/22/20
10/22/20
11/22/20
12/22/20
1/22/21
2/22/21
3/22/21
4/22/21
5/22/21
6/22/21
7/22/21
8/22/21
9/22/21
10/22/21
11/22/21
12/22/21
1/22/22
2/22/22
3/22/22
4/22/22
5/22/22
6/22/22
Note:
- Commissioning of the DPE system commenced on October 14, 2021.
- Circled results indicate concentrations below the reporting limit.

TABLES

Table 1: DPE System Operational Data

Table 2: Summary of Analytical Results and Contaminant Mass Removal – Vapor

Table 3: Summary of Analytical Results and Contaminant Mass Removal – Liquid

Table 4: Fluid Level Measurements at AOC-16 Area

Table 5: Fluid Measurements at LNAPL Wells

Table 6: Summary of Groundwater Analytical Results - Petroleum COCs

Table 7: Summary of Groundwater Analytical Results – Field Parameters

Table 8: Summary of Groundwater Analytical Results - Biodegradation Indicators

Table 1
DPE System Operational Data
Calumet Montana Refining, LLC - Great Falls, Montana

Operational Period	Percent Operational[a]	System Flowrate[b] (SCFM)	Total System Vacuum at Header[c] (in-Hg)	Liquid Extraction Rate (gpm)	Total Fluids Discharged During the Operational Period (gallons)	Total Water Discharged Since Start-up[d] (gallons)	Average Post-Catalyst Process Air Temperature When System is Operational[e] (°F)
Design Values	**--**	**200**	**17**	**0.25 to 21**	**--**	**--**	**>650**
April 1 - 30, 2022	88%	102	9.8	0.55	21,772	104,558	907
May 1 - 31, 2022	100%	121	8.8	0.73	29,633		910
June 1 - 30, 2022	72%	170	7.2	0.57	18,474		910
April 1, 2022 - June 30, 2022	**87%**	**131**	**8.6**	**0.62**	**69,879**		**909**

Notes:
a. Percent operational is calculated using the system run-time hours (as logged by the system PLC) divided by the number of available operational hours in the time period.
b. System flow is from FT-23401 (prior to dilution).
c. Total System Vacuum is measured at PT23623.
d. Commissioning and start-up testing of the DPE system commenced on October 14, 2021.
e. Post-catalyst process air temperature is based on TT-23702 reading.

Abbreviations:
in-Hg = inches of mercury
gpm = gallons per minute
scfm = standard cubic feet per minute

Table 2
Summary of Analytical Results and Contaminant Mass Removal - Vapor
Calumet Montana Refining, LLC - Great Falls, Montana

	Location	SP301		SP301		SP301	
	Ramboll Sample ID	CMR-SP301-211015		CMR-SP301-211016		CMR-SP301-211017	
	Sample Date	10/15/2021		10/16/2021		10/17/2021	
	Blower Flow (scfm)	41		41		41	
	Period Operational Time (hrs)	26		24		24	
VOCs	CAS No.	Result (ug/m^3)	Mass (lb)	Result (ug/m^3)	Mass (lb)	Result (ug/m^3)	Mass (lb)
1,1,1-Trichloroethane	71-55-6	18,100 U	0.00	18,600 U	0.00	19,600 U	0.00
1,1,2,2-Tetrachloroethane	79-34-5	22,800 U	0.00	23,400 U	0.00	24,700 U	0.00
1,1,2-Trichloroethane	79-00-5	9,040 U	0.00	9,290 U	0.00	9,800 U	0.00
1,1,2-Trichlorotrifluoroethane	76-13-1	25,400 U	0.00	26,100 U	0.00	27,600 U	0.00
1,1-Dichloroethane	75-34-3	13,400 U	0.00	13,800 U	0.00	14,500 U	0.00
1,1-Dichloroethene	75-35-4	13,100 U	0.00	13,500 U	0.00	14,200 U	0.00
1,2,4-Trichlorobenzene	120-82-1	123,000 U	0.00	126,000 U	0.00	133,000 U	0.00
1,2,4-Trimethylbenzene	95-63-6	340,000	1.36	471,000	1.73	562,000	2.07
1,2-Dibromoethane (EDB)	106-93-4	12,700 U	0.00	13,100 U	0.00	13,800 U	0.00
1,2-Dichlorobenzene	95-50-1	49,800 U	0.00	51,200 U	0.00	54,100 U	0.00
1,2-Dichloroethane	107-06-2	13,400 U	0.00	13,800 U	0.00	14,500 U	0.00
1,2-Dichloropropane	78-87-5	15,300 U	0.00	15,700 U	0.00	16,600 U	0.00
1,3,5-Trimethylbenzene	108-67-8	179,000	0.71	225,000	0.83	272,000	1.00
1,3-Butadiene	106-99-0	7,330 U	0.00	7,530 U	0.00	7,950 U	0.00
1,3-Dichlorobenzene	541-73-1	49,800 U	0.00	51,200 U	0.00	54,100 U	0.00
1,4-Dichlorobenzene	106-46-7	49,800 U	0.00	51,200 U	0.00	54,100 U	0.00
2-Butanone (MEK)	78-93-3	48,800 U	0.00	50,200 U	0.00	53,000 U	0.00
2-Hexanone	591-78-6	67,700 U	0.00	69,600 U	0.00	73,500 U	0.00
2-Propanol	67-63-0	40,700 U	0.00	41,900 U	0.00	44,200 U	0.00
4-Ethyltoluene	622-96-8	171,000	0.68	222,000	0.82	257,000	0.95
4-Methyl-2-pentanone (MIBK)	108-10-1	88,300	0.35	81,400	0.30	84,900	0.31
Acetone	67-64-1	98,300 U	0.00	101,000 U	0.00	107,000 U	0.00
Benzene	71-43-2	2,850,000 E	11.36	2,430,000 E	8.94	2,640,000 E	9.71
Benzyl chloride	100-44-7	42,800 U	0.00	44,000 U	0.00	46,500 U	0.00
Bromodichloromethane	75-27-4	22,100 U	0.00	22,800 U	0.00	24,000 U	0.00
Bromoform	75-25-2	85,500 U	0.00	87,900 U	0.00	92,700 U	0.00
Bromomethane	74-83-9	12,800 U	0.00	13,200 U	0.00	13,900 U	0.00
Carbon disulfide	75-15-0	10,300 U	0.00	10,600 U	0.00	11,200 U	0.00
Carbon tetrachloride	56-23-5	20,800 U	0.00	21,400 U	0.00	22,600 U	0.00
Chlorobenzene	108-90-7	15,200 U	0.00	15,700 U	0.00	16,500 U	0.00
Chloroethane	75-00-3	8,730 U	0.00	8,970 U	0.00	9,470 U	0.00
Chloroform	67-66-3	8,080 U	0.00	8,300 U	0.00	8,760 U	0.00
Chloromethane	74-87-3	6,840 U	0.00	7,030 U	0.00	7,420 U	0.00
cis-1,2-Dichloroethene	156-59-2	13,100 U	0.00	13,500 U	0.00	14,200 U	0.00
cis-1,3-Dichloropropene	10061-01-5	37,600 U	0.00	38,700 U	0.00	40,800 U	0.00
Cyclohexane	110-82-7	28,500 U	0.00	29,300 U	0.00	30,900 U	0.00
Dibromochloromethane	124-48-1	28,200 U	0.00	29,000 U	0.00	30,600 U	0.00
Dichlorodifluoromethane	75-71-8	16,400 U	0.00	16,900 U	0.00	17,800 U	0.00
Dichlorotetrafluoroethane	76-14-2	23,100 U	0.00	23,800 U	0.00	25,100 U	0.00
Ethanol	64-17-5	31,300 U	0.00	32,100 U	0.00	33,900 U	0.00
Ethyl acetate	141-78-6	11,900 U	0.00	12,300 U	0.00	12,900 U	0.00
Ethylbenzene	100-41-4	1,200,000	4.78	1,360,000	5.00	1,380,000	5.08
Hexachloro-1,3-butadiene	87-68-3	88,200 U	0.00	90,700 U	0.00	95,700 U	0.00
m&p-Xylene	179601-23-1	4,030,000	16.06	5,010,000	18.43	5,310,000	19.54
Methylene Chloride	75-09-2	57,500 U	0.00	59,100 U	0.00	62,400 U	0.00
Methyl-tert-butyl ether	1634-04-4	59,600 U	0.00	61,300 U	0.00	64,700 U	0.00
Naphthalene	91-20-3	43,300 U	0.00	44,500 U	0.00	47,000 U	0.00
n-Heptane	142-82-5	3,330,000 E	13.27	3,060,000 E	11.26	3,340,000 E	12.29
n-Hexane	110-54-3	7,840,000 E	31.25	7,320,000 E	26.93	7,900,000 E	29.07
o-Xylene	95-47-6	916,000	3.65	1,210,000	4.45	1,320,000	4.86
Propylene	115-07-1	14,200 U	0.00	14,600 U	0.00	15,500 U	0.00
Styrene	100-42-5	14,100 U	0.00	14,500 U	0.00	15,300 U	0.00
Tetrachloroethene	127-18-4	11,200 U	0.00	11,500 U	0.00	12,200 U	0.00
Tetrahydrofuran	109-99-9	9,770 U	0.00	10,000 U	0.00	10,600 U	0.00
Toluene	108-88-3	1,490,000	5.94	1,860,000	6.84	1,870,000	6.88
trans-1,2-Dichloroethene	156-60-5	13,100 U	0.00	13,500 U	0.00	14,200 U	0.00
trans-1,3-Dichloropropene	10061-02-6	37,600 U	0.00	38,700 U	0.00	40,800 U	0.00
Trichloroethene	79-01-6	17,800 U	0.00	18,300 U	0.00	19,300 U	0.00
Trichlorofluoromethane	75-69-4	18,600 U	0.00	19,100 U	0.00	20,100 U	0.00
Vinyl acetate	108-05-4	11,700 U	0.00	12,000 U	0.00	12,600 U	0.00
Vinyl chloride	75-01-4	4,230 U	0.00	4,350 U	0.00	4,590 U	0.00
Total VOCs	--	--	89.42	--	85.54	--	91.74
Period Total VOC Mass Removed (lbs)		89.4		85.5		91.7	
Cumulative Total VOC Mass Removed (lbs)		89		175		267	

Table 2
Summary of Analytical Results and Contaminant Mass Removal - Vapor
Calumet Montana Refining, LLC - Great Falls, Montana

	Location	SP301		SP301		SP301	
	Ramboll Sample ID	CMR-SP301-2		CMR-SP301-211201		CMR-SP301-211208	
	Sample Date	11/19/2021		12/1/2021		12/8/2021	
	Blower Flow (scfm)	41		56		65	
	Period Operational Time (hrs)	--		283		144	
VOCs	**CAS No.**	**Result (ug/m^3)**	**Mass (lb)**	**Result (ug/m^3)**	**Mass (lb)**	**Result (ug/m^3)**	**Mass (lb)**
1,1,1-Trichloroethane	71-55-6	158 R	0.00	9,290 U	0.00	9,800 U	0.00
1,1,2,2-Tetrachloroethane	79-34-5	199 R	0.00	11,700 U	0.00	12,400 U	0.00
1,1,2-Trichloroethane	79-00-5	79 R	0.00	4,650 U	0.00	4,900 U	0.00
1,1,2-Trichlorotrifluoroethane	76-13-1	222 R	0.00	13,100 U	0.00	13,800 U	0.00
1,1-Dichloroethane	75-34-3	117 R	0.00	6,890 U	0.00	7,270 U	0.00
1,1-Dichloroethene	75-35-4	115 R	0.00	6,750 U	0.00	7,120 U	0.00
1,2,4-Trichlorobenzene	120-82-1	1,070 R	0.00	63,100 U	0.00	66,600 U	0.00
1,2,4-Trimethylbenzene	95-63-6	7,720 R	0.00	49,600	2.95	50,300	1.76
1,2-Dibromoethane (EDB)	106-93-4	111 R	0.00	6,540 U	0.00	6,900 U	0.00
1,2-Dichlorobenzene	95-50-1	435 R	0.00	25,600 U	0.00	27,000 U	0.00
1,2-Dichloroethane	107-06-2	117 R	0.00	6,890 U	0.00	7,270 U	0.00
1,2-Dichloropropane	78-87-5	134 R	0.00	7,860 U	0.00	8,290 U	0.00
1,3,5-Trimethylbenzene	108-67-8	3,310 R	0.00	27,100	1.61	27,900	0.98
1,3-Butadiene	106-99-0	64 R	0.00	3,770 U	0.00	3,970 U	0.00
1,3-Dichlorobenzene	541-73-1	435 R	0.00	25,600 U	0.00	27,000 U	0.00
1,4-Dichlorobenzene	106-46-7	435 R	0.00	25,600 U	0.00	27,000 U	0.00
2-Butanone (MEK)	78-93-3	427 R	0.00	25,100 U	0.00	26,500 U	0.00
2-Hexanone	591-78-6	592 R	0.00	34,800 U	0.00	36,700 U	0.00
2-Propanol	67-63-0	356 R	0.00	20,900 U	0.00	22,100 U	0.00
4-Ethyltoluene	622-96-8	1,180 R	0.00	26,600	1.58	26,700	0.93
4-Methyl-2-pentanone (MIBK)	108-10-1	592 R	0.00	34,800 U	0.00	36,700 U	0.00
Acetone	67-64-1	859 R	0.00	50,600 U	0.00	53,300 U	0.00
Benzene	71-43-2	51 R	0.00	135,000	8.04	94,100	3.29
Benzyl chloride	100-44-7	374 R	0.00	22,000 U	0.00	23,200 U	0.00
Bromodichloromethane	75-27-4	193 R	0.00	11,400 U	0.00	12,000 U	0.00
Bromoform	75-25-2	747 R	0.00	43,900 U	0.00	46,400 U	0.00
Bromomethane	74-83-9	112 R	0.00	6,600 U	0.00	6,970 U	0.00
Carbon disulfide	75-15-0	90 R	0.00	5,300 U	0.00	5,590 U	0.00
Carbon tetrachloride	56-23-5	182 R	0.00	10,700 U	0.00	11,300 U	0.00
Chlorobenzene	108-90-7	133 R	0.00	7,840 U	0.00	8,270 U	0.00
Chloroethane	75-00-3	76 R	0.00	11,200 U	0.00	11,800 U	0.00
Chloroform	67-66-3	71 R	0.00	4,150 U	0.00	4,380 U	0.00
Chloromethane	74-87-3	60 R	0.00	3,520 U	0.00	3,710 U	0.00
cis-1,2-Dichloroethene	156-59-2	115 R	0.00	6,750 U	0.00	7,120 U	0.00
cis-1,3-Dichloropropene	10061-01-5	328 R	0.00	19,300 U	0.00	20,400 U	0.00
Cyclohexane	110-82-7	3,940 R	0.00	945,000	56.27	687,000	24.03
Dibromochloromethane	124-48-1	246 R	0.00	14,500 U	0.00	15,300 U	0.00
Dichlorodifluoromethane	75-71-8	144 R	0.00	8,450 U	0.00	8,920 U	0.00
Dichlorotetrafluoroethane	76-14-2	202 R	0.00	11,900 U	0.00	12,500 U	0.00
Ethanol	64-17-5	273 R	0.00	16,100 U	0.00	17,000 U	0.00
Ethyl acetate	141-78-6	104 R	0.00	6,140 U	0.00	6,470 U	0.00
Ethylbenzene	100-41-4	1,520 R	0.00	104,000	6.19	80,800	2.83
Hexachloro-1,3-butadiene	87-68-3	771 R	0.00	45,400 U	0.00	47,900 U	0.00
m&p-Xylene	179601-23-1	7,210 R	0.00	475,000	28.28	401,000	14.02
Methylene Chloride	75-09-2	502 R	0.00	29,600 U	0.00	31,200 U	0.00
Methyl-tert-butyl ether	1634-04-4	520 R	0.00	30,600 U	0.00	32,300 U	0.00
Naphthalene	91-20-3	378 R	0.00	44,600 U	0.00	47,100 U	0.00
n-Heptane	142-82-5	847 R	0.00	280,000	16.67	197,000	6.89
n-Hexane	110-54-3	274 R	0.00	507,000	30.19	377,000	13.19
o-Xylene	95-47-6	4,140 R	0.00	113,000	6.73	98,400	3.44
Propylene	115-07-1	124 R	0.00	7,320 U	0.00	7,730 U	0.00
Styrene	100-42-5	308 R	0.00	7,250 U	0.00	7,650 U	0.00
Tetrachloroethene	127-18-4	98 R	0.00	5,770 U	0.00	6,090 U	0.00
Tetrahydrofuran	109-99-9	85 R	0.00	5,020 U	0.00	5,300 U	0.00
Toluene	108-88-3	352 R	0.00	117,000	6.97	80,500	2.82
trans-1,2-Dichloroethene	156-60-5	115 R	0.00	6,750 U	0.00	7,120 U	0.00
trans-1,3-Dichloropropene	10061-02-6	328 R	0.00	19,300 U	0.00	20,400 U	0.00
Trichloroethene	79-01-6	78 R	0.00	4,570 U	0.00	4,820 U	0.00
Trichlorofluoromethane	75-69-4	162 R	0.00	9,540 U	0.00	10,100 U	0.00
Vinyl acetate	108-05-4	102 R	0.00	5,990 U	0.00	6,320 U	0.00
Vinyl chloride	75-01-4	37 R	0.00	4,350 U	0.00	4,590 U	0.00
Total VOCs	--	--	0.00	--	165.48	--	74.17
Period Total VOC Mass Removed (lbs)		**0.0**		**165.5**		**74.2**	
Cumulative Total VOC Mass Removed (lbs)		**267**		**432**		**506**	

Table 2
Summary of Analytical Results and Contaminant Mass Removal - Vapor
Calumet Montana Refining, LLC - Great Falls, Montana

	Location	SP301		SP301		SP301	
	Ramboll Sample ID	CMR-SP301-211216		CMR-SP301-220216		CMR-SP301-110309	
	Sample Date	12/31/2021		2/16/2022		3/9/2022	
	Blower Flow (scfm)	61		66		70	
	Period Operational Time (hrs)	334		--		949	
VOCs	CAS No.	Result (ug/m^3)	Mass (lb)	Result (ug/m^3)	Mass (lb)	Result (ug/m^3)	Mass (lb)
1,1,1-Trichloroethane	71-55-6	46,400 U	0.00	3 R	0.00	12,300 U	0.00
1,1,2,2-Tetrachloroethane	79-34-5	23,400 U	0.00	4 R	0.00	15,500 U	0.00
1,1,2-Trichloroethane	79-00-5	46,400 U	0.00	2 R	0.00	6,160 U	0.00
1,1,2-Trichlorotrifluoroethane	76-13-1	26,100 U	0.00	4 R	0.00	17,300 U	0.00
1,1-Dichloroethane	75-34-3	13,800 U	0.00	2 R	0.00	9,130 U	0.00
1,1-Dichloroethene	75-35-4	13,500 U	0.00	2 R	0.00	8,940 U	0.00
1,2,4-Trichlorobenzene	120-82-1	253,000 U	0.00	41 R	0.00	167,000 U	0.00
1,2,4-Trimethylbenzene	95-63-6	121,000	9.22	378 R	0.00	50,700	12.63
1,2-Dibromoethane (EDB)	106-93-4	26,200 U	0.00	2 R	0.00	8,670 U	0.00
1,2-Dichlorobenzene	95-50-1	51,200 U	0.00	8 R	0.00	34,000 U	0.00
1,2-Dichloroethane	107-06-2	13,800 U	0.00	2 R	0.00	9,130 U	0.00
1,2-Dichloropropane	78-87-5	39,300 U	0.00	3 R	0.00	10,400 U	0.00
1,3,5-Trimethylbenzene	108-67-8	75,900	5.79	218 R	0.00	43,300	10.79
1,3-Butadiene	106-99-0	7,530 U	0.00	1 R	0.00	4,990 U	0.00
1,3-Dichlorobenzene	541-73-1	51,200 U	0.00	8 R	0.00	34,000 U	0.00
1,4-Dichlorobenzene	106-46-7	102,000 U	0.00	8 R	0.00	34,000 U	0.00
2-Butanone (MEK)	78-93-3	50,200 U	0.00	16 R	0.00	33,300 U	0.00
2-Hexanone	591-78-6	69,600 U	0.00	11 R	0.00	46,200 U	0.00
2-Propanol	67-63-0	41,900 U	0.00	7 R	0.00	27,700 U	0.00
4-Ethyltoluene	622-96-8	51,900	3.96	41 R	0.00	32,200	8.02
4-Methyl-2-pentanone (MIBK)	108-10-1	69,600 U	0.00	11 R	0.00	46,200 U	0.00
Acetone	67-64-1	101,000 U	0.00	37 R	0.00	67,000 U	0.00
Benzene	71-43-2	150,000	11.44	4 R	0.00	195,000	48.57
Benzyl chloride	100-44-7	88,100 U	0.00	7 R	0.00	29,200 U	0.00
Bromodichloromethane	75-27-4	22,800 U	0.00	4 R	0.00	15,100 U	0.00
Bromoform	75-25-2	176,000 U	0.00	14 R	0.00	58,300 U	0.00
Bromomethane	74-83-9	13,200 U	0.00	2 R	0.00	8,760 U	0.00
Carbon disulfide	75-15-0	10,600 U	0.00	2 R	0.00	7,020 U	0.00
Carbon tetrachloride	56-23-5	21,400 U	0.00	4 R	0.00	14,200 U	0.00
Chlorobenzene	108-90-7	15,700 U	0.00	3 R	0.00	10,400 U	0.00
Chloroethane	75-00-3	8,970 U	0.00	2 R	0.00	5,950 U	0.00
Chloroform	67-66-3	8,300 U	0.00	1 R	0.00	5,500 U	0.00
Chloromethane	74-87-3	17,600 U	0.00	1 R	0.00	4,660 U	0.00
cis-1,2-Dichloroethene	156-59-2	13,500 U	0.00	2 R	0.00	8,940 U	0.00
cis-1,3-Dichloropropene	10061-01-5	38,700 U	0.00	6 R	0.00	25,600 U	0.00
Cyclohexane	110-82-7	29,300 U	0.00	5 R	0.00	19,400 U	0.00
Dibromochloromethane	124-48-1	29,000 U	0.00	5 R	0.00	19,200 U	0.00
Dichlorodifluoromethane	75-71-8	16,900 U	0.00	3 R	0.00	11,200 U	0.00
Dichlorotetrafluoroethane	76-14-2	23,800 U	0.00	4 R	0.00	15,800 U	0.00
Ethanol	64-17-5	32,100 U	0.00	8 R	0.00	21,300 U	0.00
Ethyl acetate	141-78-6	12,300 U	0.00	2 R	0.00	8,130 U	0.00
Ethylbenzene	100-41-4	151,000	11.51	29 R	0.00	256,000	63.76
Hexachloro-1,3-butadiene	87-68-3	90,700 U	0.00	15 R	0.00	60,100 U	0.00
m&p-Xylene	179601-23-1	783,000	59.70	186 R	0.00	1,010,000	251.57
Methylene Chloride	75-09-2	59,100 U	0.00	10 R	0.00	39,200 U	0.00
Methyl-tert-butyl ether	1634-04-4	61,300 U	0.00	10 R	0.00	40,600 U	0.00
Naphthalene	91-20-3	44,500 U	0.00	15 R	0.00	29,500 U	0.00
n-Heptane	142-82-5	336,000	25.62	19 R	0.00	441,000	109.84
n-Hexane	110-54-3	575,000	43.84	12 R	0.00	819,000	204.00
o-Xylene	95-47-6	236,000	17.99	148 R	0.00	263,000	65.51
Propylene	115-07-1	14,600 U	0.00	2 R	0.00	9,710 U	0.00
Styrene	100-42-5	14,500 U	0.00	6 R	0.00	9,610 U	0.00
Tetrachloroethene	127-18-4	11,500 U	0.00	2 R	0.00	7,650 U	0.00
Tetrahydrofuran	109-99-9	10,000 U	0.00	132 R	0.00	6,660 U	0.00
Toluene	108-88-3	140,000	10.67	13 R	0.00	210,000	52.31
trans-1,2-Dichloroethene	156-60-5	33,700 U	0.00	2 R	0.00	8,940 U	0.00
trans-1,3-Dichloropropene	10061-02-6	38,700 U	0.00	6 R	0.00	25,600 U	0.00
Trichloroethene	79-01-6	18,300 U	0.00	2 R	0.00	6,060 U	0.00
Trichlorofluoromethane	75-69-4	19,100 U	0.00	3 R	0.00	12,700 U	0.00
Vinyl acetate	108-05-4	12,000 U	0.00	2 R	0.00	7,950 U	0.00
Vinyl chloride	75-01-4	21,700 U	0.00	1 R	0.00	2,890 U	0.00
Total VOCs	--	--	199.73	--	0.00	--	826.99
Period Total VOC Mass Removed (lbs)		**199.7**		**0.0**		**827.0**	
Cumulative Total VOC Mass Removed (lbs)		**706**		**706**		**1,533**	

Table 2
Summary of Analytical Results and Contaminant Mass Removal - Vapor
Calumet Montana Refining, LLC - Great Falls, Montana

	Location	SP301		SP301		SP301	
	Ramboll Sample ID	CMR-SP301-2022411		CMR-SP301-220511		CMR-SP301-220617	
	Sample Date	4/11/2022		5/11/2022		6/17/2022	
	Blower Flow (scfm)	102		128		172	
	Period Operational Time (hrs)	632		742		517	
VOCs	**CAS No.**	**Result (ug/m^3)**	**Mass (lb)**	**Result (ug/m^3)**	**Mass (lb)**	**Result (ug/m^3)**	**Mass (lb)**
1,1,1-Trichloroethane	71-55-6	1,680 U	0.00	6,520 U	0.00	13,000 U	0.00
1,1,2,2-Tetrachloroethane	79-34-5	2,120 U	0.00	8,230 U	0.00	16,500 U	0.00
1,1,2-Trichloroethane	79-00-5	842 U	0.00	3,260 U	0.00	6,520 U	0.00
1,1,2-Trichlorotrifluoroethane	76-13-1	2,370 U	0.00	9,170 U	0.00	18,300 U	0.00
1,1-Dichloroethane	75-34-3	1,250 U	0.00	4,840 U	0.00	9,670 U	0.00
1,1-Dichloroethene	75-35-4	1,220 U	0.00	4,740 U	0.00	9,470 U	0.00
1,2,4-Trichlorobenzene	120-82-1	11,400 U	0.00	44,300 U	0.00	88,600 U	0.00
1,2,4-Trimethylbenzene	95-63-6	2,310	0.56	9,770	3.48	68,600	22.79
1,2-Dibromoethane (EDB)	106-93-4	1,180 U	0.00	4,590 U	0.00	9,180 U	0.00
1,2-Dichlorobenzene	95-50-1	4,640 U	0.00	18,000 U	0.00	36,000 U	0.00
1,2-Dichloroethane	107-06-2	1,250 U	0.00	4,840 U	0.00	9,670 U	0.00
1,2-Dichloropropane	78-87-5	1,420 U	0.00	5,520 U	0.00	11,000 U	0.00
1,3,5-Trimethylbenzene	108-67-8	2,090	0.50	10,000	3.56	55,200	18.34
1,3-Butadiene	106-99-0	683 U	0.00	2,640 U	0.00	5,290 U	0.00
1,3-Dichlorobenzene	541-73-1	4,640 U	0.00	18,000 U	0.00	36,000 U	0.00
1,4-Dichlorobenzene	106-46-7	4,640 U	0.00	18,000 U	0.00	36,000 U	0.00
2-Butanone (MEK)	78-93-3	4,550 U	0.00	17,600 U	0.00	35,300 U	0.00
2-Hexanone	591-78-6	6,310 U	0.00	24,400 U	0.00	48,900 U	0.00
2-Propanol	67-63-0	3,790 U	0.00	14,700 U	0.00	29,400 U	0.00
4-Ethyltoluene	622-96-8	3,790 U	0.00	14,700 U	0.00	29,400 U	0.00
4-Methyl-2-pentanone (MIBK)	108-10-1	6,310 U	0.00	24,400 U	0.00	48,900 U	0.00
Acetone	67-64-1	9,160 U	0.00	35,500 U	0.00	71,000 U	0.00
Benzene	71-43-2	36,400	8.77	114,000	40.58	50,200	16.68
Benzyl chloride	100-44-7	3,990 U	0.00	15,500 U	0.00	30,900 U	0.00
Bromodichloromethane	75-27-4	2,060 U	0.00	7,990 U	0.00	16,000 U	0.00
Bromoform	75-25-2	7,960 U	0.00	30,800 U	0.00	61,700 U	0.00
Bromomethane	74-83-9	1,200 U	0.00	4,640 U	0.00	9,270 U	0.00
Carbon disulfide	75-15-0	960 U	0.00	3,720 U	0.00	7,440 U	0.00
Carbon tetrachloride	56-23-5	1,940 U	0.00	7,520 U	0.00	15,000 U	0.00
Chlorobenzene	108-90-7	1,420 U	0.00	5,500 U	0.00	11,000 U	0.00
Chloroethane	75-00-3	813 U	0.00	7,880 U	0.00	6,300 U	0.00
Chloroform	67-66-3	752 U	0.00	2,910 U	0.00	5,830 U	0.00
Chloromethane	74-87-3	637 U	0.00	2,470 U	0.00	4,940 U	0.00
cis-1,2-Dichloroethene	156-59-2	1,220 U	0.00	4,740 U	0.00	9,470 U	0.00
cis-1,3-Dichloropropene	10061-01-5	3,500 U	0.00	13,600 U	0.00	27,100 U	0.00
Cyclohexane	110-82-7	2,650 U	0.00	10,300 U	0.00	20,600 U	0.00
Dibromochloromethane	124-48-1	2,620 U	0.00	10,200 U	0.00	20,300 U	0.00
Dichlorodifluoromethane	75-71-8	1,530 U	0.00	5,930 U	0.00	11,900 U	0.00
Dichlorotetrafluoroethane	76-14-2	2,150 U	0.00	8,340 U	0.00	16,700 U	0.00
Ethanol	64-17-5	2,910 U	0.00	11,300 U	0.00	22,600 U	0.00
Ethyl acetate	141-78-6	1,110 U	0.00	4,310 U	0.00	8,610 U	0.00
Ethylbenzene	100-41-4	19,400	4.68	59,700	21.25	45,800	15.22
Hexachloro-1,3-butadiene	87-68-3	8,220 U	0.00	31,800 U	0.00	63,700 U	0.00
m&p-Xylene	179601-23-1	75,500	18.20	262,000	93.25	380,000	126.25
Methylene Chloride	75-09-2	5,350 U	0.00	20,700 U	0.00	41,500 U	0.00
Methyl-tert-butyl ether	1634-04-4	5,550 U	0.00	21,500 U	0.00	43,000 U	0.00
Naphthalene	91-20-3	4,030 U	0.00	15,600 U	0.00	31,300 U	0.00
n-Heptane	142-82-5	66,900	16.12	292,000	103.93	157,000	52.16
n-Hexane	110-54-3	190,000	45.79	587,000	208.93	300,000	99.67
o-Xylene	95-47-6	16,700	4.02	58,000	20.64	126,000	41.86
Propylene	115-07-1	1,330 U	0.00	5,140 U	0.00	10,300 U	0.00
Styrene	100-42-5	1,310 U	0.00	5,090 U	0.00	10,200 U	0.00
Tetrachloroethene	127-18-4	1,050 U	0.00	4,050 U	0.00	13,000	4.32
Tetrahydrofuran	109-99-9	910 U	0.00	3,530 U	0.00	7,050 U	0.00
Toluene	108-88-3	22,200	5.35	57,000	20.29	43,200	14.35
trans-1,2-Dichloroethene	156-60-5	1,220 U	0.00	4,740 U	0.00	9,470 U	0.00
trans-1,3-Dichloropropene	10061-02-6	3,500 U	0.00	13,600 U	0.00	27,100 U	0.00
Trichloroethene	79-01-6	828 U	0.00	3,210 U	0.00	6,420 U	0.00
Trichlorofluoromethane	75-69-4	1,730 U	0.00	6,700 U	0.00	13,400 U	0.00
Vinyl acetate	108-05-4	1,090 U	0.00	4,210 U	0.00	8,410 U	0.00
Vinyl chloride	75-01-4	394 U	0.00	3,060 U	0.00	3,060 U	0.00
Total VOCs	--	--	103.99	--	515.90	--	411.66
Period Total VOC Mass Removed (lbs)		**104.0**		**515.9**		**411.7**	
Cumulative Total VOC Mass Removed (lbs)		**1,637**		**2,153**		**2,565**	

Table 2
Summary of Analytical Results and Contaminant Mass Removal - Vapor
Calumet Montana Refining, LLC - Great Falls, Montana

1. Blower flowrate is continuously recorded by the system PLC. Average blower flowrate during the period is used for the calculations
2. Operational time during system start-up and comissioning (October, 2021 through December 2021) is the number of hours the system operated between each sampling event. Opertational time during the standard system opration (beginning January 2022) represents system runtime (in hour) for the month during with the sample was taken.
3. Results from November 19, 2021 and February 16, 2022 appear anomalously low as PID readings from these two events were consistent with PID readings from the other sampling events. Therfore, these results were rejected.

E: Analyte concentration exceeded the calibration range. The reported result is estimated

R: Result rejected

U: The analyte was not detected in the sample at the estimated detection limit

VOCs : Volatile Organic Compounds

ug/m^3 : micrograms per cubic meter

Sample Calculation

$$\boldsymbol{Mass\ Removed\ (lb) = 340000\ \frac{ug}{m^3} \times 10^{-6}\ \frac{g}{ug} \times \frac{1}{453.6}\ \frac{lb}{g} \times 41\ \frac{ft^3}{min} \times 0.02832\ \frac{m^3}{ft^3} \times 26\ hr \times 60\ \frac{min}{hr}}$$

Table 3
Summary of Analytical Results and Contaminant Mass Removal - Liquid
Calumet Montana Refining, LLC - Great Falls, Montana

	Location	SP200		SP200		SP200	
	Ramboll Sample ID	CMR-SP200-211015		CMR-SP200-211208		CMR-SP200-220216	
	Sample Date	10/15/2021		12/8/2021		2/16/2022	
	Effluent Volume (L)*	21,138		43,176		80,754	
Analyte	**CAS No.**	**Result (ug/L)**	**Mass (lb)**	**Result (ug/L)**	**Mass (lb)**	**Result (ug/L)**	**Mass (lb)**
VOCs							
1,1,1-TRICHLOROETHANE	71-55-6	ND	--	ND	--	ND	--
1,1,2,2-TETRACHLOROETHANE	79-34-5	ND	--	ND	--	ND	--
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	ND	--	ND	--	ND	--
1,1,2-TRICHLOROETHANE	79-00-5	ND	--	ND	--	ND	--
1,1-DICHLOROETHANE	75-34-3	ND	--	ND	--	ND	--
1,1-DICHLOROETHENE	75-35-4	ND	--	ND	--	ND	--
1,2,3-TRICHLOROBENZENE	87-61-6	ND	--	ND	--	ND	--
1,2,4-TRICHLOROBENZENE	120-82-1	ND	--	ND	--	ND	--
1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	ND	--	ND	--	ND	--
1,2-DIBROMOETHANE	106-93-4	ND	--	ND	--	ND	--
1,2-DICHLOROBENZENE	95-50-1	ND	--	ND	--	ND	--
1,2-DICHLOROETHANE	107-06-2	ND	--	ND	--	ND	--
1,2-DICHLOROPROPANE	78-87-5	ND	--	ND	--	ND	--
1,3-DICHLOROBENZENE	541-73-1	ND	--	ND	--	ND	--
1,4-DICHLOROBENZENE	106-46-7	ND	--	ND	--	ND	--
1,4-DIOXANE	123-91-1	ND	--	ND	--	ND	--
2-BUTANONE	78-93-3	ND	--	ND	--	ND	--
2-HEXANONE	591-78-6	ND	--	ND	--	ND	--
4-METHYL-2-PENTANONE	108-10-1	ND	--	ND	--	ND	--
ACETONE	67-64-1	ND	--	ND	--	ND	--
BENZENE	71-43-2	1,800	0.08	230	0.02	480	0.09
BROMOCHLOROMETHANE	74-97-5	ND	--	ND	--	ND	--
BROMODICHLOROMETHANE	75-27-4	ND	--	ND	--	ND	--
BROMOFORM	75-25-2	ND	--	ND	--	ND	--
BROMOMETHANE	74-83-9	ND	--	ND	--	ND	--
CARBON DISULFIDE	75-15-0	ND	--	ND	--	ND	--
CARBON TETRACHLORIDE	56-23-5	ND	--	ND	--	ND	--
CHLOROBENZENE	108-90-7	ND	--	ND	--	ND	--
CHLOROETHANE	75-00-3	ND	--	ND	--	ND	--
CHLOROFORM	67-66-3	ND	--	ND	--	ND	--
CHLOROMETHANE	74-87-3	ND	--	ND	--	ND	--
CIS-1,2-DICHLOROETHENE	156-59-2	ND	--	79	0.01	ND	--
CIS-1,3-DICHLOROPROPENE	10061-01-5	ND	--	ND	--	ND	--
CUMENE	98-82-8	ND	--	130	0.01	ND	--
CYCLOHEXANE	110-82-7	160	0.01	72	0.01	ND	--
DIBROMOCHLOROMETHANE	124-48-1	ND	--	ND	--	ND	--
DICHLORODIFLUOROMETHANE	75-71-8	ND	--	ND	--	ND	--
ETHYL BENZENE	100-41-4	990	0.05	650	0.06	1200	0.21
M,P-XYLENE	179601-23-1	4,100	0.19	4,100	0.39	5900	1.05
METHYL ACETATE	79-20-9	ND	--	ND	--	ND	--
METHYL TERT-BUTYL ETHER	1634-04-4	ND	--	ND	--	ND	--
METHYLCYCLOHEXANE	108-87-2	71	0.00	43	0.00	ND	--
METHYLENE CHLORIDE	75-09-2	ND	--	ND	--	ND	--
NAPHTHALENE	91-20-3	510	0.02	2,300	0.22	5200	0.93
ORTHO-XYLENE	95-47-6	1,300	0.06	1,700	0.16	2200	0.39
STYRENE	100-42-5	ND	--	ND	--	ND	--
TETRACHLOROETHENE	127-18-4	ND	--	ND	--	ND	--
TOLUENE	108-88-3	1,100	0.05	300	0.03	530	0.09
TRANS-1,2-DICHLOROETHENE	156-60-5	ND	--	ND	--	ND	--
TRANS-1,3-DICHLOROPROPENE	10061-02-6	ND	--	ND	--	ND	--
TRICHLOROETHENE	79-01-6	ND	--	ND	--	ND	--
TRICHLOROFLUOROMETHANE	75-69-4	ND	--	ND	--	ND	--
VINYL CHLORIDE	75-01-4	ND	--	ND	--	ND	--
XYLENES (TOTAL)	1330-20-7	6,500	0.30	7,200	0.69	4300	0.77
Total VOCs	--	**--**	**0.77**	**--**	**1.60**	**--**	**3.53**
Period Total VOC Mass Removed (lbs)		**0.8**		**1.6**		**3.5**	
Cumulative Total VOC Mass Removed (lbs)		**0.8**		**2.4**		**5.9**	

Table 3
Summary of Analytical Results and Contaminant Mass Removal - Liquid
Calumet Montana Refining, LLC - Great Falls, Montana

	Location	SP200		SP200		SP200	
	Ramboll Sample ID	CMR-SP200-211015		CMR-SP200-211208		CMR-SP200-220216	
	Sample Date	10/15/2021		12/8/2021		2/16/2022	
	Effluent Volume (L)*	21,138		43,176		80,754	
Analyte	**CAS No.**	**Result (ug/L)**	**Mass (lb)**	**Result (ug/L)**	**Mass (lb)**	**Result (ug/L)**	**Mass (lb)**
SVOCs							
1,2,4,5-TETRACHLOROBENZENE	95-94-3	ND	--	ND	--	ND	--
1,2,4-TRICHLOROBENZENE	120-82-1	ND	--	ND	--	ND	--
1,2-DICHLOROBENZENE	95-50-1	ND	--	ND	--	ND	--
1,3-DICHLOROBENZENE	541-73-1	ND	--	ND	--	ND	--
1,4-DICHLOROBENZENE	106-46-7	ND	--	ND	--	ND	--
2,2'-OXYBIS(1-CHLOROPROPANE)	108-60-1	ND	--	ND	--	ND	--
2,3,4,6-TETRACHLOROPHENOL	58-90-2	ND	--	ND	--	ND	--
2,4,5-TRICHLOROPHENOL	95-95-4	ND	--	ND	--	ND	--
2,4,6-TRICHLOROPHENOL	88-06-2	ND	--	ND	--	ND	--
2,4-DICHLOROPHENOL	120-83-2	ND	--	ND	--	ND	--
2,4-DIMETHYLPHENOL	105-67-9	ND	--	ND	--	590	0.11
2,4-DINITROPHENOL	51-28-5	ND	--	ND	--	ND	--
2,4-DINITROTOLUENE	121-14-2	ND	--	ND	--	ND	--
2,6-DINITROTOLUENE	606-20-2	ND	--	ND	--	ND	--
2-CHLORONAPHTHALENE	91-58-7	ND	--	ND	--	ND	--
2-CHLOROPHENOL	95-57-8	ND	--	ND	--	ND	--
2-METHYLNAPHTHALENE	91-57-6	710	0.03	9,700	0.92	710	0.13
2-METHYLPHENOL	95-48-7	ND	--	ND	--	ND	--
2-NITROANILINE	88-74-4	ND	--	ND	--	ND	--
2-NITROPHENOL	88-75-5	ND	--	ND	--	ND	--
3,3'-DICHLOROBENZIDINE	91-94-1	ND	--	ND	--	ND	--
3-NITROANILINE	99-09-2	ND	--	ND	--	ND	--
4,6-DINITRO-2-METHYLPHENOL	534-52-1	ND	--	ND	--	ND	--
4-BROMOPHENYL-PHENYL ETHER	101-55-3	ND	--	ND	--	ND	--
4-CHLORO-3-METHYLPHENOL	59-50-7	ND	--	ND	--	ND	--
4-CHLOROPHENYL-PHENYL ETHER	7005-72-3	ND	--	ND	--	ND	--
4-METHYLPHENOL	106-44-5	ND	--	ND	--	ND	--
4-NITROANILINE	100-01-6	ND	--	ND	--	ND	--
4-NITROPHENOL	100-02-7	ND	--	ND	--	ND	--
ACENAPHTHENE	83-32-9	ND	--	ND	--	14	0.00
ACENAPHTHYLENE	208-96-8	38	0.00	ND	--	ND	--
ANTHRACENE	120-12-7	ND	--	ND	--	ND	--
BENZO(A)ANTHRACENE	56-55-3	ND	--	ND	--	ND	--
BENZO(A)PYRENE	50-32-8	ND	--	ND	--	ND	--
BENZO(B)FLUORANTHENE	205-99-2	ND	--	ND	--	ND	--
BENZO(G,H,I)PERYLENE	191-24-2	ND	--	ND	--	ND	--
BENZO(K)FLUORANTHENE	207-08-9	ND	--	ND	--	ND	--
BIS(2-CHLOROETHOXY)METHANE	111-91-1	ND	--	ND	--	ND	--
BIS(2-CHLOROETHYL) ETHER	111-44-4	ND	--	ND	--	ND	--
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	ND	--	ND	--	ND	--
BUTYLBENZYLPHTHALATE	85-68-7	ND	--	ND	--	ND	--
CARBAZOLE	86-74-8	ND	--	ND	--	ND	--
CHRYSENE	218-01-9	ND	--	ND	--	ND	--
DIBENZ(A,H)ANTHRACENE	53-70-3	ND	--	ND	--	ND	--
DIBENZOFURAN	132-64-9	ND	--	ND	--	ND	--
DIETHYLPHTHALATE	84-66-2	ND	--	ND	--	ND	--
DIMETHYLPHTHALATE	131-11-3	ND	--	ND	--	ND	--
DI-N-BUTYLPHTHALATE	84-74-2	ND	--	ND	--	ND	--
DI-N-OCTYLPHTHALATE	117-84-0	ND	--	ND	--	ND	--
FLUORANTHENE	206-44-0	ND	--	ND	--	ND	--
FLUORENE	86-73-7	30	0.00	360	0.03	ND	--
HEXACHLOROBENZENE	118-74-1	ND	--	ND	--	ND	--
HEXACHLOROBUTADIENE	87-68-3	ND	--	ND	--	ND	--
HEXACHLOROCYCLOPENTADIENE	77-47-4	ND	--	ND	--	ND	--
HEXACHLOROETHANE	67-72-1	ND	--	ND	--	ND	--
INDENO(1,2,3-CD)PYRENE	193-39-5	ND	--	ND	--	ND	--

Table 3
Summary of Analytical Results and Contaminant Mass Removal - Liquid
Calumet Montana Refining, LLC - Great Falls, Montana

	Location	SP200		SP200		SP200	
	Ramboll Sample ID	CMR-SP200-211015		CMR-SP200-211208		CMR-SP200-220216	
	Sample Date	10/15/2021		12/8/2021		2/16/2022	
	Effluent Volume (L)*	21,138		43,176		80,754	
Analyte	**CAS No.**	**Result (ug/L)**	**Mass (lb)**	**Result (ug/L)**	**Mass (lb)**	**Result (ug/L)**	**Mass (lb)**
ISOPHORONE	78-59-1	ND	--	ND	--	ND	--
NAPHTHALENE	91-20-3	510	0.02	2,300	0.22	5,200	0.93
NITROBENZENE	98-95-3	ND	--	ND	--	ND	--
N-NITROSO-DI-N-PROPYLAMINE	621-64-7	ND	--	ND	--	ND	--
N-NITROSODIPHENYLAMINE	86-30-6	ND	--	ND	--	ND	--
PENTACHLOROPHENOL	87-86-5	ND	--	ND	--	ND	--
PHENANTHRENE	85-01-8	48	0.00	610	0.06	53	0.01
PHENOL	108-95-2	ND	--	ND	--	ND	--
PYRENE	129-00-0	12	0.00	110	0.01	7	0.00
Total SVOCs	--	**--**	**0.06**	**--**	**1.25**	**--**	**1.17**
Period Total SVOC Mass Removed (lbs)		**0.1**		**1.2**		**1.2**	
Cumulative Total VOC Mass Removed (lbs)		**0.1**		**1.3**		**2.5**	
EPH							
C11 THROUGH C22 AROMATIC HYDROCARBONS	C11-C22-AROM	89,000	4.15	32,000	3.05	81,000	14.42
C19 THROUGH C36 ALIPHATIC HYDROCARBONS	C19-C36-ALIP	50,000	2.33	28,000	2.67	55,000	9.79
C9 THROUGH C18 ALIPHATIC HYDROCARBONS	C09-C18-ALIP	190,000	8.85	130,000	12.37	320,000	56.97
TOTAL EXTRACTABLE HYDROCARBON (POST FRACTIONATION)	68334-30-5S	330,000	15.38	--	--	460,000	81.89
TOTAL EXTRACTABLE HYDROCARBON	68334-30-5E	410,000	19.11	210,000	19.99	460,000	81.89
Total EPHs	--	**--**	**19.11**	**--**	**19.99**	**--**	**81.89**
Period Total EPH Mass Removed (lbs)		**19.1**		**20.0**		**81.9**	
Cumulative Total EPH Mass Removed (lbs)		**19.1**		**39.1**		**121.0**	
VPH							
BENZENE	71-43-2	1,800	0.08	230	0.02	480	0.09
C5 THROUGH C8 ALIPHATIC HYDROCARBONS (ADJUSTED)	C05-C08-ALIP-J	3,900	0.18	2,600	0.25	12,000	2.14
C9 THROUGH C10 AROMATIC HYDROCARBONS	C09-C10-AROM	9,300	0.43	40,000	3.81	88,000	15.67
C9 THROUGH C12 ALIPHATIC HYDROCARBONS (ADJUSTED)	C09-C12-ALIP-J	9,400	0.44	26,000	2.47	130,000	23.14
ETHYL BENZENE	100-41-4	990	0.05	650	0.06	1,200	0.21
M,P-XYLENE	179601-23-1	4,100	0.19	4,100	0.39	5,900	1.05
METHYL TERT-BUTYL ETHER	1634-04-4	ND	--	ND	--	ND	--
NAPHTHALENE	91-20-3	510	0.02	2,300	0.22	5,200	0.93
ORTHO-XYLENE	95-47-6	1,300	0.06	1,700	0.16	2,200	0.39
TOLUENE	108-88-3	1,100	0.05	300	0.03	530	0.09
TOTAL PETROLEUM HYDROCARBONS	TPH	32,000	1.49	72,000	6.85	200,000	35.61
Total VPHss	--	**--**	**1.49**	**--**	**6.85**	**--**	**35.61**
Period Total VPH Mass Removed (lbs)		**1.5**		**6.9**		**35.6**	
Cumulative Total VPH Mass Removed (lbs)		**1.5**		**8.3**		**44.0**	

Table 3
Summary of Analytical Results and Contaminant Mass Removal - Liquid
Calumet Montana Refining, LLC - Great Falls, Montana

	Location	SP200		SP200			SP200	
	Ramboll Sample ID	CMR-SP200-220411		CMR-SP200-220517			CMR-SP200-220617	
	Sample Date	4/11/2022		5/17/2022			6/17/2022	
	Effluent Volume (L)*	137,543		0			126,978	
Analyte	**CAS No.**	**Result (ug/L)**	**Mass (lb)**	**Result (ug/L)**		**Mass (lb)**	**Result (ug/L)**	**Mass (lb)**
VOCs								
1,1,1-TRICHLOROETHANE	71-55-6	ND	--	ND	R	--	ND	--
1,1,2,2-TETRACHLOROETHANE	79-34-5	ND	--	ND	R	--	ND	--
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	ND	--	ND	R	--	ND	--
1,1,2-TRICHLOROETHANE	79-00-5	ND	--	ND	R	--	ND	--
1,1-DICHLOROETHANE	75-34-3	ND	--	ND	R	--	ND	--
1,1-DICHLOROETHENE	75-35-4	ND	--	ND	R	--	ND	--
1,2,3-TRICHLOROBENZENE	87-61-6	ND	--	ND	R	--	ND	--
1,2,4-TRICHLOROBENZENE	120-82-1	ND	--	ND	R	--	ND	--
1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	ND	--	ND	R	--	ND	--
1,2-DIBROMOETHANE	106-93-4	ND	--	ND	R	--	ND	--
1,2-DICHLOROBENZENE	95-50-1	ND	--	ND	R	--	ND	--
1,2-DICHLOROETHANE	107-06-2	ND	--	ND	R	--	ND	--
1,2-DICHLOROPROPANE	78-87-5	ND	--	ND	R	--	ND	--
1,3-DICHLOROBENZENE	541-73-1	ND	--	ND	R	--	ND	--
1,4-DICHLOROBENZENE	106-46-7	ND	--	ND	R	--	ND	--
1,4-DIOXANE	123-91-1	ND	--	ND	R	--	ND	--
2-BUTANONE	78-93-3	ND	--	ND	R	--	ND	--
2-HEXANONE	591-78-6	ND	--	ND	R	--	ND	--
4-METHYL-2-PENTANONE	108-10-1	ND	--	ND	R	--	ND	--
ACETONE	67-64-1	ND	--	ND	R	--	100	0.03
BENZENE	71-43-2	430	0.13	330	R	--	58	0.02
BROMOCHLOROMETHANE	74-97-5	ND	--	ND	R	--	ND	--
BROMODICHLOROMETHANE	75-27-4	ND	--	ND	R	--	ND	--
BROMOFORM	75-25-2	ND	--	ND	R	--	ND	--
BROMOMETHANE	74-83-9	ND	--	ND	R	--	ND	--
CARBON DISULFIDE	75-15-0	ND	--	ND	R	--	ND	--
CARBON TETRACHLORIDE	56-23-5	ND	--	ND	R	--	ND	--
CHLOROBENZENE	108-90-7	ND	--	ND	R	--	ND	--
CHLOROETHANE	75-00-3	ND	--	ND	R	--	ND	--
CHLOROFORM	67-66-3	ND	--	ND	R	--	ND	--
CHLOROMETHANE	74-87-3	ND	--	ND	R	--	ND	--
CIS-1,2-DICHLOROETHENE	156-59-2	ND	--	ND	R	--	ND	--
CIS-1,3-DICHLOROPROPENE	10061-01-5	ND	--	ND	R	--	ND	--
CUMENE	98-82-8	ND	--	ND	R	--	99	0.03
CYCLOHEXANE	110-82-7	ND	--	ND	R	--	320	0.09
DIBROMOCHLOROMETHANE	124-48-1	ND	--	ND	R	--	ND	--
DICHLORODIFLUOROMETHANE	75-71-8	ND	--	ND	R	--	ND	--
ETHYL BENZENE	100-41-4	600	0.18	510	R	--	110	0.03
M,P-XYLENE	179601-23-1	3200	0.97	3200	R	--	1300	0.36
METHYL ACETATE	79-20-9	ND	--	ND	R	--	ND	--
METHYL TERT-BUTYL ETHER	1634-04-4	ND	--	ND	R	--	ND	--
METHYLCYCLOHEXANE	108-87-2	ND	--	ND	R	--	340	0.10
METHYLENE CHLORIDE	75-09-2	ND	--	ND	R	--	ND	--
NAPHTHALENE	91-20-3	470	0.14	1600	R	--	1300	0.36
ORTHO-XYLENE	95-47-6	1000	0.30	1100	R	--	550	0.15
STYRENE	100-42-5	ND	--	ND	R	--	ND	--
TETRACHLOROETHENE	127-18-4	ND	--	ND	R	--	ND	--
TOLUENE	108-88-3	300	0.09	180	R	--	52	0.01
TRANS-1,2-DICHLOROETHENE	156-60-5	ND	--	ND	R	--	ND	--
TRANS-1,3-DICHLOROPROPENE	10061-02-6	ND	--	ND	R	--	ND	--
TRICHLOROETHENE	79-01-6	ND	--	ND	R	--	ND	--
TRICHLOROFLUOROMETHANE	75-69-4	ND	--	ND	R	--	ND	--
VINYL CHLORIDE	75-01-4	ND	--	ND	R	--	ND	--
XYLENES (TOTAL)	1330-20-7	4100	1.24	3400	R	--	11000	3.08
Total VOCs	--	--	**3.06**	--		**0.00**	--	**4.26**
Period Total VOC Mass Removed (lbs)		**3.1**		**0.0**			**4.3**	
Cumulative Total VOC Mass Removed (lbs)		**9.0**		**9.0**			**13.2**	

Table 3
Summary of Analytical Results and Contaminant Mass Removal - Liquid
Calumet Montana Refining, LLC - Great Falls, Montana

	Location	SP200		SP200			SP200	
	Ramboll Sample ID	CMR-SP200-220411		CMR-SP200-220517			CMR-SP200-220617	
	Sample Date	4/11/2022		5/17/2022			6/17/2022	
	Effluent Volume (L)*	137,543		0			126,978	
Analyte	**CAS No.**	**Result (ug/L)**	**Mass (lb)**	**Result (ug/L)**		**Mass (lb)**	**Result (ug/L)**	**Mass (lb)**
SVOCs								
1,2,4,5-TETRACHLOROBENZENE	95-94-3	ND	--	ND	R	--	ND	--
1,2,4-TRICHLOROBENZENE	120-82-1	ND	--	ND	R	--	ND	--
1,2-DICHLOROBENZENE	95-50-1	ND	--	ND	R	--	ND	--
1,3-DICHLOROBENZENE	541-73-1	ND	--	ND	R	--	ND	--
1,4-DICHLOROBENZENE	106-46-7	ND	--	ND	R	--	ND	--
2,2'-OXYBIS(1-CHLOROPROPANE)	108-60-1	ND	--	ND	R	--	ND	--
2,3,4,6-TETRACHLOROPHENOL	58-90-2	ND	--	ND	R	--	ND	--
2,4,5-TRICHLOROPHENOL	95-95-4	ND	--	ND	R	--	ND	--
2,4,6-TRICHLOROPHENOL	88-06-2	ND	--	ND	R	--	ND	--
2,4-DICHLOROPHENOL	120-83-2	ND	--	ND	R	--	ND	--
2,4-DIMETHYLPHENOL	105-67-9	270	0.08	ND	R	--	ND	--
2,4-DINITROPHENOL	51-28-5	ND	--	ND	R	--	ND	--
2,4-DINITROTOLUENE	121-14-2	ND	--	ND	R	--	ND	--
2,6-DINITROTOLUENE	606-20-2	ND	--	ND	R	--	ND	--
2-CHLORONAPHTHALENE	91-58-7	ND	--	ND	R	--	ND	--
2-CHLOROPHENOL	95-57-8	ND	--	ND	R	--	ND	--
2-METHYLNAPHTHALENE	91-57-6	340	0.10	20,000	R	--	2,400	0.67
2-METHYLPHENOL	95-48-7	ND	--	ND	R	--	ND	--
2-NITROANILINE	88-74-4	ND	--	ND	R	--	ND	--
2-NITROPHENOL	88-75-5	ND	--	ND	R	--	ND	--
3,3'-DICHLOROBENZIDINE	91-94-1	ND	--	ND	R	--	ND	--
3-NITROANILINE	99-09-2	ND	--	ND	R	--	ND	--
4,6-DINITRO-2-METHYLPHENOL	534-52-1	ND	--	ND	R	--	ND	--
4-BROMOPHENYL-PHENYL ETHER	101-55-3	ND	--	ND	R	--	ND	--
4-CHLORO-3-METHYLPHENOL	59-50-7	ND	--	ND	R	--	ND	--
4-CHLOROPHENYL-PHENYL ETHER	7005-72-3	ND	--	ND	R	--	ND	--
4-METHYLPHENOL	106-44-5	ND	--	ND	R	--	ND	--
4-NITROANILINE	100-01-6	ND	--	ND	R	--	ND	--
4-NITROPHENOL	100-02-7	ND	--	ND	R	--	ND	--
ACENAPHTHENE	83-32-9	ND	--	380	R	--	93	0.03
ACENAPHTHYLENE	208-96-8	ND	--	ND	R	--	ND	--
ANTHRACENE	120-12-7	ND	--	ND	R	--	ND	--
BENZO(A)ANTHRACENE	56-55-3	ND	--	ND	R	--	ND	--
BENZO(A)PYRENE	50-32-8	ND	--	ND	R	--	ND	--
BENZO(B)FLUORANTHENE	205-99-2	ND	--	ND	R	--	ND	--
BENZO(G,H,I)PERYLENE	191-24-2	ND	--	ND	R	--	ND	--
BENZO(K)FLUORANTHENE	207-08-9	ND	--	ND	R	--	ND	--
BIS(2-CHLOROETHOXY)METHANE	111-91-1	ND	--	ND	R	--	ND	--
BIS(2-CHLOROETHYL) ETHER	111-44-4	ND	--	ND	R	--	ND	--
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	ND	--	ND	R	--	ND	--
BUTYLBENZYLPHTHALATE	85-68-7	ND	--	ND	R	--	ND	--
CARBAZOLE	86-74-8	ND	--	ND	R	--	ND	--
CHRYSENE	218-01-9	ND	--	ND	R	--	ND	--
DIBENZ(A,H)ANTHRACENE	53-70-3	ND	--	ND	R	--	ND	--
DIBENZOFURAN	132-64-9	ND	--	ND	R	--	ND	--
DIETHYLPHTHALATE	84-66-2	ND	--	ND	R	--	ND	--
DIMETHYLPHTHALATE	131-11-3	ND	--	ND	R	--	ND	--
DI-N-BUTYLPHTHALATE	84-74-2	ND	--	ND	R	--	ND	--
DI-N-OCTYLPHTHALATE	117-84-0	ND	--	ND	R	--	ND	--
FLUORANTHENE	206-44-0	ND	--	ND	R	--	ND	--
FLUORENE	86-73-7	13	0.00	910	R	--	130	0.04
HEXACHLOROBENZENE	118-74-1	ND	--	ND	R	--	ND	--
HEXACHLOROBUTADIENE	87-68-3	ND	--	ND	R	--	ND	--
HEXACHLOROCYCLOPENTADIENE	77-47-4	ND	--	ND	R	--	ND	--
HEXACHLOROETHANE	67-72-1	ND	--	ND	R	--	ND	--
INDENO(1,2,3-CD)PYRENE	193-39-5	ND	--	ND	R	--	ND	--

Table 3
Summary of Analytical Results and Contaminant Mass Removal - Liquid
Calumet Montana Refining, LLC - Great Falls, Montana

	Location	SP200		SP200			SP200	
	Ramboll Sample ID	CMR-SP200-220411		CMR-SP200-220517			CMR-SP200-220617	
	Sample Date	4/11/2022		5/17/2022			6/17/2022	
	Effluent Volume (L)*	137,543		0			126,978	
Analyte	**CAS No.**	**Result (ug/L)**	**Mass (lb)**	**Result (ug/L)**		**Mass (lb)**	**Result (ug/L)**	**Mass (lb)**
ISOPHORONE	78-59-1	ND	--	ND	R	--	ND	--
NAPHTHALENE	91-20-3	470	0.14	1,600	R	--	1,300	0.36
NITROBENZENE	98-95-3	ND	--	ND	R	--	ND	--
N-NITROSO-DI-N-PROPYLAMINE	621-64-7	ND	--	ND	R	--	ND	--
N-NITROSODIPHENYLAMINE	86-30-6	ND	--	ND	R	--	ND	--
PENTACHLOROPHENOL	87-86-5	ND	--	ND	R	--	ND	--
PHENANTHRENE	85-01-8	22	0.01	1,500	R	--	250	0.07
PHENOL	108-95-2	47	0.01	ND	R	--	ND	--
PYRENE	129-00-0	3	0.00	230	R	--	ND	--
Total SVOCs	--	**--**	**0.35**	**--**		**0.00**	**--**	**1.17**
Period Total SVOC Mass Removed (lbs)		**0.4**		**0.0**			**1.2**	
Cumulative Total VOC Mass Removed (lbs)		**2.8**		**2.8**			**4.0**	
EPH								
C11 THROUGH C22 AROMATIC HYDROCARBONS	C11-C22-AROM	56,000	16.98	740,000	R	--	530,000	148.36
C19 THROUGH C36 ALIPHATIC HYDROCARBONS	C19-C36-ALIP	17,000	5.15	660,000	R	--	37,000	10.36
C9 THROUGH C18 ALIPHATIC HYDROCARBONS	C09-C18-ALIP	87,000	26.38	3,700,000	R	--	240,000	67.18
TOTAL EXTRACTABLE HYDROCARBON (POST FRACTIONATION)	68334-30-5S	160,000	48.52	5,100,000	R	--	810,000	226.75
TOTAL EXTRACTABLE HYDROCARBON	68334-30-5E	160,000	48.52	5,900,000	R	--	670,000	187.56
Total EPHs	--	**--**	**48.52**	**--**		**0.00**	**--**	**187.56**
Period Total EPH Mass Removed (lbs)		**48.5**		**0.0**			**187.6**	
Cumulative Total EPH Mass Removed (lbs)		**169.5**		**169.5**			**357.1**	
VPH								
BENZENE	71-43-2	430	0.13	330	R	--	58	0.02
C5 THROUGH C8 ALIPHATIC HYDROCARBONS (ADJUSTED)	C05-C08-ALIP-J	1,500	0.45	2,600	R	--	1,300	0.36
C9 THROUGH C10 AROMATIC HYDROCARBONS	C09-C10-AROM	9,400	2.85	29,000	R	--	20,000	5.60
C9 THROUGH C12 ALIPHATIC HYDROCARBONS (ADJUSTED)	C09-C12-ALIP-J	6,800	2.06	28,000	R	--	8,600	2.41
ETHYL BENZENE	100-41-4	600	0.18	510	R	--	110	0.03
M,P-XYLENE	179601-23-1	3,200	0.97	3,200	R	--	1,300	0.36
METHYL TERT-BUTYL ETHER	1634-04-4	ND	--	ND	R	--	ND	--
NAPHTHALENE	91-20-3	470	0.14	1,600	R	--	1,300	0.36
ORTHO-XYLENE	95-47-6	1,000	0.30	1,100	R	--	550	0.15
TOLUENE	108-88-3	300	0.09	180	R	--	52	0.01
TOTAL PETROLEUM HYDROCARBONS	TPH	23,000	6.97	56,000	R	--	29,000	8.12
Total VPHss	--	**--**	**6.97**	**--**		**0.00**	**--**	**8.12**
Period Total VPH Mass Removed (lbs)		**7.0**		**0.0**			**8.1**	
Cumulative Total VPH Mass Removed (lbs)		**50.9**		**50.9**			**59.0**	

Table 3
Summary of Analytical Results and Contaminant Mass Removal - Liquid
Calumet Montana Refining, LLC - Great Falls, Montana

Notes:

*Effluent volumes represent volume of groundwater extracted during the start-up (October 2021), commissioning (November 2021 - December 2021), and first quarter of standard operation (January 2022 - March 2022). Effluent volumes beginning April 2022 represent volume extracted during the month which the sample was taken.

1. Results from May 17, 2022 appear anomalously high and separate phase non-aqueous phase liquid was identified in the sampling jar; therefore, these results do not appear representative of dissolved phase concentrations and were rejected. Due to the rejected May 2022 results, the effluent volume associated with the April 2022 sampling event represents the volume recovered from April 1, 2022 - May 15, 2022 and effluent volume associated with the June 17, 2022 sampling event represents the volume recovered from May 16, 2022 through June 30, 2022.

Sample Calculation

$$\boldsymbol{Mass\ Removed}\ (\boldsymbol{lb}) = \mathbf{1800}\ \frac{\boldsymbol{ug}}{\boldsymbol{L}} \times \mathbf{10^{-6}}\ \frac{\boldsymbol{g}}{\boldsymbol{ug}} \times \frac{\mathbf{1}}{\mathbf{453.6}}\ \frac{\boldsymbol{lb}}{\boldsymbol{g}} \times \mathbf{21138}\ \boldsymbol{L}$$

Abbreviations:

EPH : Extractable Petroleum Hydrocarbon
ND : Non Detect
SVOCs : Semi-volatile Organic Compounds
ug/L : micrograms per liter
VOCs : Volatile Organic Compounds
VPH : Volatile Petroleum Hydrocarbons

Table 4
Fluid Level Measurements at AOC-16 Area
Calumet Montana Refining, LLC - Great Falls, Montana

Well ID	9/29/2021			10/14/2021			10/20/2021			11/4/2021		
	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)
MW-22	--	7.12	--	--	7.26	--	NA	NA	--	NA	NA	--
MW-41D	--	10.83	--	NA	NA	--	NA	NA	--	NA	NA	--
MW-41S	7.85	7.89	0.04	NA	NA	--	NA	NA	--	NA	NA	--
MW-53	7.90	8.49	0.59	--	8.26	--	NA	NA	--	NA	NA	--
MW-57	--	10.29	--	--	10.51	--	NA	NA	--	NA	NA	--
MW-59D	--	12.14	--	--	12.06	--	NA	NA	--	NA	NA	--
MW-59S	--	6.23	--	--	6.22	--	NA	NA	--	NA	NA	--
MW-63	--	6.30	--	--	6.40	--	NA	NA	--	--	6.60	--
MW-64	--	7.76	--	--	8.40	--	NA	NA	--	--	8.72	--
MW-102	7.98	8.59	0.61	8.25	8.82	0.57	NA	NA	--	--	9.02	--
MW-103	--	8.04	--	--	8.35	--	NA	NA	--	--	8.77	--
MW-104	6.00	6.25	0.25	NA	NA	--	NA	NA	--	NA	NA	--
MW-105	--	5.58	--	--	8.97	--	NA	NA	--	NA	NA	--
MW-106	--	6.14	--	--	5.83	--	--	5.71	--	NA	NA	--

Notes:

DTP	Depth to Product
DTW	Depth to Water
ft BTOC	Below Top of Casing
LNAPL	light non-aqueous phase liquid
NA	Reading not collected
--	LNAPL was not present

Table 4
Fluid Level Measurements at AOC-16 Area
Calumet Montana Refining, LLC - Great Falls, Montana

Well ID	11/9/2021			12/2/2021			1/3/2022			2/8/2022		
	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)
MW-22	NA	NA	--	NA	NA	--	NA	NA	--	NA	NA	--
MW-41D	NA	NA	--	--	10.65	--	--	10.62	--	--	10.70	--
MW-41S	NA	NA	--	--	7.90	--	--	7.97	--	--	8.13	--
MW-53	8.54	8.59	0.05	8.83	8.88	0.06	--	9.32	--	9.31	9.32	0.00
MW-57	NA	NA	--	--	11.10	--	--	11.27	--	--	11.23	--
MW-59D	NA	NA	--	--	12.31	--	NA	NA	--	--	12.49	--
MW-59S	NA	NA	--	--	6.28	--	NA	NA	--	--	6.32	--
MW-63	NA	NA	--	NA	NA	--	NA	NA	--	--	7.13	--
MW-64	NA	NA	--	9.04	9.11	0.07	9.45	10.36	0.91	9.26	10.81	1.55
MW-102	NA	NA	--	--	8.97	--	9.29	9.33	0.04	--	9.50	--
MW-103	NA	NA	--	--	9.32	--	--	9.66	--	--	9.61	--
MW-104	NA	NA	--	6.62	6.79	0.17	6.75	7.02	0.27	6.83	7.16	0.33
MW-105	NA	NA	--	--	6.67	--	--	5.63	--	--	5.89	--
MW-106	--	5.48	--	--	5.70	--	--	6.19	--	--	5.92	--

Notes:

DTP	Depth to Product
DTW	Depth to Water
ft BTOC	Below Top of Casing
LNAPL	light non-aqueous phase liquid
NA	Reading not collected
--	LNAPL was not present

Table 4
Fluid Level Measurements at AOC-16 Area
Calumet Montana Refining, LLC - Great Falls, Montana

Well ID	3/11/2022			4/11/2022			6/8/2022		
	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)
MW-22	NA	NA	--	NA	NA	--	NA	NA	--
MW-41D	--	10.76	--	--	10.79	--	--	10.95	--
MW-41S	--	8.18	--	--	8.55	--	--	7.86	--
MW-53	9.43	9.44	0.01	--	9.38	--	9.08	10.03	0.95
MW-57	--	11.19	--	--	11.06	--	--	10.25	--
MW-59D	--	12.54	--	--	12.73	--	--	12.53	--
MW-59S	--	6.31	--	--	6.31	--	--	6.28	--
MW-63	--	7.23	--	--	7.30	--	--	7.06	--
MW-64	9.55	10.66	1.11	10.11	10.59	0.48	10.41	10.46	0.06
MW-102	--	10.07	--	--	10.08	--	--	10.22	--
MW-103	--	9.87	--	--	9.87	--	--	9.79	--
MW-104	7.13	7.57	0.44	7.38	7.81	0.43	7.86	7.86	0.00
MW-105	--	5.85	--	--	8.01	--	--	6.06	--
MW-106	--	5.80	--	--	5.70	--	--	5.03	--

Notes:

DTP	Depth to Product
DTW	Depth to Water
ft BTOC	Below Top of Casing
LNAPL	light non-aqueous phase liquid
NA	Reading not collected
--	LNAPL was not present

Table 5
Fluid Level Measurements at LNAPL Wells
Calumet Montana Refining, LLC - Great Falls, Montana

Well ID	9/30/2021				10/5/2021				10/12/2021				10/14/2021			
	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)
LNAPL-1	--	6.55	--	--	--	6.44	--	--	--	6.37	--	--	NA	NA	--	--
LNAPL-2	--	6.42	--	--	--	6.30	--	--	--	6.22	--	--	NA	NA	--	--
LNAPL-3	--	6.45	--	--	--	6.31	--	--	--	6.24	--	--	NA	NA	--	--
LNAPL-4	--	6.46	--	--	--	6.31	--	--	--	6.24	--	--	NA	NA	--	--
LNAPL-5	--	6.49	--	--	--	6.35	--	--	--	6.28	--	--	NA	NA	--	--
LNAPL-6	--	6.61	--	--	--	6.47	--	--	--	6.40	--	--	NA	NA	--	--
LNAPL-7	--	6.42	--	--	--	6.29	--	--	--	6.22	--	--	NA	NA	--	--
LNAPL-8	--	6.30	--	--	--	6.20	--	--	--	6.11	--	--	NA	NA	--	--
LNAPL-9	--	6.33	--	--	--	6.23	--	--	--	6.16	--	--	NA	NA	--	--
LNAPL-10	6.31	6.36	0.05	--	6.14	6.59	0.45	--	6.15	6.64	0.49	0.40	6.05	6.49	0.44	0.40
LNAPL-11	--	6.52	--	--	6.29	6.30	0.01	--	--	6.34	--	--	NA	NA	--	--

Notes:

DTP	Depth to Product
DTW	Depth to Water
ft BTOC	Below Top of Casing
LNAPL	light non-aqueous phase liquid
NA	Reading not collected
--	LNAPL was not present

Table 5
Fluid Level Measurements at LNAPL Wells
Calumet Montana Refining, LLC - Great Falls, Montana

Well ID	10/19/2021				10/20/2021				10/21/2021				10/22/2021			
	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)
LNAPL-1	--	6.31	--	--	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--
LNAPL-2	--	6.15	--	--	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--
LNAPL-3	--	6.18	--	--	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--
LNAPL-4	--	6.18	--	--	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--
LNAPL-5	--	6.22	--	--	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--
LNAPL-6	--	6.33	--	--	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--
LNAPL-7	--	6.16	--	--	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--
LNAPL-8	--	6.05	--	--	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--
LNAPL-9	6.11	6.12	0.01	--	NA	NA	--	--	NA	NA	--	--	--	6.12	--	--
LNAPL-10	6.05	6.42	0.37	2.30	6.04	6.22	0.18	1.70	6.15	6.23	0.08	1.00	6.09	6.18	0.09	1.00
LNAPL-11	6.22	6.63	0.41	0.30	6.32	6.35	0.03	1.60	6.40	6.41	0.01	0.80	--	6.30	--	0.80

Notes:

DTP	Depth to Product
DTW	Depth to Water
ft BTOC	Below Top of Casing
LNAPL	light non-aqueous phase liquid
NA	Reading not collected
--	LNAPL was not present

Table 5
Fluid Level Measurements at LNAPL Wells
Calumet Montana Refining, LLC - Great Falls, Montana

Well ID	10/25/2021				10/28/2021				11/4/2021				11/9/2021			
	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)
LNAPL-1	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--	--	6.24	--	--
LNAPL-2	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--	--	6.09	--	--
LNAPL-3	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--	--	6.10	--	--
LNAPL-4	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--	--	6.11	--	--
LNAPL-5	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--	--	6.14	--	--
LNAPL-6	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--	--	6.27	--	--
LNAPL-7	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--	5.98	5.99	0.01	--
LNAPL-8	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--	5.88	5.90	0.02	--
LNAPL-9	--	6.09	--	--	--	6.10	--	0.50	--	6.15	--	0.70	6.05	6.09	0.04	0.70
LNAPL-10	6.02	6.18	0.16	1.20	6.05	6.28	0.23	1.10	5.98	6.26	0.28	1.80	6.04	6.35	0.31	1.00
LNAPL-11	6.22	6.25	0.03	0.80	6.25	6.38	0.13	0.90	6.20	6.40	0.20	0.70	6.21	6.45	0.24	1.00

Notes:

DTP	Depth to Product
DTW	Depth to Water
ft BTOC	Below Top of Casing
LNAPL	light non-aqueous phase liquid
NA	Reading not collected
--	LNAPL was not present

Table 5
Fluid Level Measurements at LNAPL Wells
Calumet Montana Refining, LLC - Great Falls, Montana

Well ID	11/18/2021				12/2/2021				12/15/2021				1/3/2022			
	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)
LNAPL-1	--	6.30	--	--	--	6.36	--	--	NA	NA	--	--	--	6.50	--	--
LNAPL-2	--	6.15	--	--	--	6.22	--	--	NA	NA	--	--	--	6.35	--	--
LNAPL-3	--	6.17	--	--	--	6.24	--	--	NA	NA	--	--	--	6.38	--	--
LNAPL-4	--	6.18	--	--	--	6.25	--	--	NA	NA	--	--	--	6.40	--	--
LNAPL-5	--	6.20	--	--	6.28	6.30	0.02	0.40	6.32	6.64	0.32	0.50	6.37	6.78	0.41	0.80
LNAPL-6	--	6.24	--	--	--	6.41	--	--	--	6.50	--	--	--	6.56	--	--
LNAPL-7	6.18	6.58	0.40	1.00	6.18	6.58	0.40	1.00	6.28	6.65	0.38	1.30	6.32	6.77	0.45	0.80
LNAPL-8	6.08	6.43	0.35	1.00	6.08	6.46	0.38	1.00	6.18	6.55	0.37	1.30	6.28	6.37	0.09	0.80
LNAPL-9	6.17	6.20	0.04	0.60	6.17	6.31	0.14	1.00	6.27	6.40	0.13	0.60	--	6.42	--	--
LNAPL-10	6.08	6.45	0.38	0.80	6.09	6.62	0.53	1.00	6.19	6.64	0.45	1.80	6.24	6.75	0.51	0.80
LNAPL-11	6.26	6.53	0.27	0.80	6.28	6.68	0.40	1.00	6.38	6.78	0.41	1.60	6.42	6.88	0.46	0.80

Notes:

DTP	Depth to Product
DTW	Depth to Water
ft BTOC	Below Top of Casing
LNAPL	light non-aqueous phase liquid
NA	Reading not collected
--	LNAPL was not present

Table 5
Fluid Level Measurements at LNAPL Wells
Calumet Montana Refining, LLC - Great Falls, Montana

Well ID	2/8/2022				2/25/2022				3/7/2022				4/11/2022			
	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)
LNAPL-1	--	6.72	--	--	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--
LNAPL-2	--	6.57	--	--	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--
LNAPL-3	--	6.58	--	--	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--
LNAPL-4	--	6.59	--	--	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--
LNAPL-5	6.56	7.01	0.45	0.80	NA	NA	--	--	6.60	7.30	0.70	0.80	6.64	7.32	0.68	0.80
LNAPL-6	--	6.78	--	--	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--
LNAPL-7	6.58	6.75	0.17	0.80	NA	NA	--	--	6.57	7.18	0.61	0.80	6.53	7.26	0.73	0.80
LNAPL-8	6.50	6.59	0.09	0.80	6.47	6.98	0.51	1.00	6.45	7.10	0.65	0.80	6.46	7.07	0.61	0.13
LNAPL-9	--	6.56	--	--	NA	NA	--	--	NA	NA	--	--	NA	NA	--	--
LNAPL-10	6.47	7.05	0.59	0.80	6.43	7.33	0.90	1.00	6.47	7.10	0.63	0.80	6.52	7.19	0.67	0.80
LNAPL-11	6.73	7.29	0.56	0.80	6.61	7.39	0.78	0.80	6.63	7.43	0.80	0.80	6.70	7.43	0.73	0.80

Notes:

DTP	Depth to Product
DTW	Depth to Water
ft BTOC	Below Top of Casing
LNAPL	light non-aqueous phase liquid
NA	Reading not collected
--	LNAPL was not present

Table 5
Fluid Level Measurements at LNAPL Wells
Calumet Montana Refining, LLC - Great Falls, Montana

Well ID	5/15/2022				5/22/2022				5/29/2022				6/5/2022			
	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)
LNAPL-1	--	5.90	--	--	--	5.90	--	--	--	5.90	--	--	--	5.88	--	--
LNAPL-2	--	6.00	--	--	--	5.73	--	--	--	5.75	--	--	--	5.73	--	0.50
LNAPL-3	--	5.76	--	--	--	5.74	--	--	--	5.80	--	--	--	5.71	--	--
LNAPL-4	--	6.10	--	--	--	5.74	--	--	--	5.90	--	--	--	5.85	--	1.00
LNAPL-5	5.90	5.92	0.02	0.50	--	5.78	--	--	--	5.85	--	--	--	5.81	--	0.50
LNAPL-6	5.94	5.95	0.01	--	--	5.93	--	--	--	5.75	--	--	--	5.92	--	--
LNAPL-7	5.90	5.91	0.01	0.90	5.73	5.74	0.01	--	--	5.70	--	--	--	5.80	--	0.50
LNAPL-8	5.82	5.83	0.01	0.60	--	5.65	--	--	5.75	5.80	0.05	--	5.75	5.76	0.01	0.25
LNAPL-9	--	5.71	--	--	--	5.70	--	--	--	5.70	--	--	--	5.76	--	--
LNAPL-10	5.90	5.91	0.01	--	5.69	5.70	0.01	--	5.62	5.65	0.03	--	--	5.89	--	1.00
LNAPL-11	6.12	6.50	0.38	--	--	5.86	--	--	--	5.90	--	--	--	6.09	--	1.00

Notes:

DTP	Depth to Product
DTW	Depth to Water
ft BTOC	Below Top of Casing
LNAPL	light non-aqueous phase liquid
NA	Reading not collected
--	LNAPL was not present

Table 5
Fluid Level Measurements at LNAPL Wells
Calumet Montana Refining, LLC - Great Falls, Montana

Well ID	6/12/2022				6/19/2022				6/26/2022			
	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)	DTP (ft BTOC)	DTW (ft BTOC)	LNAPL Thickness (ft)	LNAPL Recovery (gallon)
LNAPL-1	--	5.90	--	--	--	6.00	--	--	--	6.00	--	--
LNAPL-2	--	5.73	--	--	--	5.85	--	0.50	--	5.60	--	--
LNAPL-3	--	5.78	--	--	--	5.87	--	--	--	5.45	--	--
LNAPL-4	--	5.90	--	0.80	5.87	5.89	0.02	0.75	--	5.55	--	--
LNAPL-5	5.79	5.81	0.02	0.50	5.90	5.93	0.03	0.50	5.45	5.50	0.05	--
LNAPL-6	--	5.93	--	--	--	6.04	--	--	5.45	5.50	0.05	--
LNAPL-7	--	5.96	--	0.60	5.85	5.87	0.02	1.00	5.40	5.45	0.05	--
LNAPL-8	--	5.96	--	0.80	5.77	5.80	0.03	--	--	5.40	--	--
LNAPL-9	--	5.72	--	--	5.80	5.82	0.02	--	--	5.40	--	--
LNAPL-10	6.00	6.03	0.03	0.80	5.76	6.00	0.24	0.75	--	5.35	--	--
LNAPL-11	6.21	6.25	0.04	0.50	5.94	6.18	0.24	0.75	--	5.50	--	--

Notes:

DTP	Depth to Product
DTW	Depth to Water
ft BTOC	Below Top of Casing
LNAPL	light non-aqueous phase liquid
NA	Reading not collected
--	LNAPL was not present

Table 6
Summary of Groundwater Analytical Results - Petroleum COCs
Calumet Montana Refining, LLC - Great Falls, Montana

Location	Montana DEQ-7 Human Health Standards - Groundwater	Montana DEQ Tier 1 Groundwater RBSLs	MW-041S	MW-041S	MW-041S	MW-105	MW-105	MW-105	MW-106	MW-106	MW-106
Field Sample ID			CMR-MW41S-211005	CMR-MW141S-220317	MW41S-GW-220622	CMR-MW105S-211006	CMR-MW105-220317	MW105-GW-220622	CMR-MW106-211005	CMR-MW106-220316	MW106-GW-220622
Lab Sample ID			WJ08015-001	XC21009-002	XF23073-001	WJ08015-002	XC21009-003	XF23073-003	WJ08009-001	XC21009-001	XF23073-002
Sample Method			Low Flow	Low Flow	Low Flow	Low Flow	Low Flow	Low Flow	Low Flow	Low Flow	Low Flow
Sample Date			05-Oct-21	17-Mar-22	22-Jun-22	06-Oct-21	17-Mar-22	22-Jun-22	05-Oct-21	16-Mar-22	22-Jun-22
Comments											
VOC											
Acetone			U (80)	76 (20)	HU (80)	58 H (20)	6.8 J (4)	U (4)	6.9 J (4)	U (4)	U (4)
Benzene	5	5	**1900 (8)**	**230 (2)**	**1200 H (8)**	**250 H (2)**	**25 (0.4)**	**110 (0.4)**	U (0.4)	U (0.4)	U (0.4)
2-Butanone			U (40)	28 J (10)	HU (40)	17 (2)	U (2)	3 J (2)	U (2)	U (2)	U (2)
Carbon Disulfide			U (8)	U (2)	HU (8)	HU (2)	U (0.4)	1.4 (0.4)	U (0.4)	U (0.4)	U (0.4)
Cumene			14 (8)	U (2)	16 H (8)	2.4 (0.4)	U (0.4)	2.9 (0.4)	U (0.4)	U (0.4)	U (0.4)
Cyclohexane			110 (8)	15 (2)	22 H (8)	59 (0.4)	3 (0.4)	50 (0.4)	U (0.4)	U (0.4)	U (0.4)
Ethyl Benzene	700	700	450 (8)	15 (2)	410 H (8)	150 (0.4)	20 (0.4)	200 (0.4)	U (0.4)	U (0.4)	U (0.4)
Methylcyclohexane			57 J (8)	9.4 J (2)	12 (8)	25 (0.4)	0.85 J (0.4)	14 (0.4)	U (0.4)	U (0.4)	U (0.4)
Methylene Chloride	5		U (8)	U (2)	HU (8)	U (0.4)	U (0.4)	U (0.4)	0.47 J (0.4)	U (0.4)	U (0.4)
Naphthalene	100	100	35 (8)	31 (2)	77 H (8)	8.5 (0.4)	0.86 (0.4)	4.9 (0.4)	U (0.4)	U (0.4)	U (0.4)
Toluene	1000	1000	270 (8)	44 (2)	180 H (8)	14 (0.4)	2 (0.4)	12 (0.4)	U (0.4)	U (0.4)	U (0.4)
m,p-xylene			640 (8)	580 (2)	2000 H (8)	41 (0.4)	6.7 (0.4)	28 (0.4)	U (0.4)	U (0.4)	U (0.4)
ortho-xylene	10000		200 (8)	300 (2)	750 H (8)	3.8 (0.4)	2.3 (0.4)	3.9 (0.4)	U (0.4)	U (0.4)	U (0.4)
Xylenes (total)	10000	10000	840 (8)	870 (2)	2700 H (8)	45 (0.4)	9 (0.4)	31 (0.4)	U (0.4)	U (0.4)	U (0.4)
SVOC											
Benzo(a)anthracene	0.5	0.5	U (0.2)	U (0.8)	U (2)	U (0.4)	U (0.04)	U (0.25)	U (0.04)	0.084 J (0.04)	U (0.2)
Benzo(a)pyrene	0.05	0.05	U (0.35)	U (1.4)	U (3.5)	U (0.7)	U (0.07)	U (0.44)	U (0.07)	**0.17 J (0.07)**	U (0.35)
Benzo(b)fluoranthene	0.5	0.5	U (0.2)	U (0.8)	U (2)	U (0.4)	U (0.04)	U (0.25)	U (0.04)	0.2 (0.04)	U (0.2)
Benzo(g,h,i)perylene			U (0.2)	U (0.8)	U (2)	U (0.4)	U (0.04)	U (0.25)	U (0.04)	0.12 J (0.04)	U (0.2)
Chrysene	50	50	U (0.15)	U (0.6)	U (1.5)	U (0.3)	U (0.03)	U (0.19)	U (0.03)	0.042 J (0.03)	U (0.15)
2,4-Dimethylphenol	100		U (2.4)	**160 (9.6)**	36 J (24)	U (4.8)	0.63 J (0.48)	U (3)	U (0.48)	U (0.48)	U (2.4)
Fluoranthene	20	20	U (0.5)	U (2)	U (5)	U (1)	U (0.1)	U (0.63)	U (0.1)	0.16 J (0.1)	U (0.5)
Fluorene	50	50	0.63 BJ (0.15)	U (0.6)	2.3 J (1.5)	U (0.3)	U (0.03)	U (0.19)	U (0.03)	U (0.03)	U (0.15)
Indeno(1,2,3-cd)pyrene	0.5	0.5	U (0.2)	U (0.8)	U (2)	U (0.4)	U (0.04)	U (0.25)	U (0.04)	0.15 J (0.04)	U (0.2)
2-Methylnaphthalene		36	1.7 B (0.2)	7.7 (0.8)	33 (2)	U (0.4)	U (0.04)	U (0.25)	0.044 BJ (0.04)	U (0.04)	U (0.2)
Naphthalene	100	100	15 B (0.25)	18 (1)	60 (2.5)	3.1 (0.5)	0.42 (0.05)	2.1 (0.31)	U (0.05)	U (0.05)	U (0.25)
Phenol	4000		5.6 (2.5)	15 J (10)	U (25)	U (5)	U (0.5)	U (3.1)	U (0.5)	U (0.5)	U (2.5)

Table 6
Summary of Groundwater Analytical Results - Petroleum COCs
Calumet Montana Refining, LLC - Great Falls, Montana

Location Field Sample ID Lab Sample ID Sample Method Sample Date Comments	Montana DEQ-7 Human Health Standards - Groundwater	Montana DEQ Tier 1 Groundwater RBSLs	MW-041S CMR-MW41S-211005 WJ08015-001 Low Flow 05-Oct-21	MW-041S CMR-MW141S-220317 XC21009-002 Low Flow 17-Mar-22	MW-041S MW41S-GW-220622 XF23073-001 Low Flow 22-Jun-22	MW-105 CMR-MW105S-211006 WJ08015-002 Low Flow 06-Oct-21	MW-105 CMR-MW105-220317 XC21009-003 Low Flow 17-Mar-22	MW-105 MW105-GW-220622 XF23073-003 Low Flow 22-Jun-22	MW-106 CMR-MW106-211005 WJ08009-001 Low Flow 05-Oct-21	MW-106 CMR-MW106-220316 XC21009-001 Low Flow 16-Mar-22	MW-106 MW106-GW-220622 XF23073-002 Low Flow 22-Jun-22
MTDEQ VPH											
C5-C8 Aliphatics		650	1500 (150)	460 J (150)	990 (150)	1200 (75)	150 (15)	830 (15)	U (15)	U (15)	U (15)
C9-C12 Aliphatics		1400	370 J (150)	730 J (150)	710 J (150)	130 (15)	21 J (15)	37 J (15)	U (15)	U (15)	U (15)
C9-C10 Aromatics		1100	990 (50)	810 (50)	3100 (50)	300 (5)	52 (5)	150 (5)	U (5)	U (5)	U (5)
Benzene	5	5	**1500 (5.1)**	**210 (5.1)**	**1100 (5.1)**	**220 (2.6)**	**20 (0.51)**	**86 (0.51)**	U (0.51)	U (0.51)	U (0.51)
Ethyl Benzene	700	700	370 (6.2)	11 J (6.2)	420 (6.2)	160 (0.62)	21 (0.62)	100 (0.62)	U (0.62)	U (0.62)	U (0.62)
Naphthalene	100	100	39 (0.7)	26 J (7)	**100 B (7)**	11 (0.7)	0.99 J (0.7)	3.3 BJ (0.7)	U (0.7)	U (0.7)	U (0.7)
Petroleum Hydrocarbons (Total)			6300 (350)	3100 (350)	9800 (350)	1900 (180)	240 (35)	1100 (35)	U (35)	U (35)	U (35)
Toluene	1000	1000	290 (5.3)	44 J (5.3)	170 (5.3)	14 (0.53)	1.8 J (0.53)	8.2 (0.53)	U (0.53)	U (0.53)	U (0.53)
m,p-xylene			580 (12)	490 (12)	1800 (12)	44 (1.2)	7.9 (1.2)	21 (1.2)	U (1.2)	U (1.2)	U (1.2)
ortho-xylene	10000		170 (0.58)	260 (5.8)	710 (5.8)	4.9 J (0.58)	2.5 J (0.58)	4 J (0.58)	U (0.58)	U (0.58)	U (0.58)
Xylenes (total)	10000	10000	1520 (5.8)	750 (5.8)	--	93.1 (6)	10.4 (1.2)	--	U (1.2)	U (1.2)	--
MTDEQ EPH											
C19-C36 Aliphatics		1000	--	--	U (100)	--	--	--	--	--	U (100)
C9-C18 Aliphatic Hydrocarbons		1400	--	--	990 (100)	--	--	--	--	--	U (100)
C11-C22 Aromatics		1100	--	--	4000 (100)	--	--	--	--	--	U (100)
Petroleum Hydrocarbons (Extractable)			--	--	5700 (2000)	--	--	--	U (200)	U (200)	U (200)
Extractable Petroleum Hydrocarbons (Frac)			--	--	5000 B (100)	--	--	--	--	--	U (100)

Notes:

1 All concentrations are presented in ug/L (ppb).
2 Only compounds with at least one detection are shown; EPH results also shown.
3 Concentrations that exceed the Montana DEQ-7 Human Health Standards - Groundwater are **boldfaced**.
4 Concentrations that exceed the Montana DEQ Tier 1 Groundwater RBSLs are underlined.
5 During sample collection at MW-41S, free-product was observed in the disposable tubing, purging and sample collection was immediately ended as a result of this observation and only a partial bottle set was collected at this monitoring well. However, based on a review of the historical results for MW-41S, free product is suspected to have been collected in the partial bottle set for EPH. As the data is not representative of groundwater conditions, the results are not reported in this table.

Abbreviations:

( ) -- Detection Limit.
U -- Not Detected.
J -- Estimated Concentration.
H -- Hold Time Exceeded.
-- -- Not Analyzed.

Table 7
Summary of Groundwater Analytical Results - Field Parameters
Calumet Montana Refining, LLC - Great Falls, Montana

Location	MW-041S	MW-041S	MW-041S	MW-105	MW-105	MW-105	MW-106	MW-106	MW-106
Field Sample ID	CMR-MW41S-211005	CMR-MW141S-220317	MW41S-GW-220622	CMR-MW105S-211006	CMR-MW105-220317	MW105-GW-220622	CMR-MW106-211005	CMR-MW106-220316	MW106-GW-220622
Sample Method	Low Flow	Low Flow	Low Flow	Low Flow	Low Flow	Low Flow	Low Flow	Low Flow	Low Flow
Sample Date	10/5/2021	3/17/2022	6/22/2022	10/6/2021	3/17/2022	6/22/2022	10/5/2021	3/16/2022	6/22/2022
FIELD PARAMETERS									
Specific Conductivity (Field Analysis)	1.26	0.001	1.4	1.99	1.98	2.16	6.91	2.01	2.35
Dissolved Oxygen	0.0	5.65	2.99	0.0	0.00	1.81	0.00	0.02	0.85
Oxidation Reduction Potential	-93	-40	-123	-107	-81	-113	13	14	17
pH (Field Analysis)	7.22	5.32	7	7.57	7.36	7.31	8.07	7.5	7.27
Turbidity (Field Parameters)	0.8	221	55	2.7	0	12.9	3.1	0	101

Abbreviations:
NTU -- Nephelometric Turbidity unit,
mg/L -- milligram per liter
mS/cm -- millisiemens per centimeter
mV -- millivolt

Table 8
Summary of Groundwater Analytical Results - Biodegradation Indicators
Calumet Montana Refining, LLC - Great Falls, Montana

Location	MW-105	MW-106	MW-106
Field Sample ID	MW105-GW-220622	CMR-MW106-211005	MW106-GW-220622
Lab Sample ID	XF23073-003	WJ08009-001	XF23073-002
Sample Method	Low Flow	Low Flow	Low Flow
Sample Date	6/22/2022	10/5/2021	6/22/2022
Comments			
Biodegradation Parameters			
Alkalinity [mg/l CaCO3]	--	500 (20)	830 (20)
BOD (5 Day)	--	13000 (180)	26000 7 (180)
Carbon Dioxide	--	470000 (27000)	810000 (27000)
Iron (Dissolved)	--	36 J (13)	130 J (130)
Iron	--	65 B (13)	15 J (13)
Manganese (Dissolved)	--	1400 (13)	890 (13)
Manganese	--	1400 (13)	880 (1.3)
Nitrate (as N)	--	210000 (500)	4700 B (5)
Sulfate	--	2900000 (25000)	210000 (13000)
Methane	55 B (2.5)	5.8 J (2.5)	62 B (2.5)

Notes:
1 All concentrations are presented in ug/L (ppb) except where otherwise noted.

Abbreviations:
J -- Estimated Concentration.
B -- Blank Contamination.
( ) -- Detection Limit.
-- -- Not analyzed.

APPENDIX A
LABORATORY ANALYTICAL REPORTS

A1: Dual-Phase Extraction Vapor Analytical Results

A2: Dual-Phase Extraction Effluent Liquid Analytical Results

A3: Passive Treatment Trench Groundwater Analytical Results

Report of Analysis

Ramboll US Corporation
333 West Wacker Drive
Suite 2700
Chicago, IL 60606
Attention: Ruta Deshpande

Project Name: AOC16 IM

Project Number: 690021708-011

Lot Number:**XD14056**

Date Completed:05/19/2022

05/23/2022 3:09 PM
Approved and released by:
Project Manager I: **Hannah K. Lucas**

The electronic signature above is the equivalent of a handwritten signature.
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Case Narrative
Ramboll US Corporation
Lot Number: XD14056

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report. Where sampling is conducted by the client, results relate to the accuracy of the information provided, and as the samples are received.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Volatiles
The laboratory control sample (LCS) associated with batch 39210 had 2-hexanone recovered above the acceptance limits. This could potentially result in a high bias on analytical results. There were no detections for this compound in the samples associated with this batch; therefore, data quality is not impacted.

Semivolatiles
Sample -001 had the surrogate recovered outside of the acceptance limits due to confirmed matrix interference.

Montana EPH
Sample -001 was diluted due to high detections for target compounds. As a result, the associated surrogates were recovered outside of the acceptance limits. No corrective action was required, as dilutions of 5X and greater impact recovery accuracy.

Sample Summary
Ramboll US Corporation
Lot Number: XD14056

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	CMR-SP200-220411	Aqueous	04/11/2022 1430	04/14/2022

(1 sample)

Detection Summary
Ramboll US Corporation
Lot Number: XD14056

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	CMR-SP200-220411	Aqueous	Benzene	8260D	540		ug/L	7
001	CMR-SP200-220411	Aqueous	Ethylbenzene	8260D	590		ug/L	7
001	CMR-SP200-220411	Aqueous	Naphthalene	8260D	510		ug/L	7
001	CMR-SP200-220411	Aqueous	Xylenes (total)	8260D	4100		ug/L	8
001	CMR-SP200-220411	Aqueous	m+p - Xylenes	8260D	3200		ug/L	8
001	CMR-SP200-220411	Aqueous	o - Xylenes	8260D	960		ug/L	8
001	CMR-SP200-220411	Aqueous	2,4-Dimethylphenol	8270E	270	Q	ug/L	9
001	CMR-SP200-220411	Aqueous	Fluorene	8270E	13	Q	ug/L	9
001	CMR-SP200-220411	Aqueous	2-Methylnaphthalene	8270E	340	Q	ug/L	10
001	CMR-SP200-220411	Aqueous	Naphthalene	8270E	330	Q	ug/L	10
001	CMR-SP200-220411	Aqueous	Phenanthrene	8270E	22	Q	ug/L	10
001	CMR-SP200-220411	Aqueous	Phenol	8270E	47	Q	ug/L	10
001	CMR-SP200-220411	Aqueous	Pyrene	8270E	3.2	JQ	ug/L	10
001	CMR-SP200-220411	Aqueous	TEH	Montana EPH	160000	BQL	ug/L	11
001	CMR-SP200-220411	Aqueous	C19 - C36 Aliphatics	Montana EPH	17000	Q	ug/L	12
001	CMR-SP200-220411	Aqueous	C9 - C18 Aliphatics	Montana EPH	87000	BQ	ug/L	12
001	CMR-SP200-220411	Aqueous	TEH, post-fractionation	Montana EPH	160000	BQL	ug/L	12
001	CMR-SP200-220411	Aqueous	C11 - C22 Aromatics	Montana EPH	56000	Q	ug/L	13
001	CMR-SP200-220411	Aqueous	C5 - C8 Aliphatics,	Montana VPH	1500	J	ug/L	14
001	CMR-SP200-220411	Aqueous	C9 - C12 Aliphatics,	Montana VPH	6800	J	ug/L	14
001	CMR-SP200-220411	Aqueous	Benzene	Montana VPH	430	J	ug/L	15
001	CMR-SP200-220411	Aqueous	C9 - C10 Aromatics	Montana VPH	9400		ug/L	15
001	CMR-SP200-220411	Aqueous	Ethylbenzene	Montana VPH	600		ug/L	15
001	CMR-SP200-220411	Aqueous	Naphthalene	Montana VPH	470	J	ug/L	15
001	CMR-SP200-220411	Aqueous	Toluene	Montana VPH	300	J	ug/L	15
001	CMR-SP200-220411	Aqueous	m+p - Xylenes	Montana VPH	3200		ug/L	15
001	CMR-SP200-220411	Aqueous	o - Xylenes	Montana VPH	1000		ug/L	15
001	CMR-SP200-220411	Aqueous	TPH	Montana VPH	23000		ug/L	16

(28 detections)

Volatile Organic Compounds by GC/MS

Client: **Ramboll US Corporation** Laboratory ID: **XD14056-001**

Description: **CMR-SP200-220411** Matrix: **Aqueous**

Date Sampled: **04/11/2022 1430**

Date Received: **04/14/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1000	04/24/2022 2053	BWS		39210

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND		10000	4000	ug/L	1
Benzene	**71-43-2**	**8260D**	**540**		**500**	**400**	**ug/L**	**1**
Bromochloromethane	74-97-5	8260D	ND		500	400	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND		500	400	ug/L	1
Bromoform	75-25-2	8260D	ND		500	400	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND		500	400	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND		10000	2000	ug/L	1
Carbon disulfide	75-15-0	8260D	ND		500	400	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND		500	400	ug/L	1
Chlorobenzene	108-90-7	8260D	ND		500	400	ug/L	1
Chloroethane	75-00-3	8260D	ND		500	400	ug/L	1
Chloroform	67-66-3	8260D	ND		500	400	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND		500	400	ug/L	1
Cyclohexane	110-82-7	8260D	ND		500	400	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND		500	400	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND		500	400	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND		500	400	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND		500	400	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND		500	400	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND		500	400	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND		500	400	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND		500	400	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		500	400	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND		500	400	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	ND		500	400	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND		500	400	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND		500	400	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND		500	400	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND		500	400	ug/L	1
1,4-Dioxane	123-91-1	8260D	ND		20000	13000	ug/L	1
Ethylbenzene	**100-41-4**	**8260D**	**590**		**500**	**400**	**ug/L**	**1**
2-Hexanone	591-78-6	8260D	ND	L	10000	2000	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND		500	400	ug/L	1
Methyl acetate	79-20-9	8260D	ND		1000	400	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		500	400	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND		10000	2000	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND		5000	400	ug/L	1
Methylene chloride	75-09-2	8260D	ND		500	400	ug/L	1
Naphthalene	**91-20-3**	**8260D**	**510**		**500**	**400**	**ug/L**	**1**
Styrene	100-42-5	8260D	ND		500	410	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND		500	400	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND		500	400	ug/L	1
Toluene	108-88-3	8260D	ND		500	400	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND		1000	420	ug/L	1

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: **Ramboll US Corporation**
Laboratory ID: **XD14056-001**
Description: **CMR-SP200-220411**
Matrix: **Aqueous**
Date Sampled: **04/11/2022 1430**
Date Received: **04/14/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1000	04/24/2022 2053	BWS		39210

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2,3-Trichlorobenzene	87-61-6	8260D	ND		500	400	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND		500	400	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND		500	400	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND		500	400	ug/L	1
Trichloroethene	79-01-6	8260D	ND		500	400	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	ND		500	400	ug/L	1
Vinyl chloride	75-01-4	8260D	ND		500	400	ug/L	1
Xylenes (total)	**1330-20-7**	**8260D**	**4100**		**1000**	**400**	**ug/L**	**1**
m+p - Xylenes	**179601-23-1**	**8260D**	**3200**		**500**	**400**	**ug/L**	**1**
o - Xylenes	**95-47-6**	**8260D**	**960**		**500**	**400**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		94	70-130
1,2-Dichloroethane-d4		105	70-130
Toluene-d8		97	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Semivolatile Organic Compounds by GC/MS

Client: **Ramboll US Corporation** Laboratory ID: **XD14056-001**

Description: **CMR-SP200-220411** Matrix: **Aqueous**

Date Sampled: **04/11/2022 1430**

Date Received: **04/14/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	20	04/23/2022 2219	SCD	04/18/2022 1610	38509

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270E	ND	Q	4.0	0.80	ug/L	1
Acenaphthylene	208-96-8	8270E	ND	Q	4.0	0.80	ug/L	1
Anthracene	120-12-7	8270E	ND	Q	4.0	1.2	ug/L	1
Benzo(a)anthracene	56-55-3	8270E	ND	Q	4.0	0.80	ug/L	1
Benzo(a)pyrene	50-32-8	8270E	ND	Q	4.0	1.4	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270E	ND	Q	4.0	0.80	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270E	ND	Q	4.0	0.80	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270E	ND	Q	4.0	0.80	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270E	ND	Q	16	10	ug/L	1
Butyl benzyl phthalate	85-68-7	8270E	ND	Q	16	10	ug/L	1
Carbazole	86-74-8	8270E	ND	Q	16	10	ug/L	1
bis (2-Chloro-1-methylethyl) ether	108-60-1	8270E	ND	Q	16	10	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270E	ND	Q	16	10	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270E	ND	Q	16	10	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270E	ND	Q	16	10	ug/L	1
2-Chloronaphthalene	91-58-7	8270E	ND	Q	16	10	ug/L	1
2-Chlorophenol	95-57-8	8270E	ND	Q	16	10	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270E	ND	Q	16	10	ug/L	1
Chrysene	218-01-9	8270E	ND	Q	4.0	0.60	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270E	ND	Q	4.0	0.60	ug/L	1
Dibenzofuran	132-64-9	8270E	ND	Q	16	10	ug/L	1
1,2-Dichlorobenzene	95-50-1	8270E	ND	Q	16	10	ug/L	1
1,3-Dichlorobenzene	541-73-1	8270E	ND	Q	16	10	ug/L	1
1,4-Dichlorobenzene	106-46-7	8270E	ND	Q	16	10	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270E	ND	Q	80	35	ug/L	1
2,4-Dichlorophenol	120-83-2	8270E	ND	Q	32	5.0	ug/L	1
Diethylphthalate	84-66-2	8270E	ND	Q	16	10	ug/L	1
Dimethyl phthalate	131-11-3	8270E	ND	Q	16	10	ug/L	1
2,4-Dimethylphenol	**105-67-9**	**8270E**	**270**	**Q**	**16**	**9.6**	**ug/L**	**1**
Di-n-butyl phthalate	84-74-2	8270E	ND	Q	16	10	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270E	ND	Q	80	20	ug/L	1
2,4-Dinitrophenol	51-28-5	8270E	ND	Q	80	20	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270E	ND	Q	32	10	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270E	ND	Q	32	10	ug/L	1
Di-n-octylphthalate	117-84-0	8270E	ND	Q	16	10	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270E	ND	Q	80	40	ug/L	1
Fluoranthene	206-44-0	8270E	ND	Q	4.0	2.0	ug/L	1
Fluorene	**86-73-7**	**8270E**	**13**	**Q**	**4.0**	**0.60**	**ug/L**	**1**
Hexachlorobenzene	118-74-1	8270E	ND	Q	16	10	ug/L	1
Hexachlorobutadiene	87-68-3	8270E	ND	Q	16	10	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270E	ND	Q	80	40	ug/L	1
Hexachloroethane	67-72-1	8270E	ND	Q	16	6.2	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270E	ND	Q	4.0	0.80	ug/L	1
Isophorone	78-59-1	8270E	ND	Q	16	10	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Semivolatile Organic Compounds by GC/MS

Client: **Ramboll US Corporation** | Laboratory ID: **XD14056-001**
Description: **CMR-SP200-220411** | Matrix: **Aqueous**
Date Sampled: **04/11/2022 1430**
Date Received: **04/14/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	20	04/23/2022 2219	SCD	04/18/2022 1610	38509

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
2-Methylnaphthalene	**91-57-6**	**8270E**	**340**	**Q**	**4.0**	**0.80**	**ug/L**	**1**
2-Methylphenol	95-48-7	8270E	ND	Q	16	4.2	ug/L	1
3+4-Methylphenol	106-44-5	8270E	ND	Q	32	30	ug/L	1
Naphthalene	**91-20-3**	**8270E**	**330**	**Q**	**4.0**	**1.0**	**ug/L**	**1**
2-Nitroaniline	88-74-4	8270E	ND	Q	32	10	ug/L	1
3-Nitroaniline	99-09-2	8270E	ND	Q	32	20	ug/L	1
4-Nitroaniline	100-01-6	8270E	ND	Q	32	30	ug/L	1
Nitrobenzene	98-95-3	8270E	ND	Q	16	11	ug/L	1
2-Nitrophenol	88-75-5	8270E	ND	Q	32	20	ug/L	1
4-Nitrophenol	100-02-7	8270E	ND	Q	80	40	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270E	ND	Q	16	10	ug/L	1
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270E	ND	Q	16	10	ug/L	1
Pentachlorophenol	87-86-5	8270E	ND	Q	80	40	ug/L	1
Phenanthrene	**85-01-8**	**8270E**	**22**	**Q**	**4.0**	**1.2**	**ug/L**	**1**
Phenol	**108-95-2**	**8270E**	**47**	**Q**	**16**	**10**	**ug/L**	**1**
Pyrene	**129-00-0**	**8270E**	**3.2**	**JQ**	**4.0**	**2.0**	**ug/L**	**1**
1,2,4,5-Tetrachlorobenzene	95-94-3	8270E	ND	Q	16	5.0	ug/L	1
2,3,4,6-Tetrachlorophenol	58-90-2	8270E	ND	Q	32	11	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8270E	ND	Q	16	7.4	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270E	ND	Q	16	10	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270E	ND	Q	16	10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Fluorobiphenyl		103	37-129
2-Fluorophenol		74	24-127
Nitrobenzene-d5		94	38-127
Phenol-d5	N	156	28-128
Terphenyl-d14		73	10-148
2,4,6-Tribromophenol		48	35-144

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana EPH (screening)

Client: **Ramboll US Corporation**
Laboratory ID: **XD14056-001**
Description: **CMR-SP200-220411**
Matrix: **Aqueous**
Date Sampled: **04/11/2022 1430**
Date Received: **04/14/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	Montana EPH	Montana EPH	100	05/12/2022 1715	NCM	04/22/2022 1350	39083

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
TEH		**Montana EPH**	**160000**	**BQL**	**20000**	**20000**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Bromonaphthalene (fractionation 2)	N	9460	40-140
1-Chloro-octadecane (aliphatic)	N	1660	40-140
2-Fluorobiphenyl (fractionation 1)	N	12000	40-140
o - Terphenyl (aromatic)	N	5430	40-140

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana EPH (aliphatics)

Client: **Ramboll US Corporation**
Laboratory ID: **XD14056-001**
Description: **CMR-SP200-220411**
Matrix: **Aqueous**
Date Sampled: **04/11/2022 1430**
Date Received: **04/14/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	Montana EPH	Montana EPH	50	05/12/2022 1754	NCM	04/22/2022 1350	40217

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
C19 - C36 Aliphatics		**Montana EPH**	**17000**	**Q**	**5000**	**5000**	**ug/L**	**1**
C9 - C18 Aliphatics		**Montana EPH**	**87000**	**BQ**	**5000**	**5000**	**ug/L**	**1**
TEH, post-fractionation	**68334-30-5S**	**Montana EPH**	**160000**	**BQL**	**10000**	**5000**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1-Chloro-octadecane (aliphatic)	N	0.00	40-140

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana EPH (aromatics)

Client: **Ramboll US Corporation**
Laboratory ID: **XD14056-001**
Description: **CMR-SP200-220411**
Matrix: **Aqueous**
Date Sampled: **04/11/2022 1430**
Date Received: **04/14/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	Montana EPH	Montana EPH	50	05/12/2022 1644	NCM	04/22/2022 1350	40218

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
C11 - C22 Aromatics		**Montana EPH**	**56000**	**Q**	**5000**	**5000**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Bromonaphthalene (fractionation 2)		127	40-140
2-Fluorobiphenyl (fractionation 1)	N	3510	40-140
o - Terphenyl (aromatic)	N	0.00	40-140

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana VPH (aliphatics)

Client: **Ramboll US Corporation**
Laboratory ID: **XD14056-001**
Description: **CMR-SP200-220411**
Matrix: **Aqueous**
Date Sampled: **04/11/2022 1430**
Date Received: **04/14/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	VPH	Montana VPH	100	04/22/2022 2034	JM1		39145

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
C5 - C8 Aliphatics, Adjusted		**Montana VPH**	**1500**	**J**	**7500**	**1500**	**ug/L**	**1**
C9 - C12 Aliphatics, Adjusted		**Montana VPH**	**6800**	**J**	**7500**	**1500**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2,5-Dibromotoluene (FID)		103	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana VPH (aromatics)

Client: **Ramboll US Corporation**
Laboratory ID: **XD14056-001**
Description: **CMR-SP200-220411**
Matrix: **Aqueous**
Date Sampled: **04/11/2022 1430**
Date Received: **04/14/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	VPH	Montana VPH	100	04/22/2022 2034	JM1		39144

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Benzene	**71-43-2**	**Montana VPH**	**430**	**J**	**500**	**51**	**ug/L**	**1**
C9 - C10 Aromatics		**Montana VPH**	**9400**		**2500**	**500**	**ug/L**	**1**
Ethylbenzene	**100-41-4**	**Montana VPH**	**600**		**500**	**62**	**ug/L**	**1**
Methyl tertiary butyl ether (MTBE)	1634-04-4	Montana VPH	ND		500	120	ug/L	1
Naphthalene	**91-20-3**	**Montana VPH**	**470**	**J**	**500**	**70**	**ug/L**	**1**
Toluene	**108-88-3**	**Montana VPH**	**300**	**J**	**500**	**53**	**ug/L**	**1**
m+p - Xylenes	**179601-23-1**	**Montana VPH**	**3200**		**500**	**120**	**ug/L**	**1**
o - Xylenes	**95-47-6**	**Montana VPH**	**1000**		**500**	**58**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2,5-Dibromotoluene (PID)		93	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana VPH (TPH)

Client: **Ramboll US Corporation**
Laboratory ID: **XD14056-001**
Description: **CMR-SP200-220411**
Matrix: **Aqueous**
Date Sampled: **04/11/2022 1430**
Date Received: **04/14/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	VPH	Montana VPH	100	04/22/2022 2034	JM1		39146

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
TPH		**Montana VPH**	**23000**		**18000**	**3500**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2,5-Dibromotoluene (FID)		103	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ39210-001
Batch: 39210
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	04/24/2022 1200
Benzene	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Bromochloromethane	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Bromodichloromethane	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Bromoform	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	04/24/2022 1200
2-Butanone (MEK)	ND		1	10	2.0	ug/L	04/24/2022 1200
Carbon disulfide	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Chlorobenzene	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Chloroethane	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Chloroform	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Cyclohexane	ND		1	0.50	0.40	ug/L	04/24/2022 1200
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Dibromochloromethane	ND		1	0.50	0.40	ug/L	04/24/2022 1200
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	04/24/2022 1200
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	04/24/2022 1200
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	04/24/2022 1200
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	04/24/2022 1200
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	04/24/2022 1200
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	04/24/2022 1200
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	04/24/2022 1200
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	04/24/2022 1200
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	04/24/2022 1200
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	04/24/2022 1200
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	04/24/2022 1200
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	04/24/2022 1200
1,4-Dioxane	ND		1	20	13	ug/L	04/24/2022 1200
Ethylbenzene	ND		1	0.50	0.40	ug/L	04/24/2022 1200
2-Hexanone	ND		1	10	2.0	ug/L	04/24/2022 1200
Isopropylbenzene	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Methyl acetate	ND		1	1.0	0.40	ug/L	04/24/2022 1200
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	04/24/2022 1200
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	04/24/2022 1200
Methylcyclohexane	ND		1	5.0	0.40	ug/L	04/24/2022 1200
Methylene chloride	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Naphthalene	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Styrene	ND		1	0.50	0.41	ug/L	04/24/2022 1200
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Tetrachloroethene	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Toluene	ND		1	0.50	0.40	ug/L	04/24/2022 1200
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	04/24/2022 1200

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ39210-001
Batch: 39210
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
1,2,3-Trichlorobenzene	ND		1	0.50	0.40	ug/L	04/24/2022 1200
1,2,4-Trichlorobenzene	ND		1	0.50	0.40	ug/L	04/24/2022 1200
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	04/24/2022 1200
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Trichloroethene	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Trichlorofluoromethane	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Vinyl chloride	ND		1	0.50	0.40	ug/L	04/24/2022 1200
Xylenes (total)	ND		1	1.0	0.40	ug/L	04/24/2022 1200
m+p - Xylenes	ND		1	0.50	0.40	ug/L	04/24/2022 1200
o - Xylenes	ND		1	0.50	0.40	ug/L	04/24/2022 1200

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		94	70-130
1,2-Dichloroethane-d4		107	70-130
Toluene-d8		98	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ39210-002
Batch: 39210
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acetone	100	140		1	140	60-140	04/24/2022 1110
Benzene	50	48		1	97	70-130	04/24/2022 1110
Bromochloromethane	50	45		1	90	70-130	04/24/2022 1110
Bromodichloromethane	50	50		1	101	70-130	04/24/2022 1110
Bromoform	50	55		1	110	70-130	04/24/2022 1110
Bromomethane (Methyl bromide)	50	49		1	98	70-130	04/24/2022 1110
2-Butanone (MEK)	100	120		1	120	70-130	04/24/2022 1110
Carbon disulfide	50	42		1	85	70-130	04/24/2022 1110
Carbon tetrachloride	50	45		1	90	70-130	04/24/2022 1110
Chlorobenzene	50	49		1	98	70-130	04/24/2022 1110
Chloroethane	50	42		1	83	70-130	04/24/2022 1110
Chloroform	50	45		1	90	70-130	04/24/2022 1110
Chloromethane (Methyl chloride)	50	41		1	83	60-140	04/24/2022 1110
Cyclohexane	50	47		1	93	70-130	04/24/2022 1110
1,2-Dibromo-3-chloropropane (DBCP)	50	52		1	104	70-130	04/24/2022 1110
Dibromochloromethane	50	55		1	109	70-130	04/24/2022 1110
1,2-Dibromoethane (EDB)	50	53		1	106	70-130	04/24/2022 1110
1,2-Dichlorobenzene	50	48		1	97	70-130	04/24/2022 1110
1,3-Dichlorobenzene	50	50		1	100	70-130	04/24/2022 1110
1,4-Dichlorobenzene	50	50		1	99	70-130	04/24/2022 1110
Dichlorodifluoromethane	50	39		1	78	60-140	04/24/2022 1110
1,1-Dichloroethane	50	45		1	91	70-130	04/24/2022 1110
1,2-Dichloroethane	50	48		1	96	70-130	04/24/2022 1110
1,1-Dichloroethene	50	44		1	89	70-130	04/24/2022 1110
cis-1,2-Dichloroethene	50	46		1	92	70-130	04/24/2022 1110
trans-1,2-Dichloroethene	50	45		1	90	70-130	04/24/2022 1110
1,2-Dichloropropane	50	50		1	100	70-130	04/24/2022 1110
cis-1,3-Dichloropropene	50	49		1	98	70-130	04/24/2022 1110
trans-1,3-Dichloropropene	50	51		1	102	70-130	04/24/2022 1110
1,4-Dioxane	500	490		1	97	60-140	04/24/2022 1110
Ethylbenzene	50	53		1	106	70-130	04/24/2022 1110
2-Hexanone	100	130	N	1	132	70-130	04/24/2022 1110
Isopropylbenzene	50	55		1	110	70-130	04/24/2022 1110
Methyl acetate	50	48		1	96	70-130	04/24/2022 1110
Methyl tertiary butyl ether (MTBE)	50	51		1	102	70-130	04/24/2022 1110
4-Methyl-2-pentanone	100	110		1	106	70-130	04/24/2022 1110
Methylcyclohexane	50	49		1	97	70-130	04/24/2022 1110
Methylene chloride	50	46		1	92	70-130	04/24/2022 1110
Naphthalene	50	48		1	96	70-130	04/24/2022 1110
Styrene	50	51		1	103	70-130	04/24/2022 1110
1,1,2,2-Tetrachloroethane	50	51		1	103	70-130	04/24/2022 1110
Tetrachloroethene	50	50		1	99	70-130	04/24/2022 1110
Toluene	50	53		1	105	70-130	04/24/2022 1110
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	43		1	87	70-130	04/24/2022 1110

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
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Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ39210-002
Batch: 39210
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
1,2,3-Trichlorobenzene	50	48		1	95	70-130	04/24/2022 1110
1,2,4-Trichlorobenzene	50	47		1	94	70-130	04/24/2022 1110
1,1,1-Trichloroethane	50	46		1	93	70-130	04/24/2022 1110
1,1,2-Trichloroethane	50	51		1	103	70-130	04/24/2022 1110
Trichloroethene	50	45		1	91	70-130	04/24/2022 1110
Trichlorofluoromethane	50	42		1	84	70-130	04/24/2022 1110
Vinyl chloride	50	41		1	82	70-130	04/24/2022 1110
Xylenes (total)	100	110		1	109	70-130	04/24/2022 1110
m+p - Xylenes	50	55		1	110	70-130	04/24/2022 1110
o - Xylenes	50	54		1	108	70-130	04/24/2022 1110

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		104	70-130
1,2-Dichloroethane-d4		95	70-130
Toluene-d8		101	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - MB

Sample ID: XQ38509-001
Batch: 38509
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/18/2022 1610

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acenaphthene	ND		1	0.20	0.040	ug/L	04/22/2022 1810
Acenaphthylene	ND		1	0.20	0.040	ug/L	04/22/2022 1810
Anthracene	ND		1	0.20	0.060	ug/L	04/22/2022 1810
Benzo(a)anthracene	ND		1	0.20	0.040	ug/L	04/22/2022 1810
Benzo(a)pyrene	ND		1	0.20	0.070	ug/L	04/22/2022 1810
Benzo(b)fluoranthene	ND		1	0.20	0.040	ug/L	04/22/2022 1810
Benzo(g,h,i)perylene	ND		1	0.20	0.040	ug/L	04/22/2022 1810
Benzo(k)fluoranthene	ND		1	0.20	0.040	ug/L	04/22/2022 1810
4-Bromophenyl phenyl ether	ND		1	0.80	0.50	ug/L	04/22/2022 1810
Butyl benzyl phthalate	ND		1	0.80	0.50	ug/L	04/22/2022 1810
Carbazole	ND		1	0.80	0.50	ug/L	04/22/2022 1810
bis (2-Chloro-1-methylethyl) ether	ND		1	0.80	0.50	ug/L	04/22/2022 1810
4-Chloro-3-methyl phenol	ND		1	0.80	0.50	ug/L	04/22/2022 1810
bis(2-Chloroethoxy)methane	ND		1	0.80	0.50	ug/L	04/22/2022 1810
bis(2-Chloroethyl)ether	ND		1	0.80	0.50	ug/L	04/22/2022 1810
2-Chloronaphthalene	ND		1	0.80	0.50	ug/L	04/22/2022 1810
2-Chlorophenol	ND		1	0.80	0.50	ug/L	04/22/2022 1810
4-Chlorophenyl phenyl ether	ND		1	0.80	0.50	ug/L	04/22/2022 1810
Chrysene	ND		1	0.20	0.030	ug/L	04/22/2022 1810
Dibenzo(a,h)anthracene	ND		1	0.20	0.030	ug/L	04/22/2022 1810
Dibenzofuran	ND		1	0.80	0.50	ug/L	04/22/2022 1810
1,2-Dichlorobenzene	ND		1	0.80	0.50	ug/L	04/22/2022 1810
1,3-Dichlorobenzene	ND		1	0.80	0.50	ug/L	04/22/2022 1810
1,4-Dichlorobenzene	ND		1	0.80	0.50	ug/L	04/22/2022 1810
3,3'-Dichlorobenzidine	ND		1	4.0	1.8	ug/L	04/22/2022 1810
2,4-Dichlorophenol	ND		1	1.6	0.25	ug/L	04/22/2022 1810
Diethylphthalate	ND		1	0.80	0.50	ug/L	04/22/2022 1810
Dimethyl phthalate	ND		1	0.80	0.50	ug/L	04/22/2022 1810
2,4-Dimethylphenol	ND		1	0.80	0.48	ug/L	04/22/2022 1810
Di-n-butyl phthalate	ND		1	0.80	0.50	ug/L	04/22/2022 1810
4,6-Dinitro-2-methylphenol	ND		1	4.0	1.0	ug/L	04/22/2022 1810
2,4-Dinitrophenol	ND		1	4.0	1.0	ug/L	04/22/2022 1810
2,4-Dinitrotoluene	ND		1	1.6	0.50	ug/L	04/22/2022 1810
2,6-Dinitrotoluene	ND		1	1.6	0.50	ug/L	04/22/2022 1810
Di-n-octylphthalate	ND		1	0.80	0.50	ug/L	04/22/2022 1810
bis(2-Ethylhexyl)phthalate	ND		1	4.0	2.0	ug/L	04/22/2022 1810
Fluoranthene	ND		1	0.20	0.10	ug/L	04/22/2022 1810
Fluorene	ND		1	0.20	0.030	ug/L	04/22/2022 1810
Hexachlorobenzene	ND		1	0.80	0.50	ug/L	04/22/2022 1810
Hexachlorobutadiene	ND		1	0.80	0.50	ug/L	04/22/2022 1810
Hexachlorocyclopentadiene	ND		1	4.0	2.0	ug/L	04/22/2022 1810
Hexachloroethane	ND		1	0.80	0.31	ug/L	04/22/2022 1810
Indeno(1,2,3-c,d)pyrene	ND		1	0.20	0.040	ug/L	04/22/2022 1810
Isophorone	ND		1	0.80	0.50	ug/L	04/22/2022 1810

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - MB

Sample ID: XQ38509-001
Batch: 38509
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/18/2022 1610

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
2-Methylnaphthalene	ND		1	0.20	0.040	ug/L	04/22/2022 1810
2-Methylphenol	ND		1	0.80	0.21	ug/L	04/22/2022 1810
3+4-Methylphenol	ND		1	1.6	1.5	ug/L	04/22/2022 1810
Naphthalene	ND		1	0.20	0.050	ug/L	04/22/2022 1810
2-Nitroaniline	ND		1	1.6	0.50	ug/L	04/22/2022 1810
3-Nitroaniline	ND		1	1.6	1.0	ug/L	04/22/2022 1810
4-Nitroaniline	ND		1	1.6	1.5	ug/L	04/22/2022 1810
Nitrobenzene	ND		1	0.80	0.55	ug/L	04/22/2022 1810
2-Nitrophenol	ND		1	1.6	1.0	ug/L	04/22/2022 1810
4-Nitrophenol	ND		1	4.0	2.0	ug/L	04/22/2022 1810
N-Nitrosodi-n-propylamine	ND		1	0.80	0.50	ug/L	04/22/2022 1810
N-Nitrosodiphenylamine (Diphenylamine)	ND		1	0.80	0.50	ug/L	04/22/2022 1810
Pentachlorophenol	ND		1	4.0	2.0	ug/L	04/22/2022 1810
Phenanthrene	ND		1	0.20	0.060	ug/L	04/22/2022 1810
Phenol	ND		1	0.80	0.50	ug/L	04/22/2022 1810
Pyrene	ND		1	0.20	0.10	ug/L	04/22/2022 1810
1,2,4,5-Tetrachlorobenzene	ND		1	0.80	0.25	ug/L	04/22/2022 1810
2,3,4,6-Tetrachlorophenol	ND		1	1.6	0.55	ug/L	04/22/2022 1810
1,2,4-Trichlorobenzene	ND		1	0.80	0.37	ug/L	04/22/2022 1810
2,4,5-Trichlorophenol	ND		1	0.80	0.50	ug/L	04/22/2022 1810
2,4,6-Trichlorophenol	ND		1	0.80	0.50	ug/L	04/22/2022 1810

Surrogate	Q	% Rec	Acceptance Limit
2-Fluorobiphenyl		60	37-129
2-Fluorophenol		32	24-127
Nitrobenzene-d5		49	38-127
Phenol-d5		38	28-128
Terphenyl-d14		72	10-148
2,4,6-Tribromophenol		60	35-144

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: XQ38509-002
Batch: 38509
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/18/2022 1610

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acenaphthene	8.0	4.9		1	61	30-122	04/22/2022 1836
Acenaphthylene	8.0	5.0		1	63	30-130	04/22/2022 1836
Anthracene	8.0	5.3		1	66	30-123	04/22/2022 1836
Benzo(a)anthracene	8.0	4.8		1	60	40-125	04/22/2022 1836
Benzo(a)pyrene	8.0	4.3		1	54	40-128	04/22/2022 1836
Benzo(b)fluoranthene	8.0	4.3		1	54	32-145	04/22/2022 1836
Benzo(g,h,i)perylene	8.0	5.3		1	66	42-128	04/22/2022 1836
Benzo(k)fluoranthene	8.0	4.9		1	61	50-135	04/22/2022 1836
4-Bromophenyl phenyl ether	8.0	5.5		1	68	30-124	04/22/2022 1836
Butyl benzyl phthalate	8.0	5.0		1	62	54-135	04/22/2022 1836
Carbazole	8.0	5.5		1	69	30-130	04/22/2022 1836
bis (2-Chloro-1-methylethyl) ether	8.0	4.7		1	59	34-110	04/22/2022 1836
4-Chloro-3-methyl phenol	8.0	4.5		1	56	30-123	04/22/2022 1836
bis(2-Chloroethoxy)methane	8.0	5.2		1	66	40-119	04/22/2022 1836
bis(2-Chloroethyl)ether	8.0	5.0		1	62	35-114	04/22/2022 1836
2-Chloronaphthalene	8.0	4.7		1	59	39-128	04/22/2022 1836
2-Chlorophenol	8.0	4.4		1	55	39-115	04/22/2022 1836
4-Chlorophenyl phenyl ether	8.0	4.9		1	61	30-121	04/22/2022 1836
Chrysene	8.0	5.1		1	64	50-130	04/22/2022 1836
Dibenzo(a,h)anthracene	8.0	4.6		1	58	30-130	04/22/2022 1836
Dibenzofuran	8.0	4.5		1	56	30-118	04/22/2022 1836
1,2-Dichlorobenzene	8.0	4.4		1	55	20-110	04/22/2022 1836
1,3-Dichlorobenzene	8.0	4.3		1	54	17-112	04/22/2022 1836
1,4-Dichlorobenzene	8.0	4.2		1	53	18-113	04/22/2022 1836
3,3'-Dichlorobenzidine	8.0	5.3		1	67	10-126	04/22/2022 1836
2,4-Dichlorophenol	8.0	4.4		1	55	30-121	04/22/2022 1836
Diethylphthalate	8.0	5.3		1	66	40-125	04/22/2022 1836
Dimethyl phthalate	8.0	5.3		1	66	40-127	04/22/2022 1836
2,4-Dimethylphenol	8.0	6.1		1	76	20-125	04/22/2022 1836
Di-n-butyl phthalate	8.0	5.8		1	72	40-127	04/22/2022 1836
4,6-Dinitro-2-methylphenol	8.0	5.3		1	66	46-134	04/22/2022 1836
2,4-Dinitrophenol	16	7.0		1	43	11-126	04/22/2022 1836
2,4-Dinitrotoluene	8.0	5.5		1	68	51-128	04/22/2022 1836
2,6-Dinitrotoluene	8.0	5.4		1	67	48-133	04/22/2022 1836
Di-n-octylphthalate	8.0	4.8		1	60	55-143	04/22/2022 1836
bis(2-Ethylhexyl)phthalate	8.0	4.9		1	62	50-133	04/22/2022 1836
Fluoranthene	8.0	5.4		1	67	40-128	04/22/2022 1836
Fluorene	8.0	4.7		1	59	30-124	04/22/2022 1836
Hexachlorobenzene	8.0	4.9		1	62	30-125	04/22/2022 1836
Hexachlorobutadiene	8.0	4.1		1	51	24-110	04/22/2022 1836
Hexachlorocyclopentadiene	40	11		1	28	22-122	04/22/2022 1836
Hexachloroethane	8.0	4.1		1	52	28-116	04/22/2022 1836
Indeno(1,2,3-c,d)pyrene	8.0	4.5		1	56	50-125	04/22/2022 1836
Isophorone	8.0	4.8		1	60	30-130	04/22/2022 1836

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: XQ38509-002
Batch: 38509
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/18/2022 1610

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
2-Methylnaphthalene	8.0	5.0		1	63	40-132	04/22/2022 1836
2-Methylphenol	8.0	5.1		1	64	37-115	04/22/2022 1836
3+4-Methylphenol	8.0	4.5		1	56	44-112	04/22/2022 1836
Naphthalene	8.0	4.9		1	62	40-122	04/22/2022 1836
2-Nitroaniline	8.0	5.7		1	71	49-128	04/22/2022 1836
3-Nitroaniline	8.0	5.3		1	67	31-128	04/22/2022 1836
4-Nitroaniline	8.0	6.6		1	83	30-135	04/22/2022 1836
Nitrobenzene	8.0	4.7		1	59	39-123	04/22/2022 1836
2-Nitrophenol	8.0	5.3		1	66	36-123	04/22/2022 1836
4-Nitrophenol	16	7.5		1	47	31-145	04/22/2022 1836
N-Nitrosodi-n-propylamine	8.0	4.9		1	62	39-119	04/22/2022 1836
N-Nitrosodiphenylamine (Diphenylamine)	8.0	5.1		1	64	30-123	04/22/2022 1836
Pentachlorophenol	16	5.4		1	34	34-137	04/22/2022 1836
Phenanthrene	8.0	5.0		1	62	40-123	04/22/2022 1836
Phenol	8.0	4.1		1	51	30-130	04/22/2022 1836
Pyrene	8.0	4.9		1	62	40-126	04/22/2022 1836
1,2,4,5-Tetrachlorobenzene	8.0	4.1		1	51	30-130	04/22/2022 1836
2,3,4,6-Tetrachlorophenol	8.0	3.8		1	48	30-130	04/22/2022 1836
1,2,4-Trichlorobenzene	8.0	4.2		1	53	20-90	04/22/2022 1836
2,4,5-Trichlorophenol	8.0	4.0		1	50	30-123	04/22/2022 1836
2,4,6-Trichlorophenol	8.0	4.2		1	53	30-125	04/22/2022 1836

Surrogate	Q	% Rec	Acceptance Limit
2-Fluorobiphenyl		58	37-129
2-Fluorophenol		45	24-127
Nitrobenzene-d5		58	38-127
Phenol-d5		50	28-128
Terphenyl-d14		64	10-148
2,4,6-Tribromophenol		61	35-144

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (screening) - MB

Sample ID: XQ39083-001
Batch: 39083
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 04/22/2022 1350

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TEH	**300**		**1**	**200**	**200**	**ug/L**	**04/29/2022 1538**

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)	N	183	40-140
1-Chloro-octadecane (aliphatic)		76	40-140
2-Fluorobiphenyl (fractionation 1)	N	148	40-140
o - Terphenyl (aromatic)		100	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (screening) - LCS

Sample ID: XQ39083-002
Batch: 39083
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 04/22/2022 1350

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TEH	300	990	N	1	330	40-140	04/29/2022 1547

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)	N	149	40-140
1-Chloro-octadecane (aliphatic)		115	40-140
2-Fluorobiphenyl (fractionation 1)		131	40-140
o - Terphenyl (aromatic)		120	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (screening) - LCSD

Sample ID: XQ39083-003
Batch: 39083
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 04/22/2022 1350

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
TEH	300	1100	N	1	368	11	40-140	25	04/29/2022 1557

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)	N	152	40-140
1-Chloro-octadecane (aliphatic)		122	40-140
2-Fluorobiphenyl (fractionation 1)		133	40-140
o - Terphenyl (aromatic)		123	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aliphatics) - MB

Sample ID: XQ40217-001
Batch: 40217
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 04/22/2022 1350

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
C19 - C36 Aliphatics	ND		1	100	100	ug/L	05/12/2022 1724
C9 - C18 Aliphatics	**170**		**1**	**100**	**100**	**ug/L**	**05/12/2022 1724**
TEH, post-fractionation	**270**		**1**	**200**	**100**	**ug/L**	**05/12/2022 1724**

Surrogate	Q	% Rec	Acceptance Limit
1-Chloro-octadecane (aliphatic)		69	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aliphatics) - LCS

Sample ID: XQ40217-002
Batch: 40217
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 04/22/2022 1350

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
C19 - C36 Aliphatics	400	320		1	81	40-140	05/12/2022 1734
C9 - C18 Aliphatics	300	200		1	68	40-140	05/12/2022 1734
TEH, post-fractionation	300	1200	N	1	410	40-140	05/12/2022 1734

Surrogate	Q	% Rec	Acceptance Limit
1-Chloro-octadecane (aliphatic)		72	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aliphatics) - LCSD

Sample ID: XQ40217-003
Batch: 40217
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 04/22/2022 1350

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
C19 - C36 Aliphatics	400	340		1	85	4.8	40-140	25	05/12/2022 1744
C9 - C18 Aliphatics	300	210		1	71	4.0	40-140	25	05/12/2022 1744
TEH, post-fractionation	300	1500	N,+	1	483	200	40-140	25	05/09/2022 0000

Surrogate	Q	% Rec	Acceptance Limit
1-Chloro-octadecane (aliphatic)		73	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aromatics) - MB

Sample ID: XQ40218-001
Batch: 40218
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 04/22/2022 1350

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
C11 - C22 Aromatics	ND		1	100	100	ug/L	05/12/2022 1615

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		52	40-140
2-Fluorobiphenyl (fractionation 1)		104	40-140
o - Terphenyl (aromatic)		77	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aromatics) - LCS

Sample ID: XQ40218-002
Batch: 40218
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 04/22/2022 1350

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
C11 - C22 Aromatics	850	710		1	83	40-140	05/12/2022 1625

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		64	40-140
2-Fluorobiphenyl (fractionation 1)		91	40-140
o - Terphenyl (aromatic)		76	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aromatics) - LCSD

Sample ID: XQ40218-003
Batch: 40218
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 04/22/2022 1350

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
C11 - C22 Aromatics	850	900		1	106	24	40-140	25	05/12/2022 1634

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		73	40-140
2-Fluorobiphenyl (fractionation 1)		108	40-140
o - Terphenyl (aromatic)		91	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aromatics) - MB

Sample ID: XQ39144-001
Batch: 39144
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Benzene	ND		1	5.0	0.51	ug/L	04/22/2022 1937
C9 - C10 Aromatics	ND		1	25	5.0	ug/L	04/22/2022 1937
Ethylbenzene	ND		1	5.0	0.62	ug/L	04/22/2022 1937
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	1.2	ug/L	04/22/2022 1937
Naphthalene	ND		1	5.0	0.70	ug/L	04/22/2022 1937
Toluene	ND		1	5.0	0.53	ug/L	04/22/2022 1937
m+p - Xylenes	ND		1	5.0	1.2	ug/L	04/22/2022 1937
o - Xylenes	ND		1	5.0	0.58	ug/L	04/22/2022 1937

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (PID)		80	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aromatics) - LCS

Sample ID: XQ39144-002
Batch: 39144
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Benzene	25	22		1	90	70-130	04/22/2022 1811
C9 - C10 Aromatics	25	23		1	92	70-130	04/22/2022 1811
Ethylbenzene	25	23		1	91	70-130	04/22/2022 1811
Methyl tertiary butyl ether (MTBE)	25	21		1	84	70-130	04/22/2022 1811
Naphthalene	25	22		1	89	70-130	04/22/2022 1811
Toluene	25	23		1	91	70-130	04/22/2022 1811
m+p - Xylenes	50	46		1	91	70-130	04/22/2022 1811
o - Xylenes	25	23		1	94	70-130	04/22/2022 1811

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (PID)		88	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aromatics) - LCSD

Sample ID: XQ39144-003
Batch: 39144
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Benzene	25	20		1	80	11	70-130	25	04/22/2022 1839
C9 - C10 Aromatics	25	20		1	81	13	70-130	25	04/22/2022 1839
Ethylbenzene	25	20		1	81	12	70-130	25	04/22/2022 1839
Methyl tertiary butyl ether (MTBE)	25	20		1	78	6.9	70-130	25	04/22/2022 1839
Naphthalene	25	20		1	80	9.9	70-130	25	04/22/2022 1839
Toluene	25	21		1	82	10	70-130	25	04/22/2022 1839
m+p - Xylenes	50	41		1	83	9.9	70-130	25	04/22/2022 1839
o - Xylenes	25	21		1	84	11	70-130	25	04/22/2022 1839

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (PID)		78	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aliphatics) - MB

Sample ID: XQ39145-001
Batch: 39145
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
C5 - C8 Aliphatics, Adjusted	ND		1	75	15	ug/L	04/22/2022 1937
C9 - C12 Aliphatics, Adjusted	ND		1	75	15	ug/L	04/22/2022 1937

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		87	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aliphatics) - LCS

Sample ID: XQ39145-002
Batch: 39145
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
C5 - C8 Aliphatics, Adjusted	100	110		1	114	70-130	04/22/2022 1811
C9 - C12 Aliphatics, Adjusted	75	81		1	108	70-130	04/22/2022 1811

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		98	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aliphatics) - LCSD

Sample ID: XQ39145-003
Batch: 39145
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
C5 - C8 Aliphatics, Adjusted	100	110		1	105	8.2	70-130	25	04/22/2022 1839
C9 - C12 Aliphatics, Adjusted	75	73		1	97	11	70-130	25	04/22/2022 1839

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		88	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (TPH) - MB

Sample ID: XQ39146-001
Batch: 39146
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TPH	ND		1	180	35	ug/L	04/22/2022 1937

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		87	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (TPH) - LCS

Sample ID: XQ39146-002
Batch: 39146
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TPH	380	390		1	105	70-130	04/22/2022 1811

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		98	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (TPH) - LCSD

Sample ID: XQ39146-003
Batch: 39146
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
TPH	380	360		1	95	9.3	70-130	25	04/22/2022 1839

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		88	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

SHEALY

Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 94134

Client	Ramboll
Report to Contact	Ruta Deshpande
Telephone No. / E-mail	543-641-8677 rdeshpande@ramboll.com
Quote No.	—
Address	333 W. Wacker Dr. Suite #2700
Sampler's Signature	
Printed Name	
City	Chicago
State	
Zip Code	
Project Name	AOC16 IM
Project No.	6900721708-011
P.O. No.	43836
Page	1 of 1
XD14056	HKL

Analysis (Attach list if more space is needed): VOCs 8260 totals; SVOCs 8270 totals; EPH/VPH

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab/Composite	Aqueous	Solid	Non-aqueous	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	VOCs 8260 totals	SVOCs 8270 totals	EPH/VPH	Remarks
GMR-58208-220411	4/11/22	14:30	G	X			2			6			X	X	X	please contact Ruta Deshpande w/ Ramboll to confirm analysis

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☐ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☒ Unknown

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished by: Mike Clayton	4/13/22	16:00	1. Received by		
2. Relinquished by			2. Received by		
3. Relinquished by			3. Received by		
4. Relinquished by: Fed Ex	4-14-22	10:00	4. Laboratory received by: Todd	4-14-22	10:00

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY: Received on ice (Circle) Yes / No Ice Pack Receipt Temp. 5.9 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

PaceAnalytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: Ramboll Cooler Inspected by/date: TEC / 04/14/2022 Lot #: XD14056

Means of receipt: ☑ Pace ☐ Client ☐ UPS ☐ FedEx ☐ Other: _____

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

5.9 / 5.9 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☐ Yes	☑ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)? _____
☑ Yes	☐ No		13. Was adequate sample volume available?
☑ Yes	☐ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☑ No	☐ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼" or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote # _____

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: TEC Date: 04/14/2022

Comments: Preserved 1-1L with HCL 4/14 AT 1730

Report of Analysis

Ramboll US Corporation
333 West Wacker Drive
Suite 2700
Chicago, IL 60606
Attention: Ruta Deshpande

Project Name: AOC16 1M

Project Number: 690021708-011

Lot Number:**XE19037**

Date Completed:06/30/2022

07/06/2022 12:52 PM
Approved and released by:
Project Coordinator 1: **Jenna S. Holliday**

The electronic signature above is the equivalent of a handwritten signature.
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Pace Analytical Services, LLC (*formerly Shealy Environmental Services, Inc.*)
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Case Narrative
Ramboll US Corporation
Lot Number: XE19037

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report. Where sampling is conducted by the client, results relate to the accuracy of the information provided, and as the samples are received.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

VOA analysis - method 8260

The laboratory control sample (LCS) associated with analytical batch 43216 had Acetone recovered outside the acceptance limits. The associated sample XE19037-001 were non-detect, therefore, the data has been reported.

The laboratory control sample (LCS) associated with analytical batch 43216 had Dichlorofluoromethane, Chloromethane, and Vinyl Chloride recovered outside the acceptance limits. The associated sample XE19037-001 were non-detect, therefore, the data has been reported.

Reanalysis of sample XE19037-001 was performed outside of the analytical holding time. Run 1 was overdiluted. Run 2 results contain toluene carry over from a previously analyzed sample and estimated values. The matrix is oily, and possibly the reason for the discrepency between runs. Both runs have been reported.

XE19037-001 (CMR-SP200-220517) (Run 2) (Analysis Batch 44311) Full list VOCs (with total and separate xylenes, total 1,2-DCE) (XLL)

Montana EPH
Due to insufficient sample received, the initial sample amount used for sample XE19037-001 deviated from the standard procedure. The LOQ has been adjusted accordingly. The final volume of 20 mLs would not concentrate down past 6mL.

Sample Summary

Ramboll US Corporation

Lot Number: XE19037

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	CMR-SP200-220517	Aqueous	05/17/2022 1640	05/19/2022

(1 sample)

Detection Summary
Ramboll US Corporation
Lot Number: XE19037

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	CMR-SP200-220517	Aqueous	Benzene	8260D	310		ug/L	6
001	CMR-SP200-220517	Aqueous	Ethylbenzene	8260D	340		ug/L	6
001	CMR-SP200-220517	Aqueous	Naphthalene	8260D	280		ug/L	6
001	CMR-SP200-220517	Aqueous	Toluene	8260D	170		ug/L	6
001	CMR-SP200-220517	Aqueous	Xylenes (total)	8260D	3400		ug/L	7
001	CMR-SP200-220517	Aqueous	m+p - Xylenes	8260D	2600		ug/L	7
001	CMR-SP200-220517	Aqueous	o - Xylenes	8260D	800		ug/L	7
001	CMR-SP200-220517	Aqueous	Acenaphthene	8270E	380	JQ	ug/L	10
001	CMR-SP200-220517	Aqueous	Fluorene	8270E	910	Q	ug/L	10
001	CMR-SP200-220517	Aqueous	2-Methylnaphthalene	8270E	20000	Q	ug/L	11
001	CMR-SP200-220517	Aqueous	Naphthalene	8270E	12000	Q	ug/L	11
001	CMR-SP200-220517	Aqueous	Phenanthrene	8270E	1500	Q	ug/L	11
001	CMR-SP200-220517	Aqueous	Pyrene	8270E	230	JQ	ug/L	11
001	CMR-SP200-220517	Aqueous	TEH	Montana EPH	5900000	Q	ug/L	12
001	CMR-SP200-220517	Aqueous	C19 - C36 Aliphatics	Montana EPH	660000	Q	ug/L	13
001	CMR-SP200-220517	Aqueous	C9 - C18 Aliphatics	Montana EPH	3700000	Q	ug/L	13
001	CMR-SP200-220517	Aqueous	TEH, post-fractionation	Montana EPH	5100000	Q	ug/L	13
001	CMR-SP200-220517	Aqueous	C11 - C22 Aromatics	Montana EPH	740000	Q	ug/L	14
001	CMR-SP200-220517	Aqueous	C5 - C8 Aliphatics,	Montana VPH	2600	J	ug/L	15
001	CMR-SP200-220517	Aqueous	C9 - C12 Aliphatics,	Montana VPH	28000		ug/L	15
001	CMR-SP200-220517	Aqueous	Benzene	Montana VPH	330		ug/L	16
001	CMR-SP200-220517	Aqueous	C9 - C10 Aromatics	Montana VPH	29000		ug/L	16
001	CMR-SP200-220517	Aqueous	Ethylbenzene	Montana VPH	510		ug/L	16
001	CMR-SP200-220517	Aqueous	Naphthalene	Montana VPH	1600	B	ug/L	16
001	CMR-SP200-220517	Aqueous	Toluene	Montana VPH	180	J	ug/L	16
001	CMR-SP200-220517	Aqueous	m+p - Xylenes	Montana VPH	3200		ug/L	16
001	CMR-SP200-220517	Aqueous	o - Xylenes	Montana VPH	1100		ug/L	16
001	CMR-SP200-220517	Aqueous	TPH	Montana VPH	56000		ug/L	17

(28 detections)

Volatile Organic Compounds by GC/MS

Client: Ramboll US Corporation
Laboratory ID: XE19037-001
Description: CMR-SP200-220517
Matrix: Aqueous
Date Sampled: 05/17/2022 1640
Date Received: 05/19/2022

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	100	05/27/2022 1818	BWS		43216
2	5030B	8260D	20	06/09/2022 0418	JMM2		44311

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND	L	1000	400	ug/L	1
Benzene	71-43-2	8260D	310		50	40	ug/L	1
Bromochloromethane	74-97-5	8260D	ND		50	40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND		50	40	ug/L	1
Bromoform	75-25-2	8260D	ND		50	40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND		50	40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND		1000	200	ug/L	1
Carbon disulfide	75-15-0	8260D	ND		50	40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND		50	40	ug/L	1
Chlorobenzene	108-90-7	8260D	ND		50	40	ug/L	1
Chloroethane	75-00-3	8260D	ND		50	40	ug/L	1
Chloroform	67-66-3	8260D	ND		50	40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND		50	40	ug/L	1
Cyclohexane	110-82-7	8260D	ND		50	40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND		50	40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND		50	40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND		50	40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND		50	40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND		50	40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND		50	40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND		50	40	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND		50	40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		50	40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND		50	40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	ND		50	40	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND		50	40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND		50	40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND		50	40	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND		50	40	ug/L	1
1,4-Dioxane	123-91-1	8260D	ND		2000	1300	ug/L	1
Ethylbenzene	100-41-4	8260D	340		50	40	ug/L	1
2-Hexanone	591-78-6	8260D	ND		1000	200	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND		50	40	ug/L	1
Methyl acetate	79-20-9	8260D	ND		100	40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		50	40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND		1000	200	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND		500	40	ug/L	1
Methylene chloride	75-09-2	8260D	ND		50	40	ug/L	1
Naphthalene	91-20-3	8260D	280		50	40	ug/L	1
Styrene	100-42-5	8260D	ND		50	41	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND		50	40	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND		50	40	ug/L	1
Toluene	108-88-3	8260D	170		50	40	ug/L	1

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: Ramboll US Corporation
Laboratory ID: XE19037-001
Description: CMR-SP200-220517
Matrix: Aqueous
Date Sampled: 05/17/2022 1640
Date Received: 05/19/2022

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	100	05/27/2022 1818	BWS		43216
2	5030B	8260D	20	06/09/2022 0418	JMM2		44311

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND		100	42	ug/L	1
1,2,3-Trichlorobenzene	87-61-6	8260D	ND		50	40	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND		50	40	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND		50	40	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND		50	40	ug/L	1
Trichloroethene	79-01-6	8260D	ND		50	40	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	ND		50	40	ug/L	1
Vinyl chloride	75-01-4	8260D	ND		50	40	ug/L	1
Xylenes (total)	1330-20-7	8260D	3400		100	40	ug/L	1
m+p - Xylenes	179601-23-1	8260D	2600		50	40	ug/L	1
o - Xylenes	95-47-6	8260D	800		50	40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene		100	70-130	H	113	70-130
1,2-Dichloroethane-d4		104	70-130	H	103	70-130
Toluene-d8		99	70-130	H	97	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
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Volatile Organic Compounds by GC/MS

Client: Ramboll US Corporation
Laboratory ID: XE19037-001
Description: CMR-SP200-220517
Matrix: Aqueous
Date Sampled: 05/17/2022 1640
Date Received: 05/19/2022

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	100	05/27/2022 1818	BWS		43216
2	5030B	8260D	20	06/09/2022 0418	JMM2		44311

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND	H	200	80	ug/L	2
Benzene	71-43-2	8260D	340	H	10	8.0	ug/L	2
Bromochloromethane	74-97-5	8260D	ND	H	10	8.0	ug/L	2
Bromodichloromethane	75-27-4	8260D	ND	H	10	8.0	ug/L	2
Bromoform	75-25-2	8260D	ND	H	10	8.0	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	H	10	8.0	ug/L	2
2-Butanone (MEK)	78-93-3	8260D	ND	H	200	40	ug/L	2
Carbon disulfide	75-15-0	8260D	ND	H	10	8.0	ug/L	2
Carbon tetrachloride	56-23-5	8260D	ND	H	10	8.0	ug/L	2
Chlorobenzene	108-90-7	8260D	ND	H	10	8.0	ug/L	2
Chloroethane	75-00-3	8260D	ND	H	10	8.0	ug/L	2
Chloroform	67-66-3	8260D	ND	H	10	8.0	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	HL	10	8.0	ug/L	2
Cyclohexane	110-82-7	8260D	410	H	10	8.0	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	H	10	8.0	ug/L	2
Dibromochloromethane	124-48-1	8260D	ND	H	10	8.0	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	H	10	8.0	ug/L	2
1,2-Dichlorobenzene	95-50-1	8260D	ND	H	10	8.0	ug/L	2
1,3-Dichlorobenzene	541-73-1	8260D	ND	H	10	8.0	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260D	ND	H	10	8.0	ug/L	2
Dichlorodifluoromethane	75-71-8	8260D	ND	HL	10	8.0	ug/L	2
1,1-Dichloroethane	75-34-3	8260D	ND	H	10	8.0	ug/L	2
1,2-Dichloroethane	107-06-2	8260D	ND	H	10	8.0	ug/L	2
1,1-Dichloroethene	75-35-4	8260D	ND	H	10	8.0	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260D	ND	H	10	8.0	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260D	ND	H	10	8.0	ug/L	2
1,2-Dichloropropane	78-87-5	8260D	ND	H	10	8.0	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	H	10	8.0	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	H	10	8.0	ug/L	2
1,4-Dioxane	123-91-1	8260D	ND	H	400	270	ug/L	2
Ethylbenzene	100-41-4	8260D	1300	H	10	8.0	ug/L	2
2-Hexanone	591-78-6	8260D	ND	H	200	40	ug/L	2
Isopropylbenzene	98-82-8	8260D	180	H	10	8.0	ug/L	2
Methyl acetate	79-20-9	8260D	ND	H	20	8.0	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	H	10	8.0	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260D	ND	H	200	40	ug/L	2
Methylcyclohexane	108-87-2	8260D	410	H	100	8.0	ug/L	2
Methylene chloride	75-09-2	8260D	ND	H	10	8.0	ug/L	2
Naphthalene	91-20-3	8260D	1700	H	10	8.0	ug/L	2
Styrene	100-42-5	8260D	ND	H	10	8.2	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	H	10	8.0	ug/L	2
Tetrachloroethene	127-18-4	8260D	ND	H	10	8.0	ug/L	2
Toluene	108-88-3	8260D	1800	H	10	8.0	ug/L	2

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
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Volatile Organic Compounds by GC/MS

Client: Ramboll US Corporation
Laboratory ID: XE19037-001
Description: CMR-SP200-220517
Matrix: Aqueous
Date Sampled: 05/17/2022 1640
Date Received: 05/19/2022

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	100	05/27/2022 1818	BWS		43216
2	5030B	8260D	20	06/09/2022 0418	JMM2		44311

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	H	20	8.4	ug/L	2
1,2,3-Trichlorobenzene	87-61-6	8260D	ND	H	10	8.0	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	H	10	8.0	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260D	ND	H	10	8.0	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260D	ND	H	10	8.0	ug/L	2
Trichloroethene	79-01-6	8260D	ND	H	10	8.0	ug/L	2
Trichlorofluoromethane	75-69-4	8260D	ND	H	10	8.0	ug/L	2
Vinyl chloride	75-01-4	8260D	ND	HL	10	8.0	ug/L	2
Xylenes (total)	1330-20-7	8260D	12000	H	20	8.0	ug/L	2
m+p - Xylenes	179601-23-1	8260D	9000	HE	10	8.0	ug/L	2
o - Xylenes	95-47-6	8260D	2900	H	10	8.0	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene		100	70-130	H	113	70-130
1,2-Dichloroethane-d4		104	70-130	H	103	70-130
Toluene-d8		99	70-130	H	97	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Semivolatile Organic Compounds by GC/MS

Client: Ramboll US Corporation
Laboratory ID: XE19037-001
Description: CMR-SP200-220517
Matrix: Aqueous
Date Sampled: 05/17/2022 1640
Date Received: 05/19/2022

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	200	06/10/2022 0922	JCG	05/24/2022 1810	42807

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270E	380	JQ	400	80	ug/L	1
Acenaphthylene	208-96-8	8270E	ND	Q	400	80	ug/L	1
Anthracene	120-12-7	8270E	ND	Q	400	120	ug/L	1
Benzo(a)anthracene	56-55-3	8270E	ND	Q	400	80	ug/L	1
Benzo(a)pyrene	50-32-8	8270E	ND	Q	400	140	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270E	ND	Q	400	80	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270E	ND	Q	400	80	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270E	ND	Q	400	80	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270E	ND	Q	1600	1000	ug/L	1
Butyl benzyl phthalate	85-68-7	8270E	ND	Q	1600	1000	ug/L	1
Carbazole	86-74-8	8270E	ND	Q	1600	1000	ug/L	1
bis (2-Chloro-1-methylethyl) ether	108-60-1	8270E	ND	QL	1600	1000	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270E	ND	Q	1600	1000	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270E	ND	Q	1600	1000	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270E	ND	Q	1600	1000	ug/L	1
2-Chloronaphthalene	91-58-7	8270E	ND	Q	1600	1000	ug/L	1
2-Chlorophenol	95-57-8	8270E	ND	Q	1600	1000	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270E	ND	Q	1600	1000	ug/L	1
Chrysene	218-01-9	8270E	ND	Q	400	60	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270E	ND	Q	400	60	ug/L	1
Dibenzofuran	132-64-9	8270E	ND	Q	1600	1000	ug/L	1
1,2-Dichlorobenzene	95-50-1	8270E	ND	Q	1600	1000	ug/L	1
1,3-Dichlorobenzene	541-73-1	8270E	ND	Q	1600	1000	ug/L	1
1,4-Dichlorobenzene	106-46-7	8270E	ND	Q	1600	1000	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270E	ND	Q	8000	3500	ug/L	1
2,4-Dichlorophenol	120-83-2	8270E	ND	Q	3200	500	ug/L	1
Diethylphthalate	84-66-2	8270E	ND	Q	1600	1000	ug/L	1
Dimethyl phthalate	131-11-3	8270E	ND	Q	1600	1000	ug/L	1
2,4-Dimethylphenol	105-67-9	8270E	ND	Q	1600	960	ug/L	1
Di-n-butyl phthalate	84-74-2	8270E	ND	Q	1600	1000	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270E	ND	Q	8000	2000	ug/L	1
2,4-Dinitrophenol	51-28-5	8270E	ND	Q	8000	2000	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270E	ND	Q	3200	1000	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270E	ND	Q	3200	1000	ug/L	1
Di-n-octylphthalate	117-84-0	8270E	ND	Q	1600	1000	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270E	ND	Q	8000	4000	ug/L	1
Fluoranthene	206-44-0	8270E	ND	Q	400	200	ug/L	1
Fluorene	86-73-7	8270E	910	Q	400	60	ug/L	1
Hexachlorobenzene	118-74-1	8270E	ND	Q	1600	1000	ug/L	1
Hexachlorobutadiene	87-68-3	8270E	ND	Q	1600	1000	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270E	ND	Q	8000	4000	ug/L	1
Hexachloroethane	67-72-1	8270E	ND	Q	1600	620	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270E	ND	Q	400	80	ug/L	1
Isophorone	78-59-1	8270E	ND	Q	1600	1000	ug/L	1

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Semivolatile Organic Compounds by GC/MS

Client: Ramboll US Corporation
Laboratory ID: XE19037-001
Description: CMR-SP200-220517
Matrix: Aqueous
Date Sampled: 05/17/2022 1640
Date Received: 05/19/2022

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	200	06/10/2022 0922	JCG	05/24/2022 1810	42807

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
2-Methylnaphthalene	91-57-6	8270E	20000	Q	400	80	ug/L	1
2-Methylphenol	95-48-7	8270E	ND	Q	1600	420	ug/L	1
3+4-Methylphenol	106-44-5	8270E	ND	Q	3200	3000	ug/L	1
Naphthalene	91-20-3	8270E	12000	Q	400	100	ug/L	1
2-Nitroaniline	88-74-4	8270E	ND	QL	3200	1000	ug/L	1
3-Nitroaniline	99-09-2	8270E	ND	Q	3200	2000	ug/L	1
4-Nitroaniline	100-01-6	8270E	ND	Q	3200	3000	ug/L	1
Nitrobenzene	98-95-3	8270E	ND	Q	1600	1100	ug/L	1
2-Nitrophenol	88-75-5	8270E	ND	Q	3200	2000	ug/L	1
4-Nitrophenol	100-02-7	8270E	ND	Q	8000	4000	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270E	ND	Q	1600	1000	ug/L	1
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270E	ND	Q	1600	1000	ug/L	1
Pentachlorophenol	87-86-5	8270E	ND	Q	8000	4000	ug/L	1
Phenanthrene	85-01-8	8270E	1500	Q	400	120	ug/L	1
Phenol	108-95-2	8270E	ND	Q	1600	1000	ug/L	1
Pyrene	129-00-0	8270E	230	JQ	400	200	ug/L	1
1,2,4,5-Tetrachlorobenzene	95-94-3	8270E	ND	Q	1600	500	ug/L	1
2,3,4,6-Tetrachlorophenol	58-90-2	8270E	ND	Q	3200	1100	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8270E	ND	Q	1600	740	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270E	ND	Q	1600	1000	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270E	ND	Q	1600	1000	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Fluorobiphenyl	N	985	37-129
2-Fluorophenol	N	675	24-127
Nitrobenzene-d5	N	8110	38-127
Phenol-d5	N	4010	28-128
Terphenyl-d14	N	2880	10-148
2,4,6-Tribromophenol	N	0.00	35-144

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana EPH (screening)

Client: Ramboll US Corporation
Laboratory ID: XE19037-001
Description: CMR-SP200-220517
Matrix: Aqueous
Date Sampled: 05/17/2022 1640
Date Received: 05/19/2022

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	Montana EPH	Montana EPH	100	06/28/2022 1234	NCM	05/31/2022 1533	43390

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
TEH		Montana EPH	5900000	Q	27000	27000	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Bromonaphthalene (fractionation 2)	N	0.00	40-140
1-Chloro-octadecane (aliphatic)	N	0.00	40-140
2-Fluorobiphenyl (fractionation 1)	N	0.00	40-140
o - Terphenyl (aromatic)	N	0.00	40-140

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana EPH (aliphatics)

Client: Ramboll US Corporation
Laboratory ID: XE19037-001
Description: CMR-SP200-220517
Matrix: Aqueous
Date Sampled: 05/17/2022 1640
Date Received: 05/19/2022

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	Montana EPH	Montana EPH	1	06/28/2022 1224	NCM	05/31/2022 1533	45291

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
C19 - C36 Aliphatics		Montana EPH	660000	Q	130	130	ug/L	1
C9 - C18 Aliphatics		Montana EPH	3700000	Q	130	130	ug/L	1
TEH, post-fractionation	68334-30-5S	Montana EPH	5100000	Q	270	130	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1-Chloro-octadecane (aliphatic)	N	0.00	40-140

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana EPH (aromatics)

Client: Ramboll US Corporation
Laboratory ID: XE19037-001
Description: CMR-SP200-220517
Matrix: Aqueous
Date Sampled: 05/17/2022 1640
Date Received: 05/19/2022

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	Montana EPH	Montana EPH	1	06/27/2022 1157	NCM	05/31/2022 1533	45292

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
C11 - C22 Aromatics		Montana EPH	740000	Q	130	130	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Bromonaphthalene (fractionation 2)	N	0.00	40-140
2-Fluorobiphenyl (fractionation 1)	N	0.00	40-140
o - Terphenyl (aromatic)	N	0.00	40-140

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana VPH (aliphatics)

Client: Ramboll US Corporation
Laboratory ID: XE19037-001
Description: CMR-SP200-220517
Matrix: Aqueous
Date Sampled: 05/17/2022 1640
Date Received: 05/19/2022

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	VPH	Montana VPH	50	05/26/2022 1624	ECB		43012

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
C5 - C8 Aliphatics, Adjusted		Montana VPH	2600	J	3800	750	ug/L	1
C9 - C12 Aliphatics, Adjusted		Montana VPH	28000		3800	750	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2,5-Dibromotoluene (FID)		98	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana VPH (aromatics)

Client: Ramboll US Corporation
Laboratory ID: XE19037-001
Description: CMR-SP200-220517
Matrix: Aqueous
Date Sampled: 05/17/2022 1640
Date Received: 05/19/2022

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	VPH	Montana VPH	50	05/26/2022 1624	ECB		43011

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Benzene	71-43-2	Montana VPH	330		250	26	ug/L	1
C9 - C10 Aromatics		Montana VPH	29000		1300	250	ug/L	1
Ethylbenzene	100-41-4	Montana VPH	510		250	31	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	Montana VPH	ND		250	60	ug/L	1
Naphthalene	91-20-3	Montana VPH	1600	B	250	35	ug/L	1
Toluene	108-88-3	Montana VPH	180	J	250	27	ug/L	1
m+p - Xylenes	179601-23-1	Montana VPH	3200		250	60	ug/L	1
o - Xylenes	95-47-6	Montana VPH	1100		250	29	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2,5-Dibromotoluene (PID)		103	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana VPH (TPH)

Client: Ramboll US Corporation
Laboratory ID: XE19037-001
Description: CMR-SP200-220517
Matrix: Aqueous
Date Sampled: 05/17/2022 1640
Date Received: 05/19/2022

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	VPH	Montana VPH	50	05/26/2022 1624	ECB		43015

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
TPH		Montana VPH	56000		8800	1800	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2,5-Dibromotoluene (FID)		100	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ43216-001
Batch: 43216
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	05/27/2022 0951
Benzene	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Bromochloromethane	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Bromodichloromethane	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Bromoform	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	05/27/2022 0951
2-Butanone (MEK)	ND		1	10	2.0	ug/L	05/27/2022 0951
Carbon disulfide	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Chlorobenzene	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Chloroethane	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Chloroform	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Cyclohexane	ND		1	0.50	0.40	ug/L	05/27/2022 0951
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Dibromochloromethane	ND		1	0.50	0.40	ug/L	05/27/2022 0951
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	05/27/2022 0951
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	05/27/2022 0951
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	05/27/2022 0951
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	05/27/2022 0951
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	05/27/2022 0951
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	05/27/2022 0951
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	05/27/2022 0951
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	05/27/2022 0951
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	05/27/2022 0951
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	05/27/2022 0951
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	05/27/2022 0951
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	05/27/2022 0951
1,4-Dioxane	ND		1	20	13	ug/L	05/27/2022 0951
Ethylbenzene	ND		1	0.50	0.40	ug/L	05/27/2022 0951
2-Hexanone	ND		1	10	2.0	ug/L	05/27/2022 0951
Isopropylbenzene	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Methyl acetate	ND		1	1.0	0.40	ug/L	05/27/2022 0951
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	05/27/2022 0951
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	05/27/2022 0951
Methylcyclohexane	ND		1	5.0	0.40	ug/L	05/27/2022 0951
Methylene chloride	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Naphthalene	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Styrene	ND		1	0.50	0.41	ug/L	05/27/2022 0951
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Tetrachloroethene	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Toluene	ND		1	0.50	0.40	ug/L	05/27/2022 0951
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	05/27/2022 0951

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ43216-001
Batch: 43216
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
1,2,3-Trichlorobenzene	ND		1	0.50	0.40	ug/L	05/27/2022 0951
1,2,4-Trichlorobenzene	ND		1	0.50	0.40	ug/L	05/27/2022 0951
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	05/27/2022 0951
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Trichloroethene	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Trichlorofluoromethane	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Vinyl chloride	ND		1	0.50	0.40	ug/L	05/27/2022 0951
Xylenes (total)	ND		1	1.0	0.40	ug/L	05/27/2022 0951
m+p - Xylenes	ND		1	0.50	0.40	ug/L	05/27/2022 0951
o - Xylenes	ND		1	0.50	0.40	ug/L	05/27/2022 0951

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		94	70-130
1,2-Dichloroethane-d4		100	70-130
Toluene-d8		96	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ43216-002
Batch: 43216
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acetone	100	160	N	1	158	60-140	05/27/2022 0904
Benzene	50	46		1	91	70-130	05/27/2022 0904
Bromochloromethane	50	44		1	89	70-130	05/27/2022 0904
Bromodichloromethane	50	44		1	88	70-130	05/27/2022 0904
Bromoform	50	38		1	76	70-130	05/27/2022 0904
Bromomethane (Methyl bromide)	50	45		1	91	70-130	05/27/2022 0904
2-Butanone (MEK)	100	120		1	119	70-130	05/27/2022 0904
Carbon disulfide	50	47		1	94	70-130	05/27/2022 0904
Carbon tetrachloride	50	42		1	85	70-130	05/27/2022 0904
Chlorobenzene	50	43		1	86	70-130	05/27/2022 0904
Chloroethane	50	44		1	88	70-130	05/27/2022 0904
Chloroform	50	44		1	87	70-130	05/27/2022 0904
Chloromethane (Methyl chloride)	50	49		1	99	60-140	05/27/2022 0904
Cyclohexane	50	49		1	98	70-130	05/27/2022 0904
1,2-Dibromo-3-chloropropane (DBCP)	50	45		1	91	70-130	05/27/2022 0904
Dibromochloromethane	50	41		1	82	70-130	05/27/2022 0904
1,2-Dibromoethane (EDB)	50	44		1	88	70-130	05/27/2022 0904
1,2-Dichlorobenzene	50	44		1	87	70-130	05/27/2022 0904
1,3-Dichlorobenzene	50	44		1	88	70-130	05/27/2022 0904
1,4-Dichlorobenzene	50	43		1	85	70-130	05/27/2022 0904
Dichlorodifluoromethane	50	45		1	89	60-140	05/27/2022 0904
1,1-Dichloroethane	50	48		1	95	70-130	05/27/2022 0904
1,2-Dichloroethane	50	49		1	97	70-130	05/27/2022 0904
1,1-Dichloroethene	50	48		1	96	70-130	05/27/2022 0904
cis-1,2-Dichloroethene	50	46		1	92	70-130	05/27/2022 0904
trans-1,2-Dichloroethene	50	44		1	88	70-130	05/27/2022 0904
1,2-Dichloropropane	50	44		1	88	70-130	05/27/2022 0904
cis-1,3-Dichloropropene	50	45		1	89	70-130	05/27/2022 0904
trans-1,3-Dichloropropene	50	44		1	89	70-130	05/27/2022 0904
1,4-Dioxane	500	480		1	96	60-140	05/27/2022 0904
Ethylbenzene	50	44		1	87	70-130	05/27/2022 0904
2-Hexanone	100	100		1	100	70-130	05/27/2022 0904
Isopropylbenzene	50	43		1	85	70-130	05/27/2022 0904
Methyl acetate	50	54		1	109	70-130	05/27/2022 0904
Methyl tertiary butyl ether (MTBE)	50	48		1	96	70-130	05/27/2022 0904
4-Methyl-2-pentanone	100	96		1	96	70-130	05/27/2022 0904
Methylcyclohexane	50	43		1	86	70-130	05/27/2022 0904
Methylene chloride	50	45		1	91	70-130	05/27/2022 0904
Naphthalene	50	47		1	94	70-130	05/27/2022 0904
Styrene	50	45		1	89	70-130	05/27/2022 0904
1,1,2,2-Tetrachloroethane	50	47		1	95	70-130	05/27/2022 0904
Tetrachloroethene	50	42		1	85	70-130	05/27/2022 0904
Toluene	50	46		1	91	70-130	05/27/2022 0904
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	45		1	91	70-130	05/27/2022 0904

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ43216-002
Batch: 43216
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
1,2,3-Trichlorobenzene	50	43		1	87	70-130	05/27/2022 0904
1,2,4-Trichlorobenzene	50	44		1	88	70-130	05/27/2022 0904
1,1,1-Trichloroethane	50	43		1	86	70-130	05/27/2022 0904
1,1,2-Trichloroethane	50	42		1	84	70-130	05/27/2022 0904
Trichloroethene	50	43		1	87	70-130	05/27/2022 0904
Trichlorofluoromethane	50	45		1	90	70-130	05/27/2022 0904
Vinyl chloride	50	43		1	87	70-130	05/27/2022 0904
Xylenes (total)	100	86		1	86	70-130	05/27/2022 0904
m+p - Xylenes	50	43		1	86	70-130	05/27/2022 0904
o - Xylenes	50	43		1	86	70-130	05/27/2022 0904

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		87	70-130
1,2-Dichloroethane-d4		88	70-130
Toluene-d8		87	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ44311-001
Batch: 44311
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	06/08/2022 2134
Benzene	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Bromochloromethane	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Bromodichloromethane	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Bromoform	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	06/08/2022 2134
2-Butanone (MEK)	ND		1	10	2.0	ug/L	06/08/2022 2134
Carbon disulfide	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Chlorobenzene	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Chloroethane	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Chloroform	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Cyclohexane	ND		1	0.50	0.40	ug/L	06/08/2022 2134
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Dibromochloromethane	ND		1	0.50	0.40	ug/L	06/08/2022 2134
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	06/08/2022 2134
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	06/08/2022 2134
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	06/08/2022 2134
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	06/08/2022 2134
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	06/08/2022 2134
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	06/08/2022 2134
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	06/08/2022 2134
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	06/08/2022 2134
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	06/08/2022 2134
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	06/08/2022 2134
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	06/08/2022 2134
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	06/08/2022 2134
1,4-Dioxane	ND		1	20	13	ug/L	06/08/2022 2134
Ethylbenzene	ND		1	0.50	0.40	ug/L	06/08/2022 2134
2-Hexanone	ND		1	10	2.0	ug/L	06/08/2022 2134
Isopropylbenzene	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Methyl acetate	ND		1	1.0	0.40	ug/L	06/08/2022 2134
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	06/08/2022 2134
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	06/08/2022 2134
Methylcyclohexane	ND		1	5.0	0.40	ug/L	06/08/2022 2134
Methylene chloride	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Naphthalene	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Styrene	ND		1	0.50	0.41	ug/L	06/08/2022 2134
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Tetrachloroethene	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Toluene	ND		1	0.50	0.40	ug/L	06/08/2022 2134
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	06/08/2022 2134

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ44311-001
Batch: 44311
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
1,2,3-Trichlorobenzene	ND		1	0.50	0.40	ug/L	06/08/2022 2134
1,2,4-Trichlorobenzene	ND		1	0.50	0.40	ug/L	06/08/2022 2134
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	06/08/2022 2134
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Trichloroethene	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Trichlorofluoromethane	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Vinyl chloride	ND		1	0.50	0.40	ug/L	06/08/2022 2134
Xylenes (total)	ND		1	1.0	0.40	ug/L	06/08/2022 2134
m+p - Xylenes	ND		1	0.50	0.40	ug/L	06/08/2022 2134
o - Xylenes	ND		1	0.50	0.40	ug/L	06/08/2022 2134

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		111	70-130
1,2-Dichloroethane-d4		107	70-130
Toluene-d8		96	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ44311-002
Batch: 44311
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acetone	100	97		1	97	60-140	06/08/2022 2032
Benzene	50	48		1	96	70-130	06/08/2022 2032
Bromochloromethane	50	44		1	89	70-130	06/08/2022 2032
Bromodichloromethane	50	45		1	89	70-130	06/08/2022 2032
Bromoform	50	37		1	73	70-130	06/08/2022 2032
Bromomethane (Methyl bromide)	50	62		1	124	70-130	06/08/2022 2032
2-Butanone (MEK)	100	110		1	114	70-130	06/08/2022 2032
Carbon disulfide	50	47		1	95	70-130	06/08/2022 2032
Carbon tetrachloride	50	44		1	88	70-130	06/08/2022 2032
Chlorobenzene	50	44		1	89	70-130	06/08/2022 2032
Chloroethane	50	62		1	124	70-130	06/08/2022 2032
Chloroform	50	46		1	92	70-130	06/08/2022 2032
Chloromethane (Methyl chloride)	50	74	N	1	147	60-140	06/08/2022 2032
Cyclohexane	50	52		1	103	70-130	06/08/2022 2032
1,2-Dibromo-3-chloropropane (DBCP)	50	41		1	83	70-130	06/08/2022 2032
Dibromochloromethane	50	40		1	80	70-130	06/08/2022 2032
1,2-Dibromoethane (EDB)	50	44		1	88	70-130	06/08/2022 2032
1,2-Dichlorobenzene	50	48		1	96	70-130	06/08/2022 2032
1,3-Dichlorobenzene	50	44		1	87	70-130	06/08/2022 2032
1,4-Dichlorobenzene	50	44		1	88	70-130	06/08/2022 2032
Dichlorodifluoromethane	50	82	N	1	163	60-140	06/08/2022 2032
1,1-Dichloroethane	50	50		1	100	70-130	06/08/2022 2032
1,2-Dichloroethane	50	46		1	91	70-130	06/08/2022 2032
1,1-Dichloroethene	50	49		1	97	70-130	06/08/2022 2032
cis-1,2-Dichloroethene	50	46		1	93	70-130	06/08/2022 2032
trans-1,2-Dichloroethene	50	48		1	97	70-130	06/08/2022 2032
1,2-Dichloropropane	50	50		1	101	70-130	06/08/2022 2032
cis-1,3-Dichloropropene	50	45		1	90	70-130	06/08/2022 2032
trans-1,3-Dichloropropene	50	44		1	88	70-130	06/08/2022 2032
1,4-Dioxane	500	300		1	60	60-140	06/08/2022 2032
Ethylbenzene	50	46		1	91	70-130	06/08/2022 2032
2-Hexanone	100	96		1	96	70-130	06/08/2022 2032
Isopropylbenzene	50	45		1	89	70-130	06/08/2022 2032
Methyl acetate	50	54		1	109	70-130	06/08/2022 2032
Methyl tertiary butyl ether (MTBE)	50	48		1	95	70-130	06/08/2022 2032
4-Methyl-2-pentanone	100	100		1	103	70-130	06/08/2022 2032
Methylcyclohexane	50	48		1	97	70-130	06/08/2022 2032
Methylene chloride	50	48		1	96	70-130	06/08/2022 2032
Naphthalene	50	51		1	102	70-130	06/08/2022 2032
Styrene	50	45		1	91	70-130	06/08/2022 2032
1,1,2,2-Tetrachloroethane	50	46		1	92	70-130	06/08/2022 2032
Tetrachloroethene	50	46		1	91	70-130	06/08/2022 2032
Toluene	50	45		1	90	70-130	06/08/2022 2032
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	50		1	100	70-130	06/08/2022 2032

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ44311-002
Batch: 44311
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
1,2,3-Trichlorobenzene	50	43		1	85	70-130	06/08/2022 2032
1,2,4-Trichlorobenzene	50	43		1	86	70-130	06/08/2022 2032
1,1,1-Trichloroethane	50	44		1	88	70-130	06/08/2022 2032
1,1,2-Trichloroethane	50	46		1	93	70-130	06/08/2022 2032
Trichloroethene	50	44		1	88	70-130	06/08/2022 2032
Trichlorofluoromethane	50	54		1	109	70-130	06/08/2022 2032
Vinyl chloride	50	67	N	1	134	70-130	06/08/2022 2032
Xylenes (total)	100	90		1	90	70-130	06/08/2022 2032
m+p - Xylenes	50	45		1	90	70-130	06/08/2022 2032
o - Xylenes	50	45		1	89	70-130	06/08/2022 2032

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		92	70-130
1,2-Dichloroethane-d4		89	70-130
Toluene-d8		86	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - MB

Sample ID: XQ42807-001
Batch: 42807
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 05/24/2022 1810

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acenaphthene	ND		1	0.20	0.040	ug/L	06/06/2022 1404
Acenaphthylene	ND		1	0.20	0.040	ug/L	06/06/2022 1404
Anthracene	ND		1	0.20	0.060	ug/L	06/06/2022 1404
Benzo(a)anthracene	ND		1	0.20	0.040	ug/L	06/06/2022 1404
Benzo(a)pyrene	ND		1	0.20	0.070	ug/L	06/06/2022 1404
Benzo(b)fluoranthene	ND		1	0.20	0.040	ug/L	06/06/2022 1404
Benzo(g,h,i)perylene	ND		1	0.20	0.040	ug/L	06/06/2022 1404
Benzo(k)fluoranthene	ND		1	0.20	0.040	ug/L	06/06/2022 1404
4-Bromophenyl phenyl ether	ND		1	0.80	0.50	ug/L	06/06/2022 1404
Butyl benzyl phthalate	ND		1	0.80	0.50	ug/L	06/06/2022 1404
Carbazole	ND		1	0.80	0.50	ug/L	06/06/2022 1404
bis (2-Chloro-1-methylethyl) ether	ND		1	0.80	0.50	ug/L	06/06/2022 1404
4-Chloro-3-methyl phenol	ND		1	0.80	0.50	ug/L	06/06/2022 1404
bis(2-Chloroethoxy)methane	ND		1	0.80	0.50	ug/L	06/06/2022 1404
bis(2-Chloroethyl)ether	ND		1	0.80	0.50	ug/L	06/06/2022 1404
2-Chloronaphthalene	ND		1	0.80	0.50	ug/L	06/06/2022 1404
2-Chlorophenol	ND		1	0.80	0.50	ug/L	06/06/2022 1404
4-Chlorophenyl phenyl ether	ND		1	0.80	0.50	ug/L	06/06/2022 1404
Chrysene	ND		1	0.20	0.030	ug/L	06/06/2022 1404
Dibenzo(a,h)anthracene	ND		1	0.20	0.030	ug/L	06/06/2022 1404
Dibenzofuran	ND		1	0.80	0.50	ug/L	06/06/2022 1404
1,2-Dichlorobenzene	ND		1	0.80	0.50	ug/L	06/06/2022 1404
1,3-Dichlorobenzene	ND		1	0.80	0.50	ug/L	06/06/2022 1404
1,4-Dichlorobenzene	ND		1	0.80	0.50	ug/L	06/06/2022 1404
3,3'-Dichlorobenzidine	ND		1	4.0	1.8	ug/L	06/06/2022 1404
2,4-Dichlorophenol	ND		1	1.6	0.25	ug/L	06/06/2022 1404
Diethylphthalate	ND		1	0.80	0.50	ug/L	06/06/2022 1404
Dimethyl phthalate	ND		1	0.80	0.50	ug/L	06/06/2022 1404
2,4-Dimethylphenol	ND		1	0.80	0.48	ug/L	06/06/2022 1404
Di-n-butyl phthalate	ND		1	0.80	0.50	ug/L	06/06/2022 1404
4,6-Dinitro-2-methylphenol	ND		1	4.0	1.0	ug/L	06/06/2022 1404
2,4-Dinitrophenol	ND		1	4.0	1.0	ug/L	06/06/2022 1404
2,4-Dinitrotoluene	ND		1	1.6	0.50	ug/L	06/06/2022 1404
2,6-Dinitrotoluene	ND		1	1.6	0.50	ug/L	06/06/2022 1404
Di-n-octylphthalate	ND		1	0.80	0.50	ug/L	06/06/2022 1404
bis(2-Ethylhexyl)phthalate	ND		1	4.0	2.0	ug/L	06/06/2022 1404
Fluoranthene	ND		1	0.20	0.10	ug/L	06/06/2022 1404
Fluorene	ND		1	0.20	0.030	ug/L	06/06/2022 1404
Hexachlorobenzene	ND		1	0.80	0.50	ug/L	06/06/2022 1404
Hexachlorobutadiene	ND		1	0.80	0.50	ug/L	06/06/2022 1404
Hexachlorocyclopentadiene	ND		1	4.0	2.0	ug/L	06/06/2022 1404
Hexachloroethane	ND		1	0.80	0.31	ug/L	06/06/2022 1404
Indeno(1,2,3-c,d)pyrene	ND		1	0.20	0.040	ug/L	06/06/2022 1404
Isophorone	ND		1	0.80	0.50	ug/L	06/06/2022 1404

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - MB

Sample ID: XQ42807-001
Batch: 42807
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 05/24/2022 1810

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
2-Methylnaphthalene	ND		1	0.20	0.040	ug/L	06/06/2022 1404
2-Methylphenol	ND		1	0.80	0.21	ug/L	06/06/2022 1404
3+4-Methylphenol	ND		1	1.6	1.5	ug/L	06/06/2022 1404
Naphthalene	ND		1	0.20	0.050	ug/L	06/06/2022 1404
2-Nitroaniline	ND		1	1.6	0.50	ug/L	06/06/2022 1404
3-Nitroaniline	ND		1	1.6	1.0	ug/L	06/06/2022 1404
4-Nitroaniline	ND		1	1.6	1.5	ug/L	06/06/2022 1404
Nitrobenzene	ND		1	0.80	0.55	ug/L	06/06/2022 1404
2-Nitrophenol	ND		1	1.6	1.0	ug/L	06/06/2022 1404
4-Nitrophenol	ND		1	4.0	2.0	ug/L	06/06/2022 1404
N-Nitrosodi-n-propylamine	ND		1	0.80	0.50	ug/L	06/06/2022 1404
N-Nitrosodiphenylamine (Diphenylamine)	ND		1	0.80	0.50	ug/L	06/06/2022 1404
Pentachlorophenol	ND		1	4.0	2.0	ug/L	06/06/2022 1404
Phenanthrene	ND		1	0.20	0.060	ug/L	06/06/2022 1404
Phenol	ND		1	0.80	0.50	ug/L	06/06/2022 1404
Pyrene	ND		1	0.20	0.10	ug/L	06/06/2022 1404
1,2,4,5-Tetrachlorobenzene	ND		1	0.80	0.25	ug/L	06/06/2022 1404
2,3,4,6-Tetrachlorophenol	ND		1	1.6	0.55	ug/L	06/06/2022 1404
1,2,4-Trichlorobenzene	ND		1	0.80	0.37	ug/L	06/06/2022 1404
2,4,5-Trichlorophenol	ND		1	0.80	0.50	ug/L	06/06/2022 1404
2,4,6-Trichlorophenol	ND		1	0.80	0.50	ug/L	06/06/2022 1404

Surrogate	Q	% Rec	Acceptance Limit
2-Fluorobiphenyl		81	37-129
2-Fluorophenol		53	24-127
Nitrobenzene-d5		85	38-127
Phenol-d5		69	28-128
Terphenyl-d14		84	10-148
2,4,6-Tribromophenol		67	35-144

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: XQ42807-002
Batch: 42807
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 05/24/2022 1810

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acenaphthene	8.0	7.1		1	89	30-122	06/06/2022 1429
Acenaphthylene	8.0	7.7		1	96	30-130	06/06/2022 1429
Anthracene	8.0	7.4		1	93	30-123	06/06/2022 1429
Benzo(a)anthracene	8.0	7.2		1	90	40-125	06/06/2022 1429
Benzo(a)pyrene	8.0	6.8		1	85	40-128	06/06/2022 1429
Benzo(b)fluoranthene	8.0	6.7		1	84	32-145	06/06/2022 1429
Benzo(g,h,i)perylene	8.0	8.4		1	106	42-128	06/06/2022 1429
Benzo(k)fluoranthene	8.0	6.4		1	80	50-135	06/06/2022 1429
4-Bromophenyl phenyl ether	8.0	7.0		1	87	30-124	06/06/2022 1429
Butyl benzyl phthalate	8.0	8.3		1	104	54-135	06/06/2022 1429
Carbazole	8.0	7.7		1	96	30-130	06/06/2022 1429
bis (2-Chloro-1-methylethyl) ether	8.0	9.5	N	1	119	34-110	06/06/2022 1429
4-Chloro-3-methyl phenol	8.0	7.9		1	99	30-123	06/06/2022 1429
bis(2-Chloroethoxy)methane	8.0	7.9		1	99	40-119	06/06/2022 1429
bis(2-Chloroethyl)ether	8.0	8.9		1	112	35-114	06/06/2022 1429
2-Chloronaphthalene	8.0	6.9		1	87	39-128	06/06/2022 1429
2-Chlorophenol	8.0	7.5		1	94	39-115	06/06/2022 1429
4-Chlorophenyl phenyl ether	8.0	7.3		1	91	30-121	06/06/2022 1429
Chrysene	8.0	7.3		1	91	50-130	06/06/2022 1429
Dibenzo(a,h)anthracene	8.0	6.9		1	87	30-130	06/06/2022 1429
Dibenzofuran	8.0	6.7		1	83	30-118	06/06/2022 1429
1,2-Dichlorobenzene	8.0	6.5		1	81	20-110	06/06/2022 1429
1,3-Dichlorobenzene	8.0	6.3		1	79	17-112	06/06/2022 1429
1,4-Dichlorobenzene	8.0	6.1		1	77	18-113	06/06/2022 1429
3,3'-Dichlorobenzidine	8.0	5.9		1	74	10-126	06/06/2022 1429
2,4-Dichlorophenol	8.0	7.1		1	89	30-121	06/06/2022 1429
Diethylphthalate	8.0	7.7		1	97	40-125	06/06/2022 1429
Dimethyl phthalate	8.0	8.0		1	101	40-127	06/06/2022 1429
2,4-Dimethylphenol	8.0	6.1		1	76	20-125	06/06/2022 1429
Di-n-butyl phthalate	8.0	8.4		1	105	40-127	06/06/2022 1429
4,6-Dinitro-2-methylphenol	8.0	6.0		1	74	46-134	06/06/2022 1429
2,4-Dinitrophenol	16	9.9		1	62	11-126	06/06/2022 1429
2,4-Dinitrotoluene	8.0	7.9		1	98	51-128	06/06/2022 1429
2,6-Dinitrotoluene	8.0	7.5		1	93	48-133	06/06/2022 1429
Di-n-octylphthalate	8.0	7.3		1	92	55-143	06/06/2022 1429
bis(2-Ethylhexyl)phthalate	8.0	9.3		1	116	50-133	06/06/2022 1429
Fluoranthene	8.0	7.2		1	91	40-128	06/06/2022 1429
Fluorene	8.0	7.2		1	90	30-124	06/06/2022 1429
Hexachlorobenzene	8.0	6.5		1	81	30-125	06/06/2022 1429
Hexachlorobutadiene	8.0	6.0		1	75	24-110	06/06/2022 1429
Hexachlorocyclopentadiene	40	30		1	75	22-122	06/06/2022 1429
Hexachloroethane	8.0	6.0		1	75	28-116	06/06/2022 1429
Indeno(1,2,3-c,d)pyrene	8.0	7.0		1	87	50-125	06/06/2022 1429
Isophorone	8.0	7.2		1	90	30-130	06/06/2022 1429

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: XQ42807-002
Batch: 42807
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 05/24/2022 1810

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
2-Methylnaphthalene	8.0	7.2		1	90	40-132	06/06/2022 1429
2-Methylphenol	8.0	8.4		1	105	37-115	06/06/2022 1429
3+4-Methylphenol	8.0	8.6		1	107	44-112	06/06/2022 1429
Naphthalene	8.0	7.3		1	91	40-122	06/06/2022 1429
2-Nitroaniline	8.0	11	N	1	132	49-128	06/06/2022 1429
3-Nitroaniline	8.0	8.7		1	109	31-128	06/06/2022 1429
4-Nitroaniline	8.0	9.7		1	121	30-135	06/06/2022 1429
Nitrobenzene	8.0	7.3		1	92	39-123	06/06/2022 1429
2-Nitrophenol	8.0	7.8		1	98	36-123	06/06/2022 1429
4-Nitrophenol	16	12		1	77	31-145	06/06/2022 1429
N-Nitrosodi-n-propylamine	8.0	8.2		1	102	39-119	06/06/2022 1429
N-Nitrosodiphenylamine (Diphenylamine)	8.0	6.9		1	86	30-123	06/06/2022 1429
Pentachlorophenol	16	9.1		1	57	34-137	06/06/2022 1429
Phenanthrene	8.0	7.2		1	90	40-123	06/06/2022 1429
Phenol	8.0	8.4		1	105	30-130	06/06/2022 1429
Pyrene	8.0	7.2		1	90	40-126	06/06/2022 1429
1,2,4,5-Tetrachlorobenzene	8.0	6.3		1	78	30-130	06/06/2022 1429
2,3,4,6-Tetrachlorophenol	8.0	5.3		1	67	30-130	06/06/2022 1429
1,2,4-Trichlorobenzene	8.0	6.4		1	80	20-90	06/06/2022 1429
2,4,5-Trichlorophenol	8.0	6.9		1	86	30-123	06/06/2022 1429
2,4,6-Trichlorophenol	8.0	6.8		1	85	30-125	06/06/2022 1429

Surrogate	Q	% Rec	Acceptance Limit
2-Fluorobiphenyl		86	37-129
2-Fluorophenol		84	24-127
Nitrobenzene-d5		91	38-127
Phenol-d5		96	28-128
Terphenyl-d14		80	10-148
2,4,6-Tribromophenol		74	35-144

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (screening) - MB

Sample ID: XQ43390-001
Batch: 43390
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 05/31/2022 1533

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TEH	ND		1	200	200	ug/L	06/21/2022 1815

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		111	40-140
1-Chloro-octadecane (aliphatic)		91	40-140
2-Fluorobiphenyl (fractionation 1)		110	40-140
o - Terphenyl (aromatic)		88	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (screening) - LCS

Sample ID: XQ43390-002
Batch: 43390
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 05/31/2022 1533

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TEH	1600	1200		1	79	40-140	06/21/2022 1824

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		116	40-140
1-Chloro-octadecane (aliphatic)		87	40-140
2-Fluorobiphenyl (fractionation 1)		114	40-140
o - Terphenyl (aromatic)		79	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Montana EPH (screening) - LCSD

Sample ID: XQ43390-003
Batch: 43390
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 05/31/2022 1533

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
TEH	1600	1400		1	91	14	40-140	25	06/21/2022 1834

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		107	40-140
1-Chloro-octadecane (aliphatic)		98	40-140
2-Fluorobiphenyl (fractionation 1)		108	40-140
o - Terphenyl (aromatic)		86	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aliphatics) - MB

Sample ID: XQ45291-001
Batch: 45291
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 05/31/2022 1533

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
C19 - C36 Aliphatics	ND		1	100	100	ug/L	06/28/2022 1155
C9 - C18 Aliphatics	ND		1	100	100	ug/L	06/28/2022 1155
TEH, post-fractionation	ND		1	200	100	ug/L	06/28/2022 1155

Surrogate	Q	% Rec	Acceptance Limit
1-Chloro-octadecane (aliphatic)		74	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aliphatics) - LCS

Sample ID: XQ45291-002
Batch: 45291
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 05/31/2022 1533

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
C19 - C36 Aliphatics	400	320		1	79	40-140	06/28/2022 1205
C9 - C18 Aliphatics	300	160		1	55	40-140	06/28/2022 1205
TEH, post-fractionation	1600	1300		1	81	40-140	06/22/2022 0000

Surrogate	Q	% Rec	Acceptance Limit
1-Chloro-octadecane (aliphatic)		69	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Montana EPH (aliphatics) - LCSD

Sample ID: XQ45291-003
Batch: 45291
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 05/31/2022 1533

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
C19 - C36 Aliphatics	400	360		1	91	14	40-140	25	06/28/2022 1215
C9 - C18 Aliphatics	300	250	+	1	82	40	40-140	25	06/28/2022 1215
TEH, post-fractionation	1600	1400		1	88	8.4	40-140	25	06/22/2022 0000

Surrogate	Q	% Rec	Acceptance Limit
1-Chloro-octadecane (aliphatic)		79	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aromatics) - MB

Sample ID: XQ45292-001
Batch: 45292
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 05/31/2022 1533

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
C11 - C22 Aromatics	ND		1	100	100	ug/L	06/27/2022 1127

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		95	40-140
2-Fluorobiphenyl (fractionation 1)		94	40-140
o - Terphenyl (aromatic)		81	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aromatics) - LCS

Sample ID: XQ45292-002
Batch: 45292
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 05/31/2022 1533

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
C11 - C22 Aromatics	850	780		1	92	40-140	06/27/2022 1137

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		87	40-140
2-Fluorobiphenyl (fractionation 1)		80	40-140
o - Terphenyl (aromatic)		82	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aromatics) - LCSD

Sample ID: XQ45292-003
Batch: 45292
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 05/31/2022 1533

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
C11 - C22 Aromatics	850	760		1	89	2.7	40-140	25	06/27/2022 1147

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		77	40-140
2-Fluorobiphenyl (fractionation 1)		73	40-140
o - Terphenyl (aromatic)		80	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aromatics) - MB

Sample ID: XQ43011-001
Batch: 43011
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Benzene	ND		1	5.0	0.51	ug/L	05/26/2022 1458
C9 - C10 Aromatics	ND		1	25	5.0	ug/L	05/26/2022 1458
Ethylbenzene	ND		1	5.0	0.62	ug/L	05/26/2022 1458
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	1.2	ug/L	05/26/2022 1458
Naphthalene	0.77	J	1	5.0	0.70	ug/L	05/26/2022 1458
Toluene	ND		1	5.0	0.53	ug/L	05/26/2022 1458
m+p - Xylenes	ND		1	5.0	1.2	ug/L	05/26/2022 1458
o - Xylenes	ND		1	5.0	0.58	ug/L	05/26/2022 1458

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (PID)		100	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aromatics) - LCS

Sample ID: XQ43011-002
Batch: 43011
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Benzene	25	24		1	96	70-130	05/26/2022 1429
C9 - C10 Aromatics	25	25		1	99	70-130	05/26/2022 1429
Ethylbenzene	25	24		1	94	70-130	05/26/2022 1429
Methyl tertiary butyl ether (MTBE)	25	25		1	100	70-130	05/26/2022 1429
Naphthalene	25	24		1	98	70-130	05/26/2022 1429
Toluene	25	24		1	96	70-130	05/26/2022 1429
m+p - Xylenes	50	48		1	97	70-130	05/26/2022 1429
o - Xylenes	25	25		1	100	70-130	05/26/2022 1429

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (PID)		92	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aromatics) - LCSD

Sample ID: XQ43011-003
Batch: 43011
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Benzene	25	25		1	99	3.3	70-130	25	05/26/2022 1555
C9 - C10 Aromatics	25	26		1	103	4.0	70-130	25	05/26/2022 1555
Ethylbenzene	25	24		1	97	3.3	70-130	25	05/26/2022 1555
Methyl tertiary butyl ether (MTBE)	25	26		1	102	2.0	70-130	25	05/26/2022 1555
Naphthalene	25	24		1	95	2.5	70-130	25	05/26/2022 1555
Toluene	25	24		1	96	0.00	70-130	25	05/26/2022 1555
m+p - Xylenes	50	49		1	99	2.0	70-130	25	05/26/2022 1555
o - Xylenes	25	26		1	103	2.8	70-130	25	05/26/2022 1555

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (PID)		90	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aliphatics) - MB

Sample ID: XQ43012-001
Batch: 43012
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
C5 - C8 Aliphatics, Adjusted	ND		1	75	15	ug/L	05/26/2022 1458
C9 - C12 Aliphatics, Adjusted	ND		1	75	15	ug/L	05/26/2022 1458

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		102	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aliphatics) - LCS

Sample ID: XQ43012-002
Batch: 43012
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
C5 - C8 Aliphatics, Adjusted	100	95		1	95	70-130	05/26/2022 1429
C9 - C12 Aliphatics, Adjusted	75	69		1	92	70-130	05/26/2022 1429

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		98	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aliphatics) - LCSD

Sample ID: XQ43012-003
Batch: 43012
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
C5 - C8 Aliphatics, Adjusted	100	94		1	94	0.95	70-130	25	05/26/2022 1555
C9 - C12 Aliphatics, Adjusted	75	70		1	94	1.9	70-130	25	05/26/2022 1555

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		94	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (TPH) - MB

Sample ID: XQ43015-001
Batch: 43015
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TPH	ND		1	180	35	ug/L	05/26/2022 1458

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		102	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (TPH) - LCS

Sample ID: XQ43015-002
Batch: 43015
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TPH	380	360		1	95	70-130	05/26/2022 1429

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		98	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (TPH) - LCSD

Sample ID: XQ43015-003
Batch: 43015
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
TPH	380	360		1	96	1.4	70-130	25	05/26/2022 1555

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		94	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

SHEALY

Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 94135

Client	Ramboll
Address	833 W. Wacker Dr. Suite #2900
City	Chicago
State	IL
Zip Code	
Project Name	AOC16 IM
Project No.	6900 21708-011
P.O. No.	
Report to Contact	Ruta Deshpande
Sampler's Signature	x
Printed Name	Mike Gipson
Telephone No. / E-mail	543-641-8677 rdeshpande@ramboll.com
Quote No.	—
Page	1 of 1
HRL	XE19037

Analysis (Attach list if more space is needed)

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab G / Composite C	Matrix: Aqueous	Matrix: Solid	Matrix: Non-aqueous	No of Containers by Preservative Type: Unpres	HNO3	H2SO4	HCl	NaOH	ZnOAc/NaOH	VOCs 8260 total 5	SVOCs 8270 total 5	EPH/VPH	Remarks / Cooler I.D.
CMR-SP200-220517	5/17/22	16:40	G	X			2			6			(7)	(4)	(4)	

Remarks: please contact Ruta prior to extraction to verify analysis

Turn Around Time Required (Prior lab approval required for expedited TAT.)
☒ Standard ☐ Rush (Specify)

Sample Disposal
☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification:
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☒ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Mike Gipson	5/18/22	14:00	1. Received by		
2. Relinquished by			2. Received by		
3. Relinquished by			3. Received by		
4. Relinquished by	5/18/22	15:00	4. Laboratory received by	5/18/22	15:20

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) Yes No Ice Pack Receipt Temp 5.8 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-153 Effective Date: 08-01-2014

Pace Analytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: Ramboll

Cooler Inspected by/date: TEC / 05/19/2022

Lot #: XE19037

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt 5.8 / 5.8 °C NA / NA °C NA / NA °C NA / NA °C %Solid Snap-Cup ID: NA

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☑ Yes	☐ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼" or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc...) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote #

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA 001 were received incorrectly preserved and were adjusted accordingly in sample receiving with NA 1 mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA 21-002.
Time of preservation NA 1800. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: TEC Date: 05/19/2022

Comments:

Report of Analysis

Ramboll US Corporation
333 West Wacker Drive
Suite 2700
Chicago, IL 60606
Attention: David Heidlauf

Project Name: AOC16 1M

Project Number: 1690021708-011

Lot Number:**XF22096**

Date Completed:07/15/2022

07/20/2022 1:05 PM
Approved and released by:
Project Manager II: **Cathy S. Dover**

The electronic signature above is the equivalent of a handwritten signature.
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Pace Analytical Services, LLC (*formerly Shealy Environmental Services, Inc.*)
106 Vantage Point Drive West Columbia, SC 29172
Tel: 803-791-9700 Fax: 803-791-9111 www.pacelabs.com

Case Narrative
Ramboll US Corporation
Lot Number: XF22096

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report. Where sampling is conducted by the client, results relate to the accuracy of the information provided, and as the samples are received.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

VOA 8260D

The laboratory control sample (LCS) for analytical batch 46184 exceeded acceptance criteria for Acetone. This analyte was biased high and was not detected in the associated sample: XF22096-002 (CMR-SP200-220617).

Surrogate recovery in the matrix spike (MS) in batch 46184 was outside the lower control limit. The associated sample: XF22096-002 (CMR-SP200-220617). The CCV and LCS associated with batch 46184 passed acceptance criteria, therefore the data has been reported. The parent sample (XF22096-002 (CMR-SP200-220617)), MS and MSD required a 20x dilution which could affect the surrogate recovery.

Evidence of matrix interference is present which caused multiple failures in the MS/MSD (batch 46184 and parent sample XF22096-002 (CMR-SP200-220617)). The data has been reported.

Sample XF22096-002 (CMR-SP200-220617) was re-analyzed at a higher dilution, which was over range for total xylenes. The Run 2 results do not compare well with the Run 1 results. The difference in results could be due to the oil-like matrix which was present in each sample vial. Both runs have been reported with xylenes as an estimated value in the R1.

The method blank associated with batch 46184 had Carbon disulfide detected at a concentration that was above the DL but below the LOQ. The sample (XF22096-002 (CMR-SP200-220617) associated with this method blank is non-detect for carbon disulfide; therefore the data has been reported.

Montana VPH
The method blank associated with batch 46443 had Naphthalene detected at a concentration that was above the DL but below the LOQ. All samples associated with this method blank that have detections for Naphthalene have been flagged with a "B".

SVOA (withe LL PAHs) 8270E
Insufficient sample volume was provided to perform matrix spike/matrix spike duplicate (MS/MSD) for prep batch 46694. An LCS/LCSD was run in lieu of an MS/MSD.

Due to the 500x dilution required for the analysis on sample XF22096-001 (CMR-SP200-220617) and the MS/MSD, some of the surrogate recoveries are outside of acceptance criteria. Also, the associated MS/MSD recovered outside control limits for multiple analytes. The associated LCS passed acceptance criteria.

The method blank associated with batch 45989 had Di-n-butylphthalate detected at a concentration that was above the DL but below the LOQ. All samples associated with this method blank that have detections for Di-n-butylphthalate have been flagged with a "B".

The method blank for analytical batch 46884 (prep batch 45989) contained analytes: naphthalene and 2-methylnapthalene greater than the acceptance criteria. The associated sample, XF22096-001 (CMR-SP200-220617), contained detections for these analytes at concentrations greater than 10X the value found in the method blank; therefore sample results are not impacted. The data has been reported.

Montana EPH
Sample XF22096-001 (CMR-SP200-220617) were collected in an HCl preserved container, however, the pH was outside the required criteria when verified by the laboratory. The lab analyst adjusted the pH to < pH of 2 prior to extraction.

The MT EPH screening results were done @ 200x. Upon fractionation in the extraction lab a 100x dilution was performed on sample XF22096-001 (CMR-SP200-220617) prior to analysis.

The method blank associated with batch 46731 had TEH (post fractionation) detected at a concentration that was above the DL but below the LOQ. The associated sample for this method blank batch that has a detection for TEH has been flagged with a "B".

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Sample Summary

Ramboll US Corporation

Lot Number: XF22096

Project Name: AOC16 1M

Project Number: 1690021708-011

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	CMR-SP200-220617	Aqueous	06/17/2022 1450	06/22/2022
002	CMR-SP200-220617	Aqueous	06/17/2022 1455	06/22/2022

(2 samples)

Detection Summary

Ramboll US Corporation

Lot Number: XF22096

Project Name: AOC16 1M

Project Number: 1690021708-011

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	CMR-SP200-220617	Aqueous	Acenaphthene	8270E	93	JQS	ug/L	6
001	CMR-SP200-220617	Aqueous	Fluorene	8270E	130	QS	ug/L	6
001	CMR-SP200-220617	Aqueous	2-Methylnaphthalene	8270E	2400	BQS	ug/L	7
001	CMR-SP200-220617	Aqueous	Naphthalene	8270E	1100	BQS	ug/L	7
001	CMR-SP200-220617	Aqueous	Phenanthrene	8270E	250	QS	ug/L	7
001	CMR-SP200-220617	Aqueous	TEH	Montana EPH	670000	Q	ug/L	8
001	CMR-SP200-220617	Aqueous	C19 - C36 Aliphatics	Montana EPH	37000	Q	ug/L	9
001	CMR-SP200-220617	Aqueous	C9 - C18 Aliphatics	Montana EPH	240000	Q	ug/L	9
001	CMR-SP200-220617	Aqueous	TEH, post-fractionation	Montana EPH	810000	BQ	ug/L	9
001	CMR-SP200-220617	Aqueous	C11 - C22 Aromatics	Montana EPH	530000	Q	ug/L	10
002	CMR-SP200-220617	Aqueous	Acetone	8260D	100	JL	ug/L	11
002	CMR-SP200-220617	Aqueous	Benzene	8260D	120		ug/L	11
002	CMR-SP200-220617	Aqueous	Cyclohexane	8260D	320	S	ug/L	11
002	CMR-SP200-220617	Aqueous	Ethylbenzene	8260D	660	S	ug/L	11
002	CMR-SP200-220617	Aqueous	Isopropylbenzene	8260D	99	S	ug/L	11
002	CMR-SP200-220617	Aqueous	Methylcyclohexane	8260D	340	S	ug/L	11
002	CMR-SP200-220617	Aqueous	Naphthalene	8260D	3200	S	ug/L	11
002	CMR-SP200-220617	Aqueous	Toluene	8260D	240		ug/L	11
002	CMR-SP200-220617	Aqueous	Xylenes (total)	8260D	11000	S	ug/L	12
002	CMR-SP200-220617	Aqueous	m+p - Xylenes	8260D	1400		ug/L	12
002	CMR-SP200-220617	Aqueous	o - Xylenes	8260D	2900	S	ug/L	12
002	CMR-SP200-220617	Aqueous	C5 - C8 Aliphatics,	Montana VPH	1200	J	ug/L	13
002	CMR-SP200-220617	Aqueous	C9 - C12 Aliphatics,	Montana VPH	16000		ug/L	13
002	CMR-SP200-220617	Aqueous	Benzene	Montana VPH	62	J	ug/L	14
002	CMR-SP200-220617	Aqueous	C9 - C10 Aromatics	Montana VPH	22000		ug/L	14
002	CMR-SP200-220617	Aqueous	Ethylbenzene	Montana VPH	130		ug/L	14
002	CMR-SP200-220617	Aqueous	Naphthalene	Montana VPH	1600	B	ug/L	14
002	CMR-SP200-220617	Aqueous	Toluene	Montana VPH	62	J	ug/L	14
002	CMR-SP200-220617	Aqueous	m+p - Xylenes	Montana VPH	1200		ug/L	14
002	CMR-SP200-220617	Aqueous	o - Xylenes	Montana VPH	490		ug/L	14
002	CMR-SP200-220617	Aqueous	TPH	Montana VPH	36000		ug/L	15

(31 detections)

Semivolatile Organic Compounds by GC/MS

Client: Ramboll US Corporation
Laboratory ID: XF22096-001
Description: CMR-SP200-220617
Matrix: Aqueous
Date Sampled: 06/17/2022 1450
Project Name: AOC16 1M
Date Received: 06/22/2022
Project Number: 1690021708-011

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	500	07/01/2022 2302	SCD	06/23/2022 1605	45989

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270E	93	JQS	100	20	ug/L	1
Acenaphthylene	208-96-8	8270E	ND	QS	100	20	ug/L	1
Anthracene	120-12-7	8270E	ND	QS	100	30	ug/L	1
Benzo(a)anthracene	56-55-3	8270E	ND	QS	100	20	ug/L	1
Benzo(a)pyrene	50-32-8	8270E	ND	QS	100	35	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270E	ND	QS	100	20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270E	ND	QS	100	20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270E	ND	QS	100	20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270E	ND	QS	400	250	ug/L	1
Butyl benzyl phthalate	85-68-7	8270E	ND	QS	400	250	ug/L	1
Carbazole	86-74-8	8270E	ND	QS	400	250	ug/L	1
bis (2-Chloro-1-methylethyl) ether	108-60-1	8270E	ND	QS	400	250	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270E	ND	QS	400	250	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270E	ND	QS	400	250	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270E	ND	QS	400	250	ug/L	1
2-Chloronaphthalene	91-58-7	8270E	ND	QS	400	250	ug/L	1
2-Chlorophenol	95-57-8	8270E	ND	QS	400	250	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270E	ND	QS	400	250	ug/L	1
Chrysene	218-01-9	8270E	ND	QS	100	15	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270E	ND	QS	100	15	ug/L	1
Dibenzofuran	132-64-9	8270E	ND	QS	400	250	ug/L	1
1,2-Dichlorobenzene	95-50-1	8270E	ND	QS	400	250	ug/L	1
1,3-Dichlorobenzene	541-73-1	8270E	ND	QS	400	250	ug/L	1
1,4-Dichlorobenzene	106-46-7	8270E	ND	QS	400	250	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270E	ND	QS	2000	880	ug/L	1
2,4-Dichlorophenol	120-83-2	8270E	ND	QS	800	130	ug/L	1
Diethylphthalate	84-66-2	8270E	ND	QS	400	250	ug/L	1
Dimethyl phthalate	131-11-3	8270E	ND	QS	400	250	ug/L	1
2,4-Dimethylphenol	105-67-9	8270E	ND	QS	400	240	ug/L	1
Di-n-butyl phthalate	84-74-2	8270E	ND	QS	400	250	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270E	ND	QS	2000	500	ug/L	1
2,4-Dinitrophenol	51-28-5	8270E	ND	QS	2000	500	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270E	ND	QS	800	250	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270E	ND	QS	800	250	ug/L	1
Di-n-octylphthalate	117-84-0	8270E	ND	QS	400	250	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270E	ND	QS	2000	1000	ug/L	1
Fluoranthene	206-44-0	8270E	ND	QS	100	50	ug/L	1
Fluorene	86-73-7	8270E	130	QS	100	15	ug/L	1
Hexachlorobenzene	118-74-1	8270E	ND	QS	400	250	ug/L	1
Hexachlorobutadiene	87-68-3	8270E	ND	QS	400	250	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270E	ND	QS	2000	1000	ug/L	1
Hexachloroethane	67-72-1	8270E	ND	QS	400	160	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270E	ND	QS	100	20	ug/L	1
Isophorone	78-59-1	8270E	ND	QS	400	250	ug/L	1

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Semivolatile Organic Compounds by GC/MS

Client: Ramboll US Corporation
Laboratory ID: XF22096-001
Description: CMR-SP200-220617
Matrix: Aqueous
Date Sampled: 06/17/2022 1450
Project Name: AOC16 1M
Date Received: 06/22/2022
Project Number: 1690021708-011

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	500	07/01/2022 2302	SCD	06/23/2022 1605	45989

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
2-Methylnaphthalene	91-57-6	8270E	2400	BQS	100	20	ug/L	1
2-Methylphenol	95-48-7	8270E	ND	QS	400	110	ug/L	1
3+4-Methylphenol	106-44-5	8270E	ND	QS	800	750	ug/L	1
Naphthalene	91-20-3	8270E	1100	BQS	100	25	ug/L	1
2-Nitroaniline	88-74-4	8270E	ND	QS	800	250	ug/L	1
3-Nitroaniline	99-09-2	8270E	ND	QS	800	500	ug/L	1
4-Nitroaniline	100-01-6	8270E	ND	QS	800	750	ug/L	1
Nitrobenzene	98-95-3	8270E	ND	QS	400	280	ug/L	1
2-Nitrophenol	88-75-5	8270E	ND	QS	800	500	ug/L	1
4-Nitrophenol	100-02-7	8270E	ND	QS	2000	1000	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270E	ND	QS	400	250	ug/L	1
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270E	ND	QS	400	250	ug/L	1
Pentachlorophenol	87-86-5	8270E	ND	QS	2000	1000	ug/L	1
Phenanthrene	85-01-8	8270E	250	QS	100	30	ug/L	1
Phenol	108-95-2	8270E	ND	QS	400	250	ug/L	1
Pyrene	129-00-0	8270E	ND	QS	100	50	ug/L	1
1,2,4,5-Tetrachlorobenzene	95-94-3	8270E	ND	QS	400	130	ug/L	1
2,3,4,6-Tetrachlorophenol	58-90-2	8270E	ND	QS	800	280	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8270E	ND	QS	400	190	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270E	ND	QS	400	250	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270E	ND	QS	400	250	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Fluorobiphenyl	N	426	37-129
2-Fluorophenol		66	24-127
Nitrobenzene-d5	N	1160	38-127
Phenol-d5	N	422	28-128
Terphenyl-d14		147	10-148
2,4,6-Tribromophenol	N	2490	35-144

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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Montana EPH (screening)

Client: Ramboll US Corporation			Laboratory ID: XF22096-001
Description: CMR-SP200-220617			Matrix: Aqueous
Date Sampled: 06/17/2022 1450	Project Name: AOC16 1M		
Date Received: 06/22/2022	Project Number: 1690021708-011		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	Montana EPH	Montana EPH	200	07/12/2022 1228	NCM	06/30/2022 1150	46678

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
TEH		Montana EPH	670000	Q	40000	40000	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Bromonaphthalene (fractionation 2)	N	0.00	40-140
1-Chloro-octadecane (aliphatic)	N	0.00	40-140
2-Fluorobiphenyl (fractionation 1)	N	0.00	40-140
o - Terphenyl (aromatic)	N	0.00	40-140

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana EPH (aliphatics)

Client: Ramboll US Corporation			Laboratory ID: XF22096-001
Description: CMR-SP200-220617			Matrix: Aqueous
Date Sampled: 06/17/2022 1450	Project Name: AOC16 1M		
Date Received: 06/22/2022	Project Number: 1690021708-011		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	Montana EPH	Montana EPH	1	07/14/2022 1200	NCM	06/30/2022 1150	46731

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
C19 - C36 Aliphatics		Montana EPH	37000	Q	100	100	ug/L	1
C9 - C18 Aliphatics		Montana EPH	240000	Q	100	100	ug/L	1
TEH, post-fractionation	68334-30-5S	Montana EPH	810000	BQ	200	100	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1-Chloro-octadecane (aliphatic)	N	0.00	40-140

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana EPH (aromatics)

Client: Ramboll US Corporation			Laboratory ID: XF22096-001
Description: CMR-SP200-220617			Matrix: Aqueous
Date Sampled: 06/17/2022 1450	Project Name: AOC16 1M		
Date Received: 06/22/2022	Project Number: 1690021708-011		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	Montana EPH	Montana EPH	1	07/14/2022 1210	NCM	06/30/2022 1150	46732

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
C11 - C22 Aromatics		Montana EPH	530000	Q	100	100	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Bromonaphthalene (fractionation 2)	N	0.00	40-140
2-Fluorobiphenyl (fractionation 1)	N	0.00	40-140
o - Terphenyl (aromatic)	N	0.00	40-140

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: Ramboll US Corporation			Laboratory ID: XF22096-002
Description: CMR-SP200-220617			Matrix: Aqueous
Date Sampled: 06/17/2022 1455	Project Name: AOC16 1M		
Date Received: 06/22/2022	Project Number: 1690021708-011		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	20	06/25/2022 2352	BBW		46184
2	5030B	8260D	100	06/30/2022 0557	SDC		46617

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	100	JL	200	80	ug/L	1
Benzene	71-43-2	8260D	120		10	8.0	ug/L	1
Bromochloromethane	74-97-5	8260D	ND		10	8.0	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND		10	8.0	ug/L	1
Bromoform	75-25-2	8260D	ND	S	10	8.0	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND		10	8.0	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND		200	40	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	S	10	8.0	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	S	10	8.0	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	S	10	8.0	ug/L	1
Chloroethane	75-00-3	8260D	ND		10	8.0	ug/L	1
Chloroform	67-66-3	8260D	ND		10	8.0	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND		10	8.0	ug/L	1
Cyclohexane	110-82-7	8260D	320	S	10	8.0	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND		10	8.0	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	S	10	8.0	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND		10	8.0	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	S	10	8.0	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	S	10	8.0	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	S	10	8.0	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND		10	8.0	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND		10	8.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		10	8.0	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND		10	8.0	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	ND		10	8.0	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND		10	8.0	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND		10	8.0	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	S	10	8.0	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND		10	8.0	ug/L	1
1,4-Dioxane	123-91-1	8260D	ND	S	400	270	ug/L	1
Ethylbenzene	100-41-4	8260D	660	S	10	8.0	ug/L	1
2-Hexanone	591-78-6	8260D	ND		200	40	ug/L	1
Isopropylbenzene	98-82-8	8260D	99	S	10	8.0	ug/L	1
Methyl acetate	79-20-9	8260D	ND		20	8.0	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		10	8.0	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND		200	40	ug/L	1
Methylcyclohexane	108-87-2	8260D	340	S	100	8.0	ug/L	1
Methylene chloride	75-09-2	8260D	ND		10	8.0	ug/L	1
Naphthalene	91-20-3	8260D	3200	S	10	8.0	ug/L	1
Styrene	100-42-5	8260D	ND	S	10	8.2	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND		10	8.0	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND	S	10	8.0	ug/L	1
Toluene	108-88-3	8260D	240		10	8.0	ug/L	1

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: Ramboll US Corporation			Laboratory ID: XF22096-002
Description: CMR-SP200-220617			Matrix: Aqueous
Date Sampled: 06/17/2022 1455	Project Name: AOC16 1M		
Date Received: 06/22/2022	Project Number: 1690021708-011		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	20	06/25/2022 2352	BBW		46184
2	5030B	8260D	100	06/30/2022 0557	SDC		46617

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	S	20	8.4	ug/L	1
1,2,3-Trichlorobenzene	87-61-6	8260D	ND	S	10	8.0	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	S	10	8.0	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND	S	10	8.0	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND		10	8.0	ug/L	1
Trichloroethene	79-01-6	8260D	ND	S	10	8.0	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	ND	S	10	8.0	ug/L	1
Vinyl chloride	75-01-4	8260D	ND		10	8.0	ug/L	1
Xylenes (total)	1330-20-7	8260D	11000	S	20	8.0	ug/L	1
m+p - Xylenes	179601-23-1	8260D	1400		50	40	ug/L	2
o - Xylenes	95-47-6	8260D	2900	S	10	8.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene		98	70-130		102	70-130
1,2-Dichloroethane-d4		96	70-130		93	70-130
Toluene-d8		105	70-130		100	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana VPH (aliphatics)

Client: Ramboll US Corporation			Laboratory ID: XF22096-002
Description: CMR-SP200-220617			Matrix: Aqueous
Date Sampled: 06/17/2022 1455	Project Name: AOC16 1M		
Date Received: 06/22/2022	Project Number: 1690021708-011		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	VPH	Montana VPH	20	06/28/2022 1544	ECB		46444

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
C5 - C8 Aliphatics, Adjusted		Montana VPH	1200	J	1500	300	ug/L	2
C9 - C12 Aliphatics, Adjusted		Montana VPH	16000		1500	300	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
2,5-Dibromotoluene (FID)		91	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana VPH (aromatics)

Client: Ramboll US Corporation			Laboratory ID: XF22096-002
Description: CMR-SP200-220617			Matrix: Aqueous
Date Sampled: 06/17/2022 1455	Project Name: AOC16 1M		
Date Received: 06/22/2022	Project Number: 1690021708-011		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	VPH	Montana VPH	20	06/28/2022 1544	ECB		46443

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Benzene	71-43-2	Montana VPH	62	J	100	10	ug/L	2
C9 - C10 Aromatics		Montana VPH	22000		500	100	ug/L	2
Ethylbenzene	100-41-4	Montana VPH	130		100	12	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	Montana VPH	ND		100	24	ug/L	2
Naphthalene	91-20-3	Montana VPH	1600	B	100	14	ug/L	2
Toluene	108-88-3	Montana VPH	62	J	100	11	ug/L	2
m+p - Xylenes	179601-23-1	Montana VPH	1200		100	24	ug/L	2
o - Xylenes	95-47-6	Montana VPH	490		100	12	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
2,5-Dibromotoluene (PID)		90	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana VPH (TPH)

Client: Ramboll US Corporation			Laboratory ID: XF22096-002
Description: CMR-SP200-220617			Matrix: Aqueous
Date Sampled: 06/17/2022 1455	Project Name: AOC16 1M		
Date Received: 06/22/2022	Project Number: 1690021708-011		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	VPH	Montana VPH	20	06/28/2022 1544	ECB		46446

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
TPH		Montana VPH	36000		3500	700	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
2,5-Dibromotoluene (FID)		88	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ46184-001
Batch: 46184
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	06/25/2022 1611
Benzene	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Bromochloromethane	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Bromodichloromethane	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Bromoform	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	06/25/2022 1611
2-Butanone (MEK)	ND		1	10	2.0	ug/L	06/25/2022 1611
Carbon disulfide	0.43	J	1	0.50	0.40	ug/L	06/25/2022 1611
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Chlorobenzene	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Chloroethane	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Chloroform	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Cyclohexane	ND		1	0.50	0.40	ug/L	06/25/2022 1611
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Dibromochloromethane	ND		1	0.50	0.40	ug/L	06/25/2022 1611
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	06/25/2022 1611
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	06/25/2022 1611
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	06/25/2022 1611
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	06/25/2022 1611
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	06/25/2022 1611
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	06/25/2022 1611
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	06/25/2022 1611
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	06/25/2022 1611
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	06/25/2022 1611
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	06/25/2022 1611
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	06/25/2022 1611
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	06/25/2022 1611
1,4-Dioxane	ND		1	20	13	ug/L	06/25/2022 1611
Ethylbenzene	ND		1	0.50	0.40	ug/L	06/25/2022 1611
2-Hexanone	ND		1	10	2.0	ug/L	06/25/2022 1611
Isopropylbenzene	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Methyl acetate	ND		1	1.0	0.40	ug/L	06/25/2022 1611
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	06/25/2022 1611
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	06/25/2022 1611
Methylcyclohexane	ND		1	5.0	0.40	ug/L	06/25/2022 1611
Methylene chloride	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Naphthalene	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Styrene	ND		1	0.50	0.41	ug/L	06/25/2022 1611
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Tetrachloroethene	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Toluene	ND		1	0.50	0.40	ug/L	06/25/2022 1611
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	06/25/2022 1611

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ46184-001
Batch: 46184
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
1,2,3-Trichlorobenzene	ND		1	0.50	0.40	ug/L	06/25/2022 1611
1,2,4-Trichlorobenzene	ND		1	0.50	0.40	ug/L	06/25/2022 1611
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	06/25/2022 1611
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Trichloroethene	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Trichlorofluoromethane	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Vinyl chloride	ND		1	0.50	0.40	ug/L	06/25/2022 1611
Xylenes (total)	ND		1	1.0	0.40	ug/L	06/25/2022 1611
o - Xylenes	ND		1	0.50	0.40	ug/L	06/25/2022 1611

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		104	70-130
1,2-Dichloroethane-d4		92	70-130
Toluene-d8		101	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ46184-002
Batch: 46184
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acetone	100	170	N	1	170	60-140	06/25/2022 1504
Benzene	50	47		1	94	70-130	06/25/2022 1504
Bromochloromethane	50	47		1	95	70-130	06/25/2022 1504
Bromodichloromethane	50	47		1	93	70-130	06/25/2022 1504
Bromoform	50	46		1	92	70-130	06/25/2022 1504
Bromomethane (Methyl bromide)	50	47		1	94	70-130	06/25/2022 1504
2-Butanone (MEK)	100	120		1	124	70-130	06/25/2022 1504
Carbon disulfide	50	46		1	92	70-130	06/25/2022 1504
Carbon tetrachloride	50	47		1	94	70-130	06/25/2022 1504
Chlorobenzene	50	46		1	92	70-130	06/25/2022 1504
Chloroethane	50	45		1	89	70-130	06/25/2022 1504
Chloroform	50	48		1	95	70-130	06/25/2022 1504
Chloromethane (Methyl chloride)	50	44		1	87	60-140	06/25/2022 1504
Cyclohexane	50	45		1	89	70-130	06/25/2022 1504
1,2-Dibromo-3-chloropropane (DBCP)	50	45		1	90	70-130	06/25/2022 1504
Dibromochloromethane	50	48		1	95	70-130	06/25/2022 1504
1,2-Dibromoethane (EDB)	50	49		1	99	70-130	06/25/2022 1504
1,2-Dichlorobenzene	50	47		1	94	70-130	06/25/2022 1504
1,3-Dichlorobenzene	50	47		1	93	70-130	06/25/2022 1504
1,4-Dichlorobenzene	50	46		1	93	70-130	06/25/2022 1504
Dichlorodifluoromethane	50	47		1	94	60-140	06/25/2022 1504
1,1-Dichloroethane	50	47		1	93	70-130	06/25/2022 1504
1,2-Dichloroethane	50	47		1	95	70-130	06/25/2022 1504
1,1-Dichloroethene	50	47		1	93	70-130	06/25/2022 1504
cis-1,2-Dichloroethene	50	49		1	97	70-130	06/25/2022 1504
trans-1,2-Dichloroethene	50	47		1	94	70-130	06/25/2022 1504
1,2-Dichloropropane	50	47		1	94	70-130	06/25/2022 1504
cis-1,3-Dichloropropene	50	48		1	96	70-130	06/25/2022 1504
trans-1,3-Dichloropropene	50	48		1	96	70-130	06/25/2022 1504
1,4-Dioxane	500	440		1	89	60-140	06/25/2022 1504
Ethylbenzene	50	46		1	92	70-130	06/25/2022 1504
2-Hexanone	100	100		1	102	70-130	06/25/2022 1504
Isopropylbenzene	50	47		1	94	70-130	06/25/2022 1504
Methyl acetate	50	50		1	101	70-130	06/25/2022 1504
Methyl tertiary butyl ether (MTBE)	50	51		1	102	70-130	06/25/2022 1504
4-Methyl-2-pentanone	100	100		1	104	70-130	06/25/2022 1504
Methylcyclohexane	50	45		1	91	70-130	06/25/2022 1504
Methylene chloride	50	43		1	87	70-130	06/25/2022 1504
Naphthalene	50	47		1	94	70-130	06/25/2022 1504
Styrene	50	48		1	96	70-130	06/25/2022 1504
1,1,2,2-Tetrachloroethane	50	47		1	94	70-130	06/25/2022 1504
Tetrachloroethene	50	48		1	96	70-130	06/25/2022 1504
Toluene	50	46		1	93	70-130	06/25/2022 1504
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	45		1	90	70-130	06/25/2022 1504

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ46184-002
Batch: 46184
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
1,2,3-Trichlorobenzene	50	47		1	95	70-130	06/25/2022 1504
1,2,4-Trichlorobenzene	50	47		1	94	70-130	06/25/2022 1504
1,1,1-Trichloroethane	50	47		1	93	70-130	06/25/2022 1504
1,1,2-Trichloroethane	50	47		1	94	70-130	06/25/2022 1504
Trichloroethene	50	48		1	97	70-130	06/25/2022 1504
Trichlorofluoromethane	50	48		1	95	70-130	06/25/2022 1504
Vinyl chloride	50	47		1	94	70-130	06/25/2022 1504
Xylenes (total)	100	93		1	93	70-130	06/25/2022 1504
o - Xylenes	50	47		1	94	70-130	06/25/2022 1504

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		93	70-130
1,2-Dichloroethane-d4		90	70-130
Toluene-d8		90	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MS

Sample ID: XF22096-002MS
Batch: 46184
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acetone	100	2000	2100		20	99	60-140	06/26/2022 0016
Benzene	120	1000	1200		20	106	70-130	06/26/2022 0016
Bromochloromethane	ND	1000	1000		20	101	70-130	06/26/2022 0016
Bromodichloromethane	ND	1000	760		20	76	70-130	06/26/2022 0016
Bromoform	ND	1000	560	N	20	56	70-130	06/26/2022 0016
Bromomethane (Methyl bromide)	ND	1000	1100		20	111	70-130	06/26/2022 0016
2-Butanone (MEK)	ND	2000	2000		20	101	70-130	06/26/2022 0016
Carbon disulfide	ND	1000	640	N	20	64	70-130	06/26/2022 0016
Carbon tetrachloride	ND	1000	370	N	20	37	70-130	06/26/2022 0016
Chlorobenzene	ND	1000	420	N	20	42	70-130	06/26/2022 0016
Chloroethane	ND	1000	1100		20	107	70-130	06/26/2022 0016
Chloroform	ND	1000	910		20	91	70-130	06/26/2022 0016
Chloromethane (Methyl chloride)	ND	1000	1000		20	103	60-140	06/26/2022 0016
Cyclohexane	320	1000	1200		20	87	70-130	06/26/2022 0016
1,2-Dibromo-3-chloropropane (DBCP)	ND	1000	1000		20	100	70-130	06/26/2022 0016
Dibromochloromethane	ND	1000	660	N	20	66	70-130	06/26/2022 0016
1,2-Dibromoethane (EDB)	ND	1000	810		20	81	70-130	06/26/2022 0016
1,2-Dichlorobenzene	ND	1000	230	N	20	23	70-130	06/26/2022 0016
1,3-Dichlorobenzene	ND	1000	200	N	20	20	70-130	06/26/2022 0016
1,4-Dichlorobenzene	ND	1000	200	N	20	20	70-130	06/26/2022 0016
Dichlorodifluoromethane	ND	1000	830		20	83	60-140	06/26/2022 0016
1,1-Dichloroethane	ND	1000	930		20	93	70-130	06/26/2022 0016
1,2-Dichloroethane	ND	1000	950		20	95	70-130	06/26/2022 0016
1,1-Dichloroethene	ND	1000	770		20	77	70-130	06/26/2022 0016
cis-1,2-Dichloroethene	ND	1000	970		20	97	70-130	06/26/2022 0016
trans-1,2-Dichloroethene	ND	1000	860		20	86	70-130	06/26/2022 0016
1,2-Dichloropropane	ND	1000	750		20	75	70-130	06/26/2022 0016
cis-1,3-Dichloropropene	ND	1000	690	N	20	69	70-130	06/26/2022 0016
trans-1,3-Dichloropropene	ND	1000	770		20	77	70-130	06/26/2022 0016
1,4-Dioxane	ND	10000	5600	N	20	56	60-140	06/26/2022 0016
Ethylbenzene	660	1000	2200	N	20	154	70-130	06/26/2022 0016
2-Hexanone	ND	2000	2100		20	107	70-130	06/26/2022 0016
Isopropylbenzene	99	1000	500	N	20	40	70-130	06/26/2022 0016
Methyl acetate	ND	1000	890		20	89	70-130	06/26/2022 0016
Methyl tertiary butyl ether (MTBE)	ND	1000	1100		20	106	70-130	06/26/2022 0016
4-Methyl-2-pentanone	ND	2000	1800		20	89	70-130	06/26/2022 0016
Methylcyclohexane	340	1000	1200		20	83	70-130	06/26/2022 0016
Methylene chloride	ND	1000	950		20	95	70-130	06/26/2022 0016
Naphthalene	3200	1000	5100	N	20	196	70-130	06/26/2022 0016
Styrene	ND	1000	620	N	20	62	70-130	06/26/2022 0016
1,1,2,2-Tetrachloroethane	ND	1000	960		20	96	70-130	06/26/2022 0016
Tetrachloroethene	ND	1000	240	N	20	24	70-130	06/26/2022 0016
Toluene	240	1000	1300		20	106	70-130	06/26/2022 0016
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1000	310	N	20	31	70-130	06/26/2022 0016

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MS

Sample ID: XF22096-002MS
Batch: 46184
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
1,2,3-Trichlorobenzene	ND	1000	230	N	20	23	70-130	06/26/2022 0016
1,2,4-Trichlorobenzene	ND	1000	83	N	20	8.3	70-130	06/26/2022 0016
1,1,1-Trichloroethane	ND	1000	530	N	20	53	70-130	06/26/2022 0016
1,1,2-Trichloroethane	ND	1000	840		20	84	70-130	06/26/2022 0016
Trichloroethene	ND	1000	500	N	20	50	70-130	06/26/2022 0016
Trichlorofluoromethane	ND	1000	680	N	20	68	70-130	06/26/2022 0016
Vinyl chloride	ND	1000	1100		20	111	70-130	06/26/2022 0016
Xylenes (total)	11000	2000	28000	N	20	869	70-130	06/26/2022 0016
o - Xylenes	2900	1000	8700	N	20	578	70-130	06/26/2022 0016

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene	N	47	70-130
1,2-Dichloroethane-d4		92	70-130
Toluene-d8	N	53	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MSD

Sample ID: XF22096-002MD
Batch: 46184
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Acetone	100	2000	1500	+	20	72	30	60-140	20	06/26/2022 0039
Benzene	120	1000	1100		20	98	7.3	70-130	20	06/26/2022 0039
Bromochloromethane	ND	1000	1000		20	103	2.1	70-130	20	06/26/2022 0039
Bromodichloromethane	ND	1000	920		20	92	19	70-130	20	06/26/2022 0039
Bromoform	ND	1000	800	+	20	80	36	70-130	20	06/26/2022 0039
Bromomethane (Methyl bromide)	ND	1000	1100		20	110	1.6	70-130	20	06/26/2022 0039
2-Butanone (MEK)	ND	2000	1700		20	84	18	70-130	20	06/26/2022 0039
Carbon disulfide	ND	1000	910	+	20	91	34	70-130	20	06/26/2022 0039
Carbon tetrachloride	ND	1000	950	+	20	95	87	70-130	20	06/26/2022 0039
Chlorobenzene	ND	1000	950	+	20	95	77	70-130	20	06/26/2022 0039
Chloroethane	ND	1000	1100		20	108	0.56	70-130	20	06/26/2022 0039
Chloroform	ND	1000	1000		20	103	12	70-130	20	06/26/2022 0039
Chloromethane (Methyl chloride)	ND	1000	980		20	98	5.1	60-140	20	06/26/2022 0039
Cyclohexane	320	1000	730	N,+	20	41	47	70-130	20	06/26/2022 0039
1,2-Dibromo-3-chloropropane (DBCP)	ND	1000	930		20	93	7.0	70-130	20	06/26/2022 0039
Dibromochloromethane	ND	1000	910	+	20	91	32	70-130	20	06/26/2022 0039
1,2-Dibromoethane (EDB)	ND	1000	1000	+	20	101	22	70-130	20	06/26/2022 0039
1,2-Dichlorobenzene	ND	1000	830	+	20	83	110	70-130	20	06/26/2022 0039
1,3-Dichlorobenzene	ND	1000	760	+	20	76	120	70-130	20	06/26/2022 0039
1,4-Dichlorobenzene	ND	1000	760	+	20	76	120	70-130	20	06/26/2022 0039
Dichlorodifluoromethane	ND	1000	1000	+	20	105	24	60-140	20	06/26/2022 0039
1,1-Dichloroethane	ND	1000	1000		20	103	11	70-130	20	06/26/2022 0039
1,2-Dichloroethane	ND	1000	980		20	98	3.2	70-130	20	06/26/2022 0039
1,1-Dichloroethene	ND	1000	1000	+	20	104	30	70-130	20	06/26/2022 0039
cis-1,2-Dichloroethene	ND	1000	1000		20	104	7.6	70-130	20	06/26/2022 0039
trans-1,2-Dichloroethene	ND	1000	1000		20	104	19	70-130	20	06/26/2022 0039
1,2-Dichloropropane	ND	1000	920		20	92	20	70-130	20	06/26/2022 0039
cis-1,3-Dichloropropene	ND	1000	910	+	20	91	27	70-130	20	06/26/2022 0039
trans-1,3-Dichloropropene	ND	1000	970	+	20	97	23	70-130	20	06/26/2022 0039
1,4-Dioxane	ND	10000	4800	N	20	48	15	60-140	20	06/26/2022 0039
Ethylbenzene	660	1000	1100	N,+	20	48	63	70-130	20	06/26/2022 0039
2-Hexanone	ND	2000	2000		20	100	6.6	70-130	20	06/26/2022 0039
Isopropylbenzene	99	1000	720	N,+	20	62	37	70-130	20	06/26/2022 0039
Methyl acetate	ND	1000	720	+	20	72	22	70-130	20	06/26/2022 0039
Methyl tertiary butyl ether (MTBE)	ND	1000	1000		20	101	4.4	70-130	20	06/26/2022 0039
4-Methyl-2-pentanone	ND	2000	1800		20	91	2.2	70-130	20	06/26/2022 0039
Methylcyclohexane	340	1000	560	N,+	20	22	71	70-130	20	06/26/2022 0039
Methylene chloride	ND	1000	970		20	97	1.9	70-130	20	06/26/2022 0039
Naphthalene	3200	1000	2700	N,+	20	-45	61	70-130	20	06/26/2022 0039
Styrene	ND	1000	970	+	20	97	43	70-130	20	06/26/2022 0039
1,1,2,2-Tetrachloroethane	ND	1000	950		20	95	0.62	70-130	20	06/26/2022 0039
Tetrachloroethene	ND	1000	860	+	20	86	110	70-130	20	06/26/2022 0039
Toluene	240	1000	1100		20	86	17	70-130	20	06/26/2022 0039
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1000	930	+	20	93	99	70-130	20	06/26/2022 0039

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MSD

Sample ID: XF22096-002MD
Batch: 46184
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
1,2,3-Trichlorobenzene	ND	1000	800	+	20	80	110	70-130	20	06/26/2022 0039
1,2,4-Trichlorobenzene	ND	1000	590	N,+	20	59	150	70-130	20	06/26/2022 0039
1,1,1-Trichloroethane	ND	1000	1000	+	20	100	61	70-130	20	06/26/2022 0039
1,1,2-Trichloroethane	ND	1000	1000		20	102	20	70-130	20	06/26/2022 0039
Trichloroethene	ND	1000	1000	+	20	101	67	70-130	20	06/26/2022 0039
Trichlorofluoromethane	ND	1000	1100	+	20	107	44	70-130	20	06/26/2022 0039
Vinyl chloride	ND	1000	1100		20	111	0.030	70-130	20	06/26/2022 0039
Xylenes (total)	11000	2000	6700	N,+	20	-219	120	70-130	20	06/26/2022 0039
o - Xylenes	2900	1000	2100	N,+	20	-74	120	70-130	20	06/26/2022 0039

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		86	70-130
1,2-Dichloroethane-d4		93	70-130
Toluene-d8		96	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ46617-001
Batch: 46617
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
m+p - Xylenes	ND		1	0.50	0.40	ug/L	06/29/2022 2154

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		99	70-130
1,2-Dichloroethane-d4		96	70-130
Toluene-d8		97	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ46617-002
Batch: 46617
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
m+p - Xylenes	50	45		1	90	70-130	06/29/2022 2045

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		91	70-130
1,2-Dichloroethane-d4		91	70-130
Toluene-d8		93	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - MB

Sample ID: XQ45989-001
Batch: 45989
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 06/23/2022 1605

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acenaphthene	ND		1	0.20	0.040	ug/L	07/01/2022 1709
Acenaphthylene	ND		1	0.20	0.040	ug/L	07/01/2022 1709
Anthracene	ND		1	0.20	0.060	ug/L	07/01/2022 1709
Benzo(a)anthracene	ND		1	0.20	0.040	ug/L	07/01/2022 1709
Benzo(a)pyrene	ND		1	0.20	0.070	ug/L	07/01/2022 1709
Benzo(b)fluoranthene	ND		1	0.20	0.040	ug/L	07/01/2022 1709
Benzo(g,h,i)perylene	ND		1	0.20	0.040	ug/L	07/01/2022 1709
Benzo(k)fluoranthene	ND		1	0.20	0.040	ug/L	07/01/2022 1709
4-Bromophenyl phenyl ether	ND		1	0.80	0.50	ug/L	07/01/2022 1709
Butyl benzyl phthalate	ND		1	0.80	0.50	ug/L	07/01/2022 1709
Carbazole	ND		1	0.80	0.50	ug/L	07/01/2022 1709
bis (2-Chloro-1-methylethyl) ether	ND		1	0.80	0.50	ug/L	07/01/2022 1709
4-Chloro-3-methyl phenol	ND		1	0.80	0.50	ug/L	07/01/2022 1709
bis(2-Chloroethoxy)methane	ND		1	0.80	0.50	ug/L	07/01/2022 1709
bis(2-Chloroethyl)ether	ND		1	0.80	0.50	ug/L	07/01/2022 1709
2-Chloronaphthalene	ND		1	0.80	0.50	ug/L	07/01/2022 1709
2-Chlorophenol	ND		1	0.80	0.50	ug/L	07/01/2022 1709
4-Chlorophenyl phenyl ether	ND		1	0.80	0.50	ug/L	07/01/2022 1709
Chrysene	ND		1	0.20	0.030	ug/L	07/01/2022 1709
Dibenzo(a,h)anthracene	ND		1	0.20	0.030	ug/L	07/01/2022 1709
Dibenzofuran	ND		1	0.80	0.50	ug/L	07/01/2022 1709
1,2-Dichlorobenzene	ND		1	0.80	0.50	ug/L	07/01/2022 1709
1,3-Dichlorobenzene	ND		1	0.80	0.50	ug/L	07/01/2022 1709
1,4-Dichlorobenzene	ND		1	0.80	0.50	ug/L	07/01/2022 1709
3,3'-Dichlorobenzidine	ND		1	4.0	1.8	ug/L	07/01/2022 1709
2,4-Dichlorophenol	ND		1	1.6	0.25	ug/L	07/01/2022 1709
Diethylphthalate	ND		1	0.80	0.50	ug/L	07/01/2022 1709
Dimethyl phthalate	ND		1	0.80	0.50	ug/L	07/01/2022 1709
2,4-Dimethylphenol	ND		1	0.80	0.48	ug/L	07/01/2022 1709
Di-n-butyl phthalate	0.76	J	1	0.80	0.50	ug/L	07/01/2022 1709
4,6-Dinitro-2-methylphenol	ND		1	4.0	1.0	ug/L	07/01/2022 1709
2,4-Dinitrophenol	ND		1	4.0	1.0	ug/L	07/01/2022 1709
2,4-Dinitrotoluene	ND		1	1.6	0.50	ug/L	07/01/2022 1709
2,6-Dinitrotoluene	ND		1	1.6	0.50	ug/L	07/01/2022 1709
Di-n-octylphthalate	ND		1	0.80	0.50	ug/L	07/01/2022 1709
bis(2-Ethylhexyl)phthalate	ND		1	4.0	2.0	ug/L	07/01/2022 1709
Fluoranthene	ND		1	0.20	0.10	ug/L	07/01/2022 1709
Fluorene	ND		1	0.20	0.030	ug/L	07/01/2022 1709
Hexachlorobenzene	ND		1	0.80	0.50	ug/L	07/01/2022 1709
Hexachlorobutadiene	ND		1	0.80	0.50	ug/L	07/01/2022 1709
Hexachlorocyclopentadiene	ND		1	4.0	2.0	ug/L	07/01/2022 1709
Hexachloroethane	ND		1	0.80	0.31	ug/L	07/01/2022 1709
Indeno(1,2,3-c,d)pyrene	ND		1	0.20	0.040	ug/L	07/01/2022 1709
Isophorone	ND		1	0.80	0.50	ug/L	07/01/2022 1709

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - MB

Sample ID: XQ45989-001
Batch: 45989
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 06/23/2022 1605

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
2-Methylnaphthalene	0.45		1	0.20	0.040	ug/L	07/01/2022 1709
2-Methylphenol	ND		1	0.80	0.21	ug/L	07/01/2022 1709
3+4-Methylphenol	ND		1	1.6	1.5	ug/L	07/01/2022 1709
Naphthalene	0.42		1	0.20	0.050	ug/L	07/01/2022 1709
2-Nitroaniline	ND		1	1.6	0.50	ug/L	07/01/2022 1709
3-Nitroaniline	ND		1	1.6	1.0	ug/L	07/01/2022 1709
4-Nitroaniline	ND		1	1.6	1.5	ug/L	07/01/2022 1709
Nitrobenzene	ND		1	0.80	0.55	ug/L	07/01/2022 1709
2-Nitrophenol	ND		1	1.6	1.0	ug/L	07/01/2022 1709
4-Nitrophenol	ND		1	4.0	2.0	ug/L	07/01/2022 1709
N-Nitrosodi-n-propylamine	ND		1	0.80	0.50	ug/L	07/01/2022 1709
N-Nitrosodiphenylamine (Diphenylamine)	ND		1	0.80	0.50	ug/L	07/01/2022 1709
Pentachlorophenol	ND		1	4.0	2.0	ug/L	07/01/2022 1709
Phenanthrene	ND		1	0.20	0.060	ug/L	07/01/2022 1709
Phenol	ND		1	0.80	0.50	ug/L	07/01/2022 1709

Surrogate	Q	% Rec	Acceptance Limit
2-Fluorobiphenyl		63	37-129
2-Fluorophenol		34	24-127
Nitrobenzene-d5		57	38-127
Phenol-d5		50	28-128
Terphenyl-d14		80	10-148
2,4,6-Tribromophenol		58	35-144

Pyrene	ND		1	0.20	0.10	ug/L	07/01/2022 1709
1,2,4,5-Tetrachlorobenzene	ND		1	0.80	0.25	ug/L	07/01/2022 1709
2,3,4,6-Tetrachlorophenol	ND		1	1.6	0.55	ug/L	07/01/2022 1709
1,2,4-Trichlorobenzene	ND		1	0.80	0.37	ug/L	07/01/2022 1709
2,4,5-Trichlorophenol	ND		1	0.80	0.50	ug/L	07/01/2022 1709
2,4,6-Trichlorophenol	ND		1	0.80	0.50	ug/L	07/01/2022 1709

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: XQ45989-002
Batch: 45989
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 06/23/2022 1605

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acenaphthene	8.0	5.8		1	73	30-122	07/01/2022 1733
Acenaphthylene	8.0	5.8		1	72	30-130	07/01/2022 1733
Anthracene	8.0	6.0		1	75	30-123	07/01/2022 1733
Benzo(a)anthracene	8.0	5.9		1	74	40-125	07/01/2022 1733
Benzo(a)pyrene	8.0	6.0		1	75	40-128	07/01/2022 1733
Benzo(b)fluoranthene	8.0	6.0		1	75	32-145	07/01/2022 1733
Benzo(g,h,i)perylene	8.0	6.0		1	75	42-128	07/01/2022 1733
Benzo(k)fluoranthene	8.0	6.3		1	79	50-135	07/01/2022 1733
4-Bromophenyl phenyl ether	8.0	6.0		1	74	30-124	07/01/2022 1733
Butyl benzyl phthalate	8.0	6.1		1	76	54-135	07/01/2022 1733
Carbazole	8.0	6.1		1	76	30-130	07/01/2022 1733
bis (2-Chloro-1-methylethyl) ether	8.0	7.6		1	95	34-110	07/01/2022 1733
4-Chloro-3-methyl phenol	8.0	5.4		1	67	30-123	07/01/2022 1733
bis(2-Chloroethoxy)methane	8.0	7.1		1	89	40-119	07/01/2022 1733
bis(2-Chloroethyl)ether	8.0	6.6		1	83	35-114	07/01/2022 1733
2-Chloronaphthalene	8.0	5.5		1	69	39-128	07/01/2022 1733
2-Chlorophenol	8.0	4.6		1	58	39-115	07/01/2022 1733
4-Chlorophenyl phenyl ether	8.0	5.8		1	72	30-121	07/01/2022 1733
Chrysene	8.0	5.9		1	73	50-130	07/01/2022 1733
Dibenzo(a,h)anthracene	8.0	6.2		1	77	30-130	07/01/2022 1733
Dibenzofuran	8.0	5.2		1	65	30-118	07/01/2022 1733
1,2-Dichlorobenzene	8.0	4.9		1	61	20-110	07/01/2022 1733
1,3-Dichlorobenzene	8.0	4.5		1	57	17-112	07/01/2022 1733
1,4-Dichlorobenzene	8.0	4.7		1	59	18-113	07/01/2022 1733
3,3'-Dichlorobenzidine	8.0	4.9		1	61	10-126	07/01/2022 1733
2,4-Dichlorophenol	8.0	5.2		1	65	30-121	07/01/2022 1733
Diethylphthalate	8.0	6.3		1	78	40-125	07/01/2022 1733
Dimethyl phthalate	8.0	6.2		1	77	40-127	07/01/2022 1733
2,4-Dimethylphenol	8.0	8.2		1	103	20-125	07/01/2022 1733
Di-n-butyl phthalate	8.0	6.8		1	85	40-127	07/01/2022 1733
4,6-Dinitro-2-methylphenol	8.0	6.1		1	77	46-134	07/01/2022 1733
2,4-Dinitrophenol	16	9.7		1	60	11-126	07/01/2022 1733
2,4-Dinitrotoluene	8.0	5.3		1	66	51-128	07/01/2022 1733
2,6-Dinitrotoluene	8.0	5.5		1	69	48-133	07/01/2022 1733
Di-n-octylphthalate	8.0	6.0		1	75	55-143	07/01/2022 1733
bis(2-Ethylhexyl)phthalate	8.0	6.7		1	84	50-133	07/01/2022 1733
Fluoranthene	8.0	6.2		1	77	40-128	07/01/2022 1733
Fluorene	8.0	5.7		1	72	30-124	07/01/2022 1733
Hexachlorobenzene	8.0	5.6		1	70	30-125	07/01/2022 1733
Hexachlorobutadiene	8.0	5.1		1	63	24-110	07/01/2022 1733
Hexachlorocyclopentadiene	40	21		1	52	22-122	07/01/2022 1733
Hexachloroethane	8.0	7.0		1	88	28-116	07/01/2022 1733
Indeno(1,2,3-c,d)pyrene	8.0	6.0		1	75	50-125	07/01/2022 1733
Isophorone	8.0	6.2		1	77	30-130	07/01/2022 1733

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: XQ45989-002
Batch: 45989
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 06/23/2022 1605

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
2-Methylnaphthalene	8.0	5.7		1	72	40-132	07/01/2022 1733
2-Methylphenol	8.0	6.6		1	82	37-115	07/01/2022 1733
3+4-Methylphenol	8.0	7.1		1	89	44-112	07/01/2022 1733
Naphthalene	8.0	5.7		1	72	40-122	07/01/2022 1733
2-Nitroaniline	8.0	6.8		1	85	49-128	07/01/2022 1733
3-Nitroaniline	8.0	7.1		1	89	31-128	07/01/2022 1733
4-Nitroaniline	8.0	7.3		1	92	30-135	07/01/2022 1733
Nitrobenzene	8.0	5.6		1	70	39-123	07/01/2022 1733
2-Nitrophenol	8.0	5.8		1	72	36-123	07/01/2022 1733
4-Nitrophenol	16	10		1	64	31-145	07/01/2022 1733
N-Nitrosodi-n-propylamine	8.0	7.2		1	90	39-119	07/01/2022 1733
N-Nitrosodiphenylamine (Diphenylamine)	8.0	5.5		1	69	30-123	07/01/2022 1733
Pentachlorophenol	16	11		1	70	34-137	07/01/2022 1733
Phenanthrene	8.0	5.9		1	73	40-123	07/01/2022 1733
Phenol	8.0	4.8		1	60	30-130	07/01/2022 1733

Surrogate	Q	% Rec	Acceptance Limit
2-Fluorobiphenyl		67	37-129
2-Fluorophenol		37	24-127
Nitrobenzene-d5		63	38-127
Phenol-d5		53	28-128
Terphenyl-d14		77	10-148
2,4,6-Tribromophenol		70	35-144

Pyrene	8.0	5.9		1	74	40-126	07/01/2022 1733
1,2,4,5-Tetrachlorobenzene	8.0	5.2		1	65	30-130	07/01/2022 1733
2,3,4,6-Tetrachlorophenol	8.0	5.9		1	73	30-130	07/01/2022 1733
1,2,4-Trichlorobenzene	8.0	4.9		1	61	20-90	07/01/2022 1733
2,4,5-Trichlorophenol	8.0	5.2		1	65	30-123	07/01/2022 1733
2,4,6-Trichlorophenol	8.0	5.9		1	74	30-125	07/01/2022 1733

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - MS

Sample ID: XF22096-001MS
Batch: 45989
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 06/23/2022 1605

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acenaphthene	93	8.0	54	N	500	-496	30-122	07/02/2022 0224
Acenaphthylene	ND	8.0	30	N	500	380	30-130	07/02/2022 0224
Anthracene	ND	8.0	100	N	500	1300	30-123	07/02/2022 0224
Benzo(a)anthracene	ND	8.0	ND	N	500	0.00	40-125	07/02/2022 0224
Benzo(a)pyrene	ND	8.0	36	N	500	452	40-128	07/02/2022 0224
Benzo(b)fluoranthene	ND	8.0	ND	N	500	0.00	30-130	07/02/2022 0224
Benzo(g,h,i)perylene	ND	8.0	ND	N	500	0.00	30-130	07/02/2022 0224
Benzo(k)fluoranthene	ND	8.0	ND	N	500	0.00	30-130	07/02/2022 0224
4-Bromophenyl phenyl ether	ND	8.0	ND	N	500	0.00	30-124	07/02/2022 0224
Butyl benzyl phthalate	ND	8.0	230	N	500	2920	54-135	07/02/2022 0224
Carbazole	ND	8.0	42	N	500	529	30-130	07/02/2022 0224
bis (2-Chloro-1-methylethyl) ether	ND	8.0	ND	N	500	0.00	30-130	07/02/2022 0224
4-Chloro-3-methyl phenol	ND	8.0	230	N	500	2930	30-130	07/02/2022 0224
bis(2-Chloroethoxy)methane	ND	8.0	120	N	500	1530	30-130	07/02/2022 0224
bis(2-Chloroethyl)ether	ND	8.0	100	N	500	1280	30-130	07/02/2022 0224
2-Chloronaphthalene	ND	8.0	6600	N	500	82800	30-130	07/02/2022 0224
2-Chlorophenol	ND	8.0	ND	N	500	0.00	30-130	07/02/2022 0224
4-Chlorophenyl phenyl ether	ND	8.0	290	N	500	3680	30-121	07/02/2022 0224
Chrysene	ND	8.0	ND	N	500	0.00	30-130	07/02/2022 0224
Dibenzo(a,h)anthracene	ND	8.0	ND	N	500	0.00	30-130	07/02/2022 0224
Dibenzofuran	ND	8.0	150	N	500	1930	30-118	07/02/2022 0224
1,2-Dichlorobenzene	ND	8.0	ND	N	500	0.00	30-130	07/02/2022 0224
1,3-Dichlorobenzene	ND	8.0	ND	N	500	0.00	30-130	07/02/2022 0224
1,4-Dichlorobenzene	ND	8.0	ND	N	500	0.00	30-130	07/02/2022 0224
3,3'-Dichlorobenzidine	ND	8.0	ND	N	500	0.00	10-126	07/02/2022 0224
2,4-Dichlorophenol	ND	8.0	140	N	500	1750	30-121	07/02/2022 0224
Diethylphthalate	ND	8.0	ND	N	500	0.00	40-125	07/02/2022 0224
Dimethyl phthalate	ND	8.0	1300	N	500	16700	40-127	07/02/2022 0224
2,4-Dimethylphenol	ND	8.0	1100	N	500	14100	20-125	07/02/2022 0224
Di-n-butyl phthalate	ND	8.0	ND	N	500	0.00	40-127	07/02/2022 0224
4,6-Dinitro-2-methylphenol	ND	8.0	240	N	500	3000	30-130	07/02/2022 0224
2,4-Dinitrophenol	ND	16	660	N	500	4120	30-130	07/02/2022 0224
2,4-Dinitrotoluene	ND	8.0	2700	N	500	33800	30-130	07/02/2022 0224
2,6-Dinitrotoluene	ND	8.0	250	N	500	3160	30-130	07/02/2022 0224
Di-n-octylphthalate	ND	8.0	250	N	500	3080	30-130	07/02/2022 0224
bis(2-Ethylhexyl)phthalate	ND	8.0	270	N	500	-61	30-130	07/02/2022 0224
Fluoranthene	ND	8.0	23	N	500	289	40-128	07/02/2022 0224
Fluorene	130	8.0	150	N	500	188	30-124	07/02/2022 0224
Hexachlorobenzene	ND	8.0	ND	N	500	0.00	30-125	07/02/2022 0224
Hexachlorobutadiene	ND	8.0	ND	N	500	0.00	24-110	07/02/2022 0224
Hexachlorocyclopentadiene	ND	40	ND	N	500	0.00	30-130	07/02/2022 0224
Hexachloroethane	ND	8.0	1200	N	500	15400	30-130	07/02/2022 0224
Indeno(1,2,3-c,d)pyrene	ND	8.0	ND	N	500	0.00	30-130	07/02/2022 0224
Isophorone	ND	8.0	250	N	500	3160	30-130	07/02/2022 0224

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - MS

Sample ID: XF22096-001MS
Batch: 45989
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 06/23/2022 1605

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
2-Methylnaphthalene	2400	8.0	1800	N	500	-7210	40-132	07/02/2022 0224
2-Methylphenol	ND	8.0	100	N	500	1250	30-130	07/02/2022 0224
3+4-Methylphenol	ND	8.0	110	N	500	1430	30-130	07/02/2022 0224
Naphthalene	1100	8.0	880	N	500	-2760	30-130	07/02/2022 0224
2-Nitroaniline	ND	8.0	170	N	500	2080	30-130	07/02/2022 0224
3-Nitroaniline	ND	8.0	240	N	500	3000	30-130	07/02/2022 0224
4-Nitroaniline	ND	8.0	210	N	500	2590	30-135	07/02/2022 0224
Nitrobenzene	ND	8.0	190	N	500	2420	30-130	07/02/2022 0224
2-Nitrophenol	ND	8.0	240	N	500	3050	30-130	07/02/2022 0224
4-Nitrophenol	ND	16	1400	N	500	8920	30-130	07/02/2022 0224
N-Nitrosodi-n-propylamine	ND	8.0	840	N	500	10500	30-130	07/02/2022 0224
N-Nitrosodiphenylamine (Diphenylamine)	ND	8.0	260	N	500	3230	30-123	07/02/2022 0224
Pentachlorophenol	ND	16	97	N	500	604	30-130	07/02/2022 0224
Phenanthrene	250	8.0	210	N	500	-493	40-123	07/02/2022 0224
Phenol	ND	8.0	ND	N	500	0.00	30-130	07/02/2022 0224

Surrogate	Q	% Rec	Acceptance Limit
2-Fluorobiphenyl	N	195	37-129
2-Fluorophenol		37	24-127
Nitrobenzene-d5	N	1200	38-127
Phenol-d5	N	506	28-128
Terphenyl-d14		128	10-148
2,4,6-Tribromophenol	N	0.00	35-144

Pyrene	ND	8.0	40	N	500	1.4	40-126	07/02/2022 0224
1,2,4,5-Tetrachlorobenzene	ND	8.0	ND	N	500	0.00	30-130	07/02/2022 0224
2,3,4,6-Tetrachlorophenol	ND	8.0	ND	N	500	0.00	30-130	07/02/2022 0224
1,2,4-Trichlorobenzene	ND	8.0	ND	N	500	0.00	20-90	07/02/2022 0224
2,4,5-Trichlorophenol	ND	8.0	82	N	500	1030	30-123	07/02/2022 0224
2,4,6-Trichlorophenol	ND	8.0	170	N	500	2180	30-125	07/02/2022 0224

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - MSD

Sample ID: XF22096-001MD
Batch: 45989
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 06/23/2022 1605

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Acenaphthene	93	8.0	84	N,+	500	-119	44	30-122	40	07/02/2022 0249
Acenaphthylene	ND	8.0	36	N	500	448	16	30-130	40	07/02/2022 0249
Anthracene	ND	8.0	120	N	500	1480	12	30-123	40	07/02/2022 0249
Benzo(a)anthracene	ND	8.0	ND	N	500	0.00	0.00	40-125	40	07/02/2022 0249
Benzo(a)pyrene	ND	8.0	38	N	500	478	5.5	40-128	40	07/02/2022 0249
Benzo(b)fluoranthene	ND	8.0	ND	N	500	0.00	0.00	30-130	40	07/02/2022 0249
Benzo(g,h,i)perylene	ND	8.0	ND	N	500	0.00	0.00	30-130	40	07/02/2022 0249
Benzo(k)fluoranthene	ND	8.0	ND	N	500	0.00	0.00	30-130	40	07/02/2022 0249
4-Bromophenyl phenyl ether	ND	8.0	ND	N	500	0.00	0.00	30-124	40	07/02/2022 0249
Butyl benzyl phthalate	ND	8.0	230	N	500	2920	0.12	54-135	40	07/02/2022 0249
Carbazole	ND	8.0	71	N,+	500	883	50	30-130	40	07/02/2022 0249
bis (2-Chloro-1-methylethyl) ether	ND	8.0	ND	N	500	0.00	0.00	30-130	40	07/02/2022 0249
4-Chloro-3-methyl phenol	ND	8.0	240	N	500	2970	1.3	30-130	40	07/02/2022 0249
bis(2-Chloroethoxy)methane	ND	8.0	150	N	500	1850	19	30-130	40	07/02/2022 0249
bis(2-Chloroethyl)ether	ND	8.0	110	N	500	1380	7.4	30-130	40	07/02/2022 0249
2-Chloronaphthalene	ND	8.0	81	N,+	500	1010	200	30-130	40	07/02/2022 0249
2-Chlorophenol	ND	8.0	ND	N	500	0.00	0.00	30-130	40	07/02/2022 0249
4-Chlorophenyl phenyl ether	ND	8.0	370	N	500	4660	23	30-121	40	07/02/2022 0249
Chrysene	ND	8.0	ND	N	500	0.00	0.00	30-130	40	07/02/2022 0249
Dibenzo(a,h)anthracene	ND	8.0	ND	N	500	0.00	0.00	30-130	40	07/02/2022 0249
Dibenzofuran	ND	8.0	89	N,+	500	1110	54	30-118	40	07/02/2022 0249
1,2-Dichlorobenzene	ND	8.0	ND	N	500	0.00	0.00	30-130	40	07/02/2022 0249
1,3-Dichlorobenzene	ND	8.0	ND	N	500	0.00	0.00	30-130	40	07/02/2022 0249
1,4-Dichlorobenzene	ND	8.0	ND	N	500	0.00	0.00	30-130	40	07/02/2022 0249
3,3'-Dichlorobenzidine	ND	8.0	ND	N	500	0.00	0.00	10-126	40	07/02/2022 0249
2,4-Dichlorophenol	ND	8.0	930	N,+	500	11600	150	30-121	40	07/02/2022 0249
Diethylphthalate	ND	8.0	100	N,+	500	1250	200	40-125	40	07/02/2022 0249
Dimethyl phthalate	ND	8.0	1300	N	500	16600	0.42	40-127	40	07/02/2022 0249
2,4-Dimethylphenol	ND	8.0	950	N	500	11900	17	20-125	40	07/02/2022 0249
Di-n-butyl phthalate	ND	8.0	ND	N	500	0.00	0.00	40-127	40	07/02/2022 0249
4,6-Dinitro-2-methylphenol	ND	8.0	280	N	500	3490	15	30-130	40	07/02/2022 0249
2,4-Dinitrophenol	ND	16	600	N	500	3720	10	30-130	40	07/02/2022 0249
2,4-Dinitrotoluene	ND	8.0	260	N,+	500	3200	170	30-130	40	07/02/2022 0249
2,6-Dinitrotoluene	ND	8.0	210	N	500	2590	20	30-130	40	07/02/2022 0249
Di-n-octylphthalate	ND	8.0	250	N	500	3090	0.61	30-130	40	07/02/2022 0249
bis(2-Ethylhexyl)phthalate	ND	8.0	280	N	500	-14	1.4	30-130	40	07/02/2022 0249
Fluoranthene	ND	8.0	20	N	500	251	14	40-128	40	07/02/2022 0249
Fluorene	130	8.0	190	N	500	805	29	30-124	40	07/02/2022 0249
Hexachlorobenzene	ND	8.0	ND	N	500	0.00	0.00	30-125	40	07/02/2022 0249
Hexachlorobutadiene	ND	8.0	ND	N	500	0.00	0.00	24-110	40	07/02/2022 0249
Hexachlorocyclopentadiene	ND	40	ND	N	500	0.00	0.00	30-130	40	07/02/2022 0249
Hexachloroethane	ND	8.0	1400	N	500	17400	12	30-130	40	07/02/2022 0249
Indeno(1,2,3-c,d)pyrene	ND	8.0	ND	N	500	0.00	0.00	30-130	40	07/02/2022 0249
Isophorone	ND	8.0	310	N	500	3820	19	30-130	40	07/02/2022 0249

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - MSD

Sample ID: XF22096-001MD
Batch: 45989
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 06/23/2022 1605

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
2-Methylnaphthalene	2400	8.0	2100	N	500	-3130	17	40-132	40	07/02/2022 0249
2-Methylphenol	ND	8.0	ND	N,+	500	0.00	200	30-130	40	07/02/2022 0249
3+4-Methylphenol	ND	8.0	150	N	500	1830	24	30-130	40	07/02/2022 0249
Naphthalene	1100	8.0	1000	N	500	-765	17	30-130	40	07/02/2022 0249
2-Nitroaniline	ND	8.0	220	N	500	2760	28	30-130	40	07/02/2022 0249
3-Nitroaniline	ND	8.0	230	N	500	2830	5.8	30-130	40	07/02/2022 0249
4-Nitroaniline	ND	8.0	300	N	500	3780	37	30-135	40	07/02/2022 0249
Nitrobenzene	ND	8.0	88	N,+	500	1100	75	30-130	40	07/02/2022 0249
2-Nitrophenol	ND	8.0	320	N	500	4060	28	30-130	40	07/02/2022 0249
4-Nitrophenol	ND	16	1300	N	500	8170	8.8	30-130	40	07/02/2022 0249
N-Nitrosodi-n-propylamine	ND	8.0	950	N	500	11900	13	30-130	40	07/02/2022 0249
N-Nitrosodiphenylamine (Diphenylamine)	ND	8.0	460	N,+	500	5720	56	30-123	40	07/02/2022 0249
Pentachlorophenol	ND	16	61	N,+	500	384	45	30-130	40	07/02/2022 0249
Phenanthrene	250	8.0	270	N	500	190	23	40-123	40	07/02/2022 0249
Phenol	ND	8.0	ND	N	500	0.00	0.00	30-130	40	07/02/2022 0249

Surrogate	Q	% Rec	Acceptance Limit
2-Fluorobiphenyl	N	447	37-129
2-Fluorophenol		43	24-127
Nitrobenzene-d5	N	1530	38-127
Phenol-d5	N	481	28-128
Terphenyl-d14		39	10-148
2,4,6-Tribromophenol	N	2470	35-144

Pyrene	ND	8.0	34	N	500	-68	15	40-126	40	07/02/2022 0249
1,2,4,5-Tetrachlorobenzene	ND	8.0	ND	N	500	0.00	0.00	30-130	40	07/02/2022 0249
2,3,4,6-Tetrachlorophenol	ND	8.0	130	N,+	500	1570	200	30-130	40	07/02/2022 0249
1,2,4-Trichlorobenzene	ND	8.0	83	N,+	500	1030	200	20-90	40	07/02/2022 0249
2,4,5-Trichlorophenol	ND	8.0	170	N,+	500	2120	69	30-123	40	07/02/2022 0249
2,4,6-Trichlorophenol	ND	8.0	82	N,+	500	1020	72	30-125	40	07/02/2022 0249

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (screening) - MB

Sample ID: XQ46678-001
Batch: 46678
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 06/30/2022 1150

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TEH	ND		1	200	200	ug/L	07/05/2022 1405

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		101	40-140
1-Chloro-octadecane (aliphatic)		87	40-140
2-Fluorobiphenyl (fractionation 1)		101	40-140
o - Terphenyl (aromatic)		84	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (screening) - LCS

Sample ID: XQ46678-002
Batch: 46678
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 06/30/2022 1150

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TEH	1600	1200		1	80	40-140	07/05/2022 1414

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		101	40-140
1-Chloro-octadecane (aliphatic)		88	40-140
2-Fluorobiphenyl (fractionation 1)		101	40-140
o - Terphenyl (aromatic)		76	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
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Montana EPH (screening) - LCSD

Sample ID: XQ46678-003
Batch: 46678
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 06/30/2022 1150

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
TEH	1600	1300		1	82	3.6	40-140	25	07/05/2022 1424

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		98	40-140
1-Chloro-octadecane (aliphatic)		90	40-140
2-Fluorobiphenyl (fractionation 1)		98	40-140
o - Terphenyl (aromatic)		77	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aliphatics) - MB

Sample ID: XQ46731-001
Batch: 46731
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 06/30/2022 1150

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
C19 - C36 Aliphatics	ND		1	100	100	ug/L	07/05/2022 1108
C9 - C18 Aliphatics	ND		1	100	100	ug/L	07/05/2022 1108
TEH, post-fractionation	120	J	1	200	100	ug/L	07/05/2022 1108

Surrogate	Q	% Rec	Acceptance Limit
1-Chloro-octadecane (aliphatic)		73	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aliphatics) - LCS

Sample ID: XQ46731-002
Batch: 46731
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 06/30/2022 1150

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
C19 - C36 Aliphatics	400	340		1	84	40-140	07/05/2022 1117
C9 - C18 Aliphatics	300	150		1	52	40-140	07/05/2022 1117
TEH, post-fractionation	1600	1100		1	74	40-140	07/05/2022 1117

Surrogate	Q	% Rec	Acceptance Limit
1-Chloro-octadecane (aliphatic)		68	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aliphatics) - LCSD

Sample ID: XQ46731-003
Batch: 46731
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 06/30/2022 1150

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
C19 - C36 Aliphatics	400	330		1	82	2.7	40-140	25	07/05/2022 1127
C9 - C18 Aliphatics	300	150		1	49	4.7	40-140	25	07/05/2022 1127
TEH, post-fractionation	1600	1200	+	1	74	200	40-140	25	07/05/2022 1127

Surrogate	Q	% Rec	Acceptance Limit
1-Chloro-octadecane (aliphatic)		64	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aromatics) - MB

Sample ID: XQ46732-001
Batch: 46732
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 06/30/2022 1150

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
C11 - C22 Aromatics	ND		1	100	100	ug/L	07/05/2022 1156

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		87	40-140
2-Fluorobiphenyl (fractionation 1)		86	40-140
o - Terphenyl (aromatic)		73	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aromatics) - LCS

Sample ID: XQ46732-002
Batch: 46732
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 06/30/2022 1150

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
C11 - C22 Aromatics	850	650		1	77	40-140	07/05/2022 1206

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		84	40-140
2-Fluorobiphenyl (fractionation 1)		84	40-140
o - Terphenyl (aromatic)		68	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aromatics) - LCSD

Sample ID: XQ46732-003
Batch: 46732
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 06/30/2022 1150

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
C11 - C22 Aromatics	850	670		1	78	2.4	40-140	25	07/05/2022 1216

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		83	40-140
2-Fluorobiphenyl (fractionation 1)		83	40-140
o - Terphenyl (aromatic)		68	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aromatics) - MB

Sample ID: XQ46443-001
Batch: 46443
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Benzene	ND		1	5.0	0.51	ug/L	06/28/2022 1410
C9 - C10 Aromatics	ND		1	25	5.0	ug/L	06/28/2022 1410
Ethylbenzene	ND		1	5.0	0.62	ug/L	06/28/2022 1410
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	1.2	ug/L	06/28/2022 1410
Naphthalene	1.2	J	1	5.0	0.70	ug/L	06/28/2022 1410
Toluene	ND		1	5.0	0.53	ug/L	06/28/2022 1410
m+p - Xylenes	ND		1	5.0	1.2	ug/L	06/28/2022 1410
o - Xylenes	ND		1	5.0	0.58	ug/L	06/28/2022 1410

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (PID)		98	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aromatics) - LCS

Sample ID: XQ46443-002
Batch: 46443
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Benzene	25	24		1	94	70-130	06/28/2022 1314
C9 - C10 Aromatics	25	23		1	92	70-130	06/28/2022 1314
Ethylbenzene	25	23		1	94	70-130	06/28/2022 1314
Methyl tertiary butyl ether (MTBE)	25	21		1	84	70-130	06/28/2022 1314
Naphthalene	25	22		1	90	70-130	06/28/2022 1314
Toluene	25	24		1	96	70-130	06/28/2022 1314
m+p - Xylenes	50	48		1	95	70-130	06/28/2022 1314
o - Xylenes	25	23		1	93	70-130	06/28/2022 1314

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (PID)		95	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aromatics) - LCSD

Sample ID: XQ46443-003
Batch: 46443
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Benzene	25	23		1	93	1.3	70-130	25	06/28/2022 1342
C9 - C10 Aromatics	25	24		1	95	3.9	70-130	25	06/28/2022 1342
Ethylbenzene	25	23		1	92	1.3	70-130	25	06/28/2022 1342
Methyl tertiary butyl ether (MTBE)	25	22		1	89	6.5	70-130	25	06/28/2022 1342
Naphthalene	25	24		1	94	5.2	70-130	25	06/28/2022 1342
Toluene	25	24		1	94	1.7	70-130	25	06/28/2022 1342
m+p - Xylenes	50	48		1	96	0.21	70-130	25	06/28/2022 1342
o - Xylenes	25	24		1	94	1.3	70-130	25	06/28/2022 1342

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (PID)		92	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aliphatics) - MB

Sample ID: XQ46444-001
Batch: 46444
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
C5 - C8 Aliphatics, Adjusted	ND		1	75	15	ug/L	06/28/2022 1410
C9 - C12 Aliphatics, Adjusted	ND		1	75	15	ug/L	06/28/2022 1410

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		101	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aliphatics) - LCS

Sample ID: XQ46444-002
Batch: 46444
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
C5 - C8 Aliphatics, Adjusted	100	98		1	98	70-130	06/28/2022 1314
C9 - C12 Aliphatics, Adjusted	75	66		1	87	70-130	06/28/2022 1314

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		95	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aliphatics) - LCSD

Sample ID: XQ46444-003
Batch: 46444
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
C5 - C8 Aliphatics, Adjusted	100	99		1	99	0.10	70-130	25	06/28/2022 1342
C9 - C12 Aliphatics, Adjusted	75	65		1	87	0.46	70-130	25	06/28/2022 1342

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		95	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (TPH) - MB

Sample ID: XQ46446-001
Batch: 46446
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TPH	ND		1	180	35	ug/L	06/28/2022 1410

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		89	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (TPH) - LCS

Sample ID: XQ46446-002
Batch: 46446
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TPH	380	350		1	94	70-130	06/28/2022 1314

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		95	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Montana VPH (TPH) - LCSD

Sample ID: XQ46446-003
Batch: 46446
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
TPH	380	360		1	95	0.85	70-130	25	06/28/2022 1342

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		96	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

SHEALY

Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 099728

Client: Ramboll
Address: 333 W. Wacker Dr. Suite #2700
City: Chicago | State: IL | Zip Code: 60606
Project Name: AOC16 IM
Project No: 1690021708-011
P.O. No.: 43836
Report to Contact:
Sampler's Signature: X
Printed Name:
Telephone No. / E-mail: 543-641-8677 @ ramboll.com (rdashpande)
Quote No.:
Page 1 of 1

XF22096

JSH

Analysis (Attach list if more space is needed): VOCs 8260 (Full); SVOCs 8270 (Full); EPH/VPH

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab/Comp	Matrix: Aqueous	Solid	Non-Aqueous	No of Containers by Preservative Type: Unpres.	HCl/D4	HNO3	HCl	NaOH	SCS Kit	VOCs 8260 (Full)	SVOCs 8270 (Full)	EPH/VPH	Remarks / Cooler I.D.
CMR-SP200-220617	6/17/22	14:50	G	X			2			6			X	X	X	please contact Rita Deshpande w/ Ramboll to confirm analytes
CMR-SP200-220617	6/17/22	14:55	G	X						6			X			

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☐ Standard ☒ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☒ Unknown

QC Requirements (Specify):

1. Relinquished by: Mike Gipson	Date: 6/17/22	Time: *	1. Received by	Date	Time
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: FedEx	Date: 6/22	Time: 1555	4. Laboratory received by: [signature]	Date: 6-22-22	Time: 1555

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle): Yes No Non-Peak
Receipt Temp: 4 °C

DISTRIBUTION: WHITE & YELLOW Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-132 Effective Date: 08-01-2014

Pace Analytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: Ramboll

Cooler Inspected by/date: TEC / 06/22/2022 Lot #: XF22096

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

4.7 / 4.7 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☐ Temperature Blank ☑ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☐ Yes	☑ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☑ Yes	☐ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote #

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA. Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: KDRW Date: 06/22/2022

Comments: Preserved 1-1L amber with HCL 1:1 6/22/22 AT 2030

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

May 09, 2022

Ruta Deshpande
Ramboll
333 West Wacker Drive
Suite 2700
Chicago, IL 60606

RE: Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10605432

Dear Ruta Deshpande:

Enclosed are the analytical results for sample(s) received by the laboratory on April 21, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Matt Ray
matt.ray@pacelabs.com
(612)607-1700
Project Manager

Enclosures

cc: Evan Leister, Ramboll
Scott Tarmann, Ramboll US Consulting, Inc.

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10605432

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414
A2LA Certification #: 2926.01*
1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009*
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014*
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605*
Georgia Certification #: 959
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: AI-03086*
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064*
Maryland Certification #: 322
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137*
Minnesota Dept of Ag Approval: via MN 027-053-137
Minnesota Petrofund Registration #: 1240*
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081*
New Jersey Certification #: MN002
New York Certification #: 11647*
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification (A2LA) #: R-036
North Dakota Certification (MN) #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification (1700) #: CL101
Ohio VAP Certification (1800) #: CL110*
Oklahoma Certification #: 9507*
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001*
Pennsylvania Certification #: 68-00563*
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192*
Utah Certification #: MN00064*
Vermont Certification #: VT-027053137
Virginia Certification #: 460163*
Washington Certification #: C486*
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01
USDA Permit #: P330-19-00208
*Please Note: Applicable air certifications are denoted with an asterisk (*).

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1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10605432

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10605432001	**CMR-SP301-2022411**	Air	04/11/22 16:17	04/21/22 10:05

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SAMPLE ANALYTE COUNT

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10605432

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10605432001	**CMR-SP301-2022411**	TO-15	AJA	61	PASI-M

PASI-M = Pace Analytical Services - Minneapolis

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ANALYTICAL RESULTS

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10605432

Sample: CMR-SP301-2022411 **Lab ID: 10605432001** Collected: 04/11/22 16:17 Received: 04/21/22 10:05 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
	Pace Analytical Services - Minneapolis							
Acetone	ND	ug/m3	9160	1517		05/06/22 00:56	67-64-1	
Benzene	**36400**	ug/m3	984	1517		05/06/22 00:56	71-43-2	
Benzyl chloride	ND	ug/m3	3990	1517		05/06/22 00:56	100-44-7	
Bromodichloromethane	ND	ug/m3	2060	1517		05/06/22 00:56	75-27-4	
Bromoform	ND	ug/m3	7960	1517		05/06/22 00:56	75-25-2	
Bromomethane	ND	ug/m3	1200	1517		05/06/22 00:56	74-83-9	
1,3-Butadiene	ND	ug/m3	683	1517		05/06/22 00:56	106-99-0	
2-Butanone (MEK)	ND	ug/m3	4550	1517		05/06/22 00:56	78-93-3	
Carbon disulfide	ND	ug/m3	960	1517		05/06/22 00:56	75-15-0	
Carbon tetrachloride	ND	ug/m3	1940	1517		05/06/22 00:56	56-23-5	
Chlorobenzene	ND	ug/m3	1420	1517		05/06/22 00:56	108-90-7	
Chloroethane	ND	ug/m3	813	1517		05/06/22 00:56	75-00-3	
Chloroform	ND	ug/m3	752	1517		05/06/22 00:56	67-66-3	
Chloromethane	ND	ug/m3	637	1517		05/06/22 00:56	74-87-3	
Cyclohexane	ND	ug/m3	2650	1517		05/06/22 00:56	110-82-7	
Dibromochloromethane	ND	ug/m3	2620	1517		05/06/22 00:56	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/m3	1180	1517		05/06/22 00:56	106-93-4	
1,2-Dichlorobenzene	ND	ug/m3	4640	1517		05/06/22 00:56	95-50-1	
1,3-Dichlorobenzene	ND	ug/m3	4640	1517		05/06/22 00:56	541-73-1	
1,4-Dichlorobenzene	ND	ug/m3	4640	1517		05/06/22 00:56	106-46-7	
Dichlorodifluoromethane	ND	ug/m3	1530	1517		05/06/22 00:56	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1250	1517		05/06/22 00:56	75-34-3	
1,2-Dichloroethane	ND	ug/m3	1250	1517		05/06/22 00:56	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1220	1517		05/06/22 00:56	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1220	1517		05/06/22 00:56	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1220	1517		05/06/22 00:56	156-60-5	
1,2-Dichloropropane	ND	ug/m3	1420	1517		05/06/22 00:56	78-87-5	
cis-1,3-Dichloropropene	ND	ug/m3	3500	1517		05/06/22 00:56	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/m3	3500	1517		05/06/22 00:56	10061-02-6	
Dichlorotetrafluoroethane	ND	ug/m3	2150	1517		05/06/22 00:56	76-14-2	
Ethanol	ND	ug/m3	2910	1517		05/06/22 00:56	64-17-5	
Ethyl acetate	ND	ug/m3	1110	1517		05/06/22 00:56	141-78-6	
Ethylbenzene	**19400**	ug/m3	1340	1517		05/06/22 00:56	100-41-4	
4-Ethyltoluene	ND	ug/m3	3790	1517		05/06/22 00:56	622-96-8	
n-Heptane	**66900**	ug/m3	1260	1517		05/06/22 00:56	142-82-5	
Hexachloro-1,3-butadiene	ND	ug/m3	8220	1517		05/06/22 00:56	87-68-3	
n-Hexane	**190000**	ug/m3	1090	1517		05/06/22 00:56	110-54-3	
2-Hexanone	ND	ug/m3	6310	1517		05/06/22 00:56	591-78-6	
Methylene Chloride	ND	ug/m3	5350	1517		05/06/22 00:56	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/m3	6310	1517		05/06/22 00:56	108-10-1	
Methyl-tert-butyl ether	ND	ug/m3	5550	1517		05/06/22 00:56	1634-04-4	
Naphthalene	ND	ug/m3	4030	1517		05/06/22 00:56	91-20-3	
2-Propanol	ND	ug/m3	3790	1517		05/06/22 00:56	67-63-0	
Propylene	ND	ug/m3	1330	1517		05/06/22 00:56	115-07-1	
Styrene	ND	ug/m3	1310	1517		05/06/22 00:56	100-42-5	
1,1,2,2-Tetrachloroethane	ND	ug/m3	2120	1517		05/06/22 00:56	79-34-5	

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1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10605432

Sample: CMR-SP301-2022411 **Lab ID: 10605432001** Collected: 04/11/22 16:17 Received: 04/21/22 10:05 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
	Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	1050	1517		05/06/22 00:56	127-18-4	
Tetrahydrofuran	ND	ug/m3	910	1517		05/06/22 00:56	109-99-9	
Toluene	**22200**	ug/m3	1160	1517		05/06/22 00:56	108-88-3	
1,2,4-Trichlorobenzene	ND	ug/m3	11400	1517		05/06/22 00:56	120-82-1	
1,1,1-Trichloroethane	ND	ug/m3	1680	1517		05/06/22 00:56	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	842	1517		05/06/22 00:56	79-00-5	
Trichloroethene	ND	ug/m3	828	1517		05/06/22 00:56	79-01-6	
Trichlorofluoromethane	ND	ug/m3	1730	1517		05/06/22 00:56	75-69-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/m3	2370	1517		05/06/22 00:56	76-13-1	
1,2,4-Trimethylbenzene	**2310**	ug/m3	1520	1517		05/06/22 00:56	95-63-6	
1,3,5-Trimethylbenzene	**2090**	ug/m3	1520	1517		05/06/22 00:56	108-67-8	
Vinyl acetate	ND	ug/m3	1090	1517		05/06/22 00:56	108-05-4	
Vinyl chloride	ND	ug/m3	394	1517		05/06/22 00:56	75-01-4	
m&p-Xylene	**75500**	ug/m3	2680	1517		05/06/22 00:56	179601-23-1	
o-Xylene	**16700**	ug/m3	1340	1517		05/06/22 00:56	95-47-6	

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1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10605432

QC Batch: 813498
QC Batch Method: TO-15
Analysis Method: TO-15
Analysis Description: TO15 MSV AIR Low Level
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10605432001

METHOD BLANK: 4312955
Matrix: Air
Associated Lab Samples: 10605432001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	1.1	05/05/22 11:43	
1,1,2,2-Tetrachloroethane	ug/m3	ND	1.4	05/05/22 11:43	
1,1,2-Trichloroethane	ug/m3	ND	0.56	05/05/22 11:43	
1,1,2-Trichlorotrifluoroethane	ug/m3	ND	1.6	05/05/22 11:43	
1,1-Dichloroethane	ug/m3	ND	0.82	05/05/22 11:43	
1,1-Dichloroethene	ug/m3	ND	0.81	05/05/22 11:43	
1,2,4-Trichlorobenzene	ug/m3	ND	7.5	05/05/22 11:43	
1,2,4-Trimethylbenzene	ug/m3	ND	1.0	05/05/22 11:43	
1,2-Dibromoethane (EDB)	ug/m3	ND	0.78	05/05/22 11:43	
1,2-Dichlorobenzene	ug/m3	ND	3.1	05/05/22 11:43	
1,2-Dichloroethane	ug/m3	ND	0.82	05/05/22 11:43	
1,2-Dichloropropane	ug/m3	ND	0.94	05/05/22 11:43	
1,3,5-Trimethylbenzene	ug/m3	ND	1.0	05/05/22 11:43	
1,3-Butadiene	ug/m3	ND	0.45	05/05/22 11:43	
1,3-Dichlorobenzene	ug/m3	ND	3.1	05/05/22 11:43	
1,4-Dichlorobenzene	ug/m3	ND	3.1	05/05/22 11:43	
2-Butanone (MEK)	ug/m3	ND	3.0	05/05/22 11:43	
2-Hexanone	ug/m3	ND	4.2	05/05/22 11:43	
2-Propanol	ug/m3	ND	2.5	05/05/22 11:43	
4-Ethyltoluene	ug/m3	ND	2.5	05/05/22 11:43	
4-Methyl-2-pentanone (MIBK)	ug/m3	ND	4.2	05/05/22 11:43	
Acetone	ug/m3	ND	6.0	05/05/22 11:43	
Benzene	ug/m3	ND	0.65	05/05/22 11:43	MN
Benzyl chloride	ug/m3	ND	2.6	05/05/22 11:43	
Bromodichloromethane	ug/m3	ND	1.4	05/05/22 11:43	
Bromoform	ug/m3	ND	5.2	05/05/22 11:43	
Bromomethane	ug/m3	ND	0.79	05/05/22 11:43	
Carbon disulfide	ug/m3	ND	0.63	05/05/22 11:43	
Carbon tetrachloride	ug/m3	ND	1.3	05/05/22 11:43	
Chlorobenzene	ug/m3	ND	0.94	05/05/22 11:43	
Chloroethane	ug/m3	ND	0.54	05/05/22 11:43	
Chloroform	ug/m3	ND	0.50	05/05/22 11:43	
Chloromethane	ug/m3	ND	0.42	05/05/22 11:43	
cis-1,2-Dichloroethene	ug/m3	ND	0.81	05/05/22 11:43	
cis-1,3-Dichloropropene	ug/m3	ND	2.3	05/05/22 11:43	
Cyclohexane	ug/m3	ND	1.8	05/05/22 11:43	
Dibromochloromethane	ug/m3	ND	1.7	05/05/22 11:43	
Dichlorodifluoromethane	ug/m3	ND	1.0	05/05/22 11:43	
Dichlorotetrafluoroethane	ug/m3	ND	1.4	05/05/22 11:43	
Ethanol	ug/m3	ND	1.9	05/05/22 11:43	

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REPORT OF LABORATORY ANALYSIS

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(612)607-1700

QUALITY CONTROL DATA

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10605432

METHOD BLANK: 4312955 Matrix: Air
Associated Lab Samples: 10605432001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethyl acetate	ug/m3	ND	0.73	05/05/22 11:43	
Ethylbenzene	ug/m3	ND	0.88	05/05/22 11:43	
Hexachloro-1,3-butadiene	ug/m3	ND	5.4	05/05/22 11:43	
m&p-Xylene	ug/m3	ND	1.8	05/05/22 11:43	
Methyl-tert-butyl ether	ug/m3	ND	3.7	05/05/22 11:43	
Methylene Chloride	ug/m3	ND	3.5	05/05/22 11:43	
n-Heptane	ug/m3	ND	0.83	05/05/22 11:43	
n-Hexane	ug/m3	ND	0.72	05/05/22 11:43	
Naphthalene	ug/m3	ND	2.7	05/05/22 11:43	
o-Xylene	ug/m3	ND	0.88	05/05/22 11:43	
Propylene	ug/m3	ND	0.88	05/05/22 11:43	
Styrene	ug/m3	ND	0.87	05/05/22 11:43	
Tetrachloroethene	ug/m3	ND	0.69	05/05/22 11:43	
Tetrahydrofuran	ug/m3	ND	0.60	05/05/22 11:43	
Toluene	ug/m3	ND	0.77	05/05/22 11:43	
trans-1,2-Dichloroethene	ug/m3	ND	0.81	05/05/22 11:43	
trans-1,3-Dichloropropene	ug/m3	ND	2.3	05/05/22 11:43	
Trichloroethene	ug/m3	ND	0.55	05/05/22 11:43	
Trichlorofluoromethane	ug/m3	ND	1.1	05/05/22 11:43	
Vinyl acetate	ug/m3	ND	0.72	05/05/22 11:43	
Vinyl chloride	ug/m3	ND	0.26	05/05/22 11:43	

LABORATORY CONTROL SAMPLE: 4312956

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/m3	59.3	61.4	103	70-130	
1,1,2,2-Tetrachloroethane	ug/m3	75.4	82.2	109	70-132	
1,1,2-Trichloroethane	ug/m3	59.6	69.4	117	70-131	
1,1,2-Trichlorotrifluoroethane	ug/m3	83.6	85.1	102	70-130	
1,1-Dichloroethane	ug/m3	43.9	44.1	100	70-130	
1,1-Dichloroethene	ug/m3	43.5	48.5	112	70-130	
1,2,4-Trichlorobenzene	ug/m3	177	174	98	70-130	
1,2,4-Trimethylbenzene	ug/m3	54	58.0	107	70-137	
1,2-Dibromoethane (EDB)	ug/m3	82.5	93.9	114	70-137	
1,2-Dichlorobenzene	ug/m3	66.2	66.2	100	70-131	
1,2-Dichloroethane	ug/m3	44.4	47.3	106	70-134	
1,2-Dichloropropane	ug/m3	50.6	54.2	107	70-130	
1,3,5-Trimethylbenzene	ug/m3	53.7	58.2	108	70-131	
1,3-Butadiene	ug/m3	24.2	27.6	114	70-139	
1,3-Dichlorobenzene	ug/m3	66.3	66.1	100	70-134	
1,4-Dichlorobenzene	ug/m3	66.3	66.1	100	70-131	
2-Butanone (MEK)	ug/m3	32.3	33.2	103	70-133	
2-Hexanone	ug/m3	44.8	44.5	100	70-136	
2-Propanol	ug/m3	149	145	97	65-133	

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REPORT OF LABORATORY ANALYSIS

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(612)607-1700

QUALITY CONTROL DATA

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10605432

LABORATORY CONTROL SAMPLE: 4312956

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Ethyltoluene	ug/m3	53.7	60.2	112	70-130	
4-Methyl-2-pentanone (MIBK)	ug/m3	44.9	51.1	114	70-130	
Acetone	ug/m3	128	122	96	60-134	
Benzene	ug/m3	34.8	34.6	99	70-130	
Benzyl chloride	ug/m3	57.6	57.3	100	70-130	
Bromodichloromethane	ug/m3	73.1	80.0	109	70-130	
Bromoform	ug/m3	114	113	99	70-138	
Bromomethane	ug/m3	42.5	47.7	112	68-131	
Carbon disulfide	ug/m3	34.4	39.8	116	70-130	
Carbon tetrachloride	ug/m3	69.4	71.7	103	70-132	
Chlorobenzene	ug/m3	50.2	56.0	112	70-130	
Chloroethane	ug/m3	28.8	29.6	103	70-134	
Chloroform	ug/m3	52.4	53.4	102	70-130	
Chloromethane	ug/m3	22.6	21.2	94	68-131	
cis-1,2-Dichloroethene	ug/m3	43.4	47.6	110	70-136	
cis-1,3-Dichloropropene	ug/m3	49.4	57.8	117	70-130	
Cyclohexane	ug/m3	37.4	36.9	99	70-131	
Dibromochloromethane	ug/m3	93.2	107	115	70-134	
Dichlorodifluoromethane	ug/m3	54.6	56.0	103	70-130	
Dichlorotetrafluoroethane	ug/m3	71.2	80.0	112	70-130	
Ethanol	ug/m3	124	126	101	55-145	
Ethyl acetate	ug/m3	38.9	41.0	105	70-135	
Ethylbenzene	ug/m3	47.8	46.8	98	70-133	
Hexachloro-1,3-butadiene	ug/m3	133	134	101	70-132	
m&p-Xylene	ug/m3	95.4	93.7	98	70-134	
Methyl-tert-butyl ether	ug/m3	39.6	41.7	105	70-131	
Methylene Chloride	ug/m3	190	195	103	65-132	
n-Heptane	ug/m3	44.6	43.7	98	70-130	
n-Hexane	ug/m3	38	33.8	89	70-132	
Naphthalene	ug/m3	65.2	63.5	97	70-130	
o-Xylene	ug/m3	47.6	44.3	93	70-134	
Propylene	ug/m3	18.9	17.4	92	69-133	
Styrene	ug/m3	47	46.1	98	70-135	
Tetrachloroethene	ug/m3	73.4	79.3	108	70-134	
Tetrahydrofuran	ug/m3	32.1	31.7	99	70-140	
Toluene	ug/m3	41.6	37.4	90	70-136	
trans-1,2-Dichloroethene	ug/m3	43.6	49.0	112	70-134	
trans-1,3-Dichloropropene	ug/m3	50.5	50.7	100	70-131	
Trichloroethene	ug/m3	58.4	59.0	101	70-134	
Trichlorofluoromethane	ug/m3	62	68.9	111	63-130	
Vinyl acetate	ug/m3	46.4	51.2	111	70-139	
Vinyl chloride	ug/m3	28	28.0	100	70-132	

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QUALITY CONTROL DATA

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10605432

SAMPLE DUPLICATE: 4314058

Parameter	Units	10605180001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	ND		25	
1,1,2,2-Tetrachloroethane	ug/m3	ND	ND		25	
1,1,2-Trichloroethane	ug/m3	ND	ND		25	
1,1,2-Trichlorotrifluoroethane	ug/m3	ND	ND		25	
1,1-Dichloroethane	ug/m3	ND	ND		25	
1,1-Dichloroethene	ug/m3	ND	ND		25	
1,2,4-Trichlorobenzene	ug/m3	ND	ND		25	
1,2,4-Trimethylbenzene	ug/m3	5.8	5.9	1	25	
1,2-Dibromoethane (EDB)	ug/m3	ND	ND		25	
1,2-Dichlorobenzene	ug/m3	ND	ND		25	
1,2-Dichloroethane	ug/m3	ND	ND		25	
1,2-Dichloropropane	ug/m3	ND	ND		25	
1,3,5-Trimethylbenzene	ug/m3	ND	1.5J		25	
1,3-Butadiene	ug/m3	ND	ND		25	
1,3-Dichlorobenzene	ug/m3	6.4	6.7	4	25	
1,4-Dichlorobenzene	ug/m3	ND	3J		25	
2-Butanone (MEK)	ug/m3	16.3	16.3	0	25	
2-Hexanone	ug/m3	ND	1.8J		25	
2-Propanol	ug/m3	225	229	2	25	
4-Ethyltoluene	ug/m3	ND	1.6J		25	
4-Methyl-2-pentanone (MIBK)	ug/m3	ND	1.4J		25	
Acetone	ug/m3	119	111	7	25	
Benzene	ug/m3	3.1	3.1	3	25	
Benzyl chloride	ug/m3	ND	ND		25	
Bromodichloromethane	ug/m3	ND	ND		25	
Bromoform	ug/m3	ND	ND		25	
Bromomethane	ug/m3	ND	ND		25	
Carbon disulfide	ug/m3	7.5	7.4	2	25	
Carbon tetrachloride	ug/m3	ND	ND		25	
Chlorobenzene	ug/m3	ND	.43J		25	
Chloroethane	ug/m3	ND	ND		25	
Chloroform	ug/m3	1.8	1.6	8	25	
Chloromethane	ug/m3	ND	ND		25	
cis-1,2-Dichloroethene	ug/m3	ND	ND		25	
cis-1,3-Dichloropropene	ug/m3	ND	ND		25	
Cyclohexane	ug/m3	ND	.44J		25	
Dibromochloromethane	ug/m3	ND	ND		25	
Dichlorodifluoromethane	ug/m3	2.3	2.3	2	25	
Dichlorotetrafluoroethane	ug/m3	ND	ND		25	
Ethanol	ug/m3	1170	1190	1	25	E
Ethyl acetate	ug/m3	3.5	3.5	0	25	
Ethylbenzene	ug/m3	2.5	2.4	2	25	
Hexachloro-1,3-butadiene	ug/m3	ND	ND		25	
m&p-Xylene	ug/m3	9.2	9.1	1	25	
Methyl-tert-butyl ether	ug/m3	ND	ND		25	
Methylene Chloride	ug/m3	ND	3.5J		25	
n-Heptane	ug/m3	2.9	3.1	6	25	

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QUALITY CONTROL DATA

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10605432

SAMPLE DUPLICATE: 4314058

Parameter	Units	10605180001 Result	Dup Result	RPD	Max RPD	Qualifiers
n-Hexane	ug/m3	9.7	9.1	7	25	
Naphthalene	ug/m3	ND	ND		25	
o-Xylene	ug/m3	4.4	4.5	0	25	
Propylene	ug/m3	36.1	35.2	3	25	
Styrene	ug/m3	ND	1.1J		25	
Tetrachloroethene	ug/m3	7.5	7.7	2	25	
Tetrahydrofuran	ug/m3	ND	ND		25	
Toluene	ug/m3	18.0	17.9	1	25	
trans-1,2-Dichloroethene	ug/m3	ND	ND		25	
trans-1,3-Dichloropropene	ug/m3	ND	ND		25	
Trichloroethene	ug/m3	ND	ND		25	
Trichlorofluoromethane	ug/m3	2.5	2.5	2	25	
Vinyl acetate	ug/m3	ND	ND		25	
Vinyl chloride	ug/m3	ND	ND		25	

SAMPLE DUPLICATE: 4314059

Parameter	Units	10605180002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	ND		25	
1,1,2,2-Tetrachloroethane	ug/m3	ND	ND		25	
1,1,2-Trichloroethane	ug/m3	ND	ND		25	
1,1,2-Trichlorotrifluoroethane	ug/m3	ND	ND		25	
1,1-Dichloroethane	ug/m3	ND	ND		25	
1,1-Dichloroethene	ug/m3	ND	ND		25	
1,2,4-Trichlorobenzene	ug/m3	ND	ND		25	
1,2,4-Trimethylbenzene	ug/m3	5.6	5.2	7	25	
1,2-Dibromoethane (EDB)	ug/m3	ND	ND		25	
1,2-Dichlorobenzene	ug/m3	ND	ND		25	
1,2-Dichloroethane	ug/m3	ND	ND		25	
1,2-Dichloropropane	ug/m3	ND	ND		25	
1,3,5-Trimethylbenzene	ug/m3	ND	1.5J		25	
1,3-Butadiene	ug/m3	ND	ND		25	
1,3-Dichlorobenzene	ug/m3	ND	7.8J		25	
1,4-Dichlorobenzene	ug/m3	ND	3.7J		25	
2-Butanone (MEK)	ug/m3	20.6	19.5	6	25	
2-Hexanone	ug/m3	ND	1.8J		25	
2-Propanol	ug/m3	292	271	7	25	
4-Ethyltoluene	ug/m3	ND	1.5J		25	
4-Methyl-2-pentanone (MIBK)	ug/m3	ND	1J		25	
Acetone	ug/m3	217	206	5	25	
Benzene	ug/m3	ND	.6J		25	
Benzyl chloride	ug/m3	ND	ND		25	
Bromodichloromethane	ug/m3	ND	ND		25	
Bromoform	ug/m3	ND	ND		25	
Bromomethane	ug/m3	ND	ND		25	

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QUALITY CONTROL DATA

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10605432

SAMPLE DUPLICATE: 4314059

Parameter	Units	10605180002 Result	Dup Result	RPD	Max RPD	Qualifiers
Carbon disulfide	ug/m3	ND	1.4J		25	
Carbon tetrachloride	ug/m3	ND	ND		25	
Chlorobenzene	ug/m3	ND	ND		25	
Chloroethane	ug/m3	ND	ND		25	
Chloroform	ug/m3	1.8	1.8	2	25	
Chloromethane	ug/m3	ND	ND		25	
cis-1,2-Dichloroethene	ug/m3	ND	ND		25	
cis-1,3-Dichloropropene	ug/m3	ND	ND		25	
Cyclohexane	ug/m3	ND	ND		25	
Dibromochloromethane	ug/m3	ND	ND		25	
Dichlorodifluoromethane	ug/m3	ND	2.6J		25	
Dichlorotetrafluoroethane	ug/m3	ND	ND		25	
Ethanol	ug/m3	1610	1510	7	25	E
Ethyl acetate	ug/m3	4.2	3.7	12	25	
Ethylbenzene	ug/m3	2.5	2.2J		25	
Hexachloro-1,3-butadiene	ug/m3	ND	ND		25	
m&p-Xylene	ug/m3	8.6	8.0	8	25	
Methyl-tert-butyl ether	ug/m3	ND	ND		25	
Methylene Chloride	ug/m3	ND	4.3J		25	
n-Heptane	ug/m3	ND	ND		25	
n-Hexane	ug/m3	8.4	8.1	3	25	
Naphthalene	ug/m3	ND	ND		25	
o-Xylene	ug/m3	4.5	4.2	7	25	
Propylene	ug/m3	10.8	9.7	11	25	
Styrene	ug/m3	ND	ND		25	
Tetrachloroethene	ug/m3	5.6	5.4	3	25	
Tetrahydrofuran	ug/m3	ND	ND		25	
Toluene	ug/m3	17.6	16.9	4	25	
trans-1,2-Dichloroethene	ug/m3	ND	ND		25	
trans-1,3-Dichloropropene	ug/m3	ND	ND		25	
Trichloroethene	ug/m3	ND	ND		25	
Trichlorofluoromethane	ug/m3	22.0	20.9	5	25	
Vinyl acetate	ug/m3	ND	ND		25	
Vinyl chloride	ug/m3	ND	ND		25	

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Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10605432

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
MN	The reporting limit has been raised in accordance with Minnesota Statutes 4740.2100 Subpart 8. C, D. Reporting Limit Evaluation Rule.

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1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10605432

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10605432001	**CMR-SP301-2022411**	TO-15	813498		

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AIR: CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Ramboll	Report To: rdeshpande@ramboll.com	Attention: Ruta Deshpande
Address: 333 W. Wacker Dr., Suite #2700	Copy To: starmann@ramboll.com	Company Name: Ramboll
Chicago, IL. 60606		Address: 333 W. Wacker Dr., Suite #2700, IL, 60606
Email To:Rdeshpande@ramboll.com	Purchase Order No.:	Pace Quote Reference:
Phone: 543-641-8677 Fax:	Project Name: AOC-16 IM	Pace Project Manager/Sales Rep.: Hannah Lucas
Requested Due Date/TAT:	Project Number: 1690021708-011	Pace Profile #: 43836

Program: UST, Superfund, Emissions, Clean Air Act, Voluntary Clean Up, Dry Clean, RCRA, Other_____

Location of Sampling by State: MT

Reporting Units: ug/m³ X, mg/m³ ___, PPBV ___, PPMV X, Other ___

Report Level II.___ III.___ IV.___ Other_____

Valid Media Codes: MEDIA / CODE — Tedlar Bag TB; 1 Liter Summa Can 1LC; 6 Liter Summa Can 6LC; Low Volume Puff LVP; High Volume Puff HVP; Other PM10

ITEM #	'Section D Required Client Information AIR SAMPLE ID (Sample IDs MUST BE UNIQUE)	MEDIA CODE	PID Reading (Client only)	COLLECTED COMPOSITE START END/GRAB DATE	TIME	COMPOSITE - DATE	TIME	Initial Field reading (-inches of Hg)	Final Field reading (-inches of Hg)	Summa Can Number	Flow Control Number	Method: PM10	3C- Fixed Gas (%)	TO-3	TO-3M (Methane)	TO-4 (PCBs)	TO-13 (PAH)	TO-14	TO-15	TO15 Short List*	Pace Lab ID
1	CMR-SP301-2022411	1L		4/11/22	16:09	4/11/22	16:17	-26	-11	26172680								X			001
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

Comments :

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Mike Gipson / CMR	4/18	14:00	Matt / Pace	4/21/22	10:05

SAMPLE CONDITIONS

Temp in °C	Received on Ice	Custody Sealed Cooler	Samples Intact
–	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Mike Gipson

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM / DD / YY): 04/11/2022

WO# : 10605432

10605432

FC046Rev.01, 03Feb2010

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) - Air**	Document Revised: 13Oct2021 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0113 Rev.01**	Pace Analytical Services - **Minneapolis**

WO#: 10605432
PM: MR2 Due Date: 04/28/22
CLIENT: Ramboll-IL

Air Sample Condition Upon Receipt

Client Name: Ramboll **Project #**

Courier: ☒ FedEx ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial

Tracking Number: 9753 8447 6926 ☐ See Exception

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No

Seals Intact? ☐ Yes ☐ No

Packing Material: ☒ Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Tin Can ☐ Other:

Date & Initials of Person Examining Contents: 4-21-22 MI

				Comments:
Chain of Custody Present?	☒ Yes	☐ No		1.
Chain of Custody Filled Out?	☒ Yes	☐ No		2.
Chain of Custody Relinquished?	☒ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		6.
Rush Turn Around Time Requested?	☐ Yes	☒ No		7.
Sufficient Volume?	☒ Yes	☐ No		8.
Correct Containers Used? **(Tedlar bags not acceptable container for TO-15 or APH)** -Pace Containers Used?	☒ Yes ☒ Yes	☐ No ☐ No		9.
Containers Intact? **(visual inspection/no leaks when pressurized)**	☒ Yes	☐ No		10.
Media: Air Can | Airbag				11. Individually Certified Cans? Y | N (list which samples)
Is sufficient information available to reconcile samples to the COC?	☒ Yes	☐ No		12.
Do cans need to be pressurized? **(DO NOT PRESSURIZE 3C or ASTM 1946!!!)**	☒ Yes	☐ No		13.

Gauge #: ☐ 10AIR26 ☐ 10AIR34 ☐ 10AIR35 ☒ 10AIR17 ☐ 10AIR47 ☐ 10AIR48

Canisters					Canisters				
Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure	Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure
SP301	2617	2680	-14	+10					

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Matt Ray **Date:** 04/21/22

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers).

Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

ANALYTICAL RESULTS

Client: Ramboll - IL (AIR)
Phone: 513-641-8677

Lab Project Number: 10605432
Project Name: 1690021708-011 AOC-16 IM

Lab Sample No: 10605432001
Client Sample ID: CMR-SP301-2022411

ProjSampleNum: 10605432001
Matrix: Air

Date Collected: 04/11/22 16:17
Date Received: 04/21/22 10:05

Air

TO-15

Parameters	Results	Units	Report Limit	DF	Analyzed	CAS No.	Qualifiers
1,1,1-Trichloroethane	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	71-55-6	
1,1,2,2-Tetrachloroethane	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	79-34-5	
1,1,2-Trichloroethane	ND	ppmv	0.15	1517	05/06/22 0:56 AJA	79-00-5	
1,1,2-Trichlorotrifluoroethane	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	76-13-1	
1,1-Dichloroethane	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	75-34-3	
1,1-Dichloroethene	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	75-35-4	
1,2,4-Trichlorobenzene	ND	ppmv	1.5	1517	05/06/22 0:56 AJA	120-82-1	
1,2,4-Trimethylbenzene	0.46	ppmv	0.3	1517	05/06/22 0:56 AJA	95-63-6	
1,2-Dibromoethane (EDB)	ND	ppmv	0.15	1517	05/06/22 0:56 AJA	106-93-4	
1,2-Dichlorobenzene	ND	ppmv	0.76	1517	05/06/22 0:56 AJA	95-50-1	
1,2-Dichloroethane	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	107-06-2	
1,2-Dichloropropane	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	78-87-5	
1,3,5-Trimethylbenzene	0.42	ppmv	0.3	1517	05/06/22 0:56 AJA	108-67-8	
1,3-Butadiene	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	106-99-0	
1,3-Dichlorobenzene	ND	ppmv	0.76	1517	05/06/22 0:56 AJA	541-73-1	
1,4-Dichlorobenzene	ND	ppmv	0.76	1517	05/06/22 0:56 AJA	106-46-7	
2-Butanone (MEK)	ND	ppmv	1.5	1517	05/06/22 0:56 AJA	78-93-3	
2-Hexanone	ND	ppmv	1.5	1517	05/06/22 0:56 AJA	591-78-6	
2-Propanol	ND	ppmv	1.5	1517	05/06/22 0:56 AJA	67-63-0	
4-Ethyltoluene	ND	ppmv	0.76	1517	05/06/22 0:56 AJA	622-96-8	
4-Methyl-2-pentanone (MIBK)	ND	ppmv	1.5	1517	05/06/22 0:56 AJA	108-10-1	
Acetone	ND	ppmv	3.8	1517	05/06/22 0:56 AJA	67-64-1	
Benzene	11.2	ppmv	0.3	1517	05/06/22 0:56 AJA	71-43-2	
Benzyl chloride	ND	ppmv	0.76	1517	05/06/22 0:56 AJA	100-44-7	
Bromodichloromethane	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	75-27-4	
Bromoform	ND	ppmv	0.76	1517	05/06/22 0:56 AJA	75-25-2	
Bromomethane	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	74-83-9	
Carbon disulfide	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	75-15-0	
Carbon tetrachloride	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	56-23-5	
Chlorobenzene	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	108-90-7	
Chloroethane	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	75-00-3	
Chloroform	ND	ppmv	0.15	1517	05/06/22 0:56 AJA	67-66-3	
Chloromethane	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	74-87-3	
cis-1,2-Dichloroethene	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	156-59-2	
cis-1,3-Dichloropropene	ND	ppmv	0.76	1517	05/06/22 0:56 AJA	10061-01-5	
Cyclohexane	ND	ppmv	0.76	1517	05/06/22 0:56 AJA	110-82-7	
Dibromochloromethane	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	124-48-1	
Dichlorodifluoromethane	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	75-71-8	

SUPPLEMENTAL REPORT

Units Conversion Request

Date: 5/9/2022

Page 1

Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

ANALYTICAL RESULTS

Client: Ramboll - IL (AIR)
Phone: 513-641-8677

Lab Project Number: 10605432
Project Name: 1690021708-011 AOC-16 IM

Lab Sample No: 10605432001
Client Sample ID: CMR-SP301-2022411

ProjSampleNum: 10605432001
Matrix: Air

Date Collected: 04/11/22 16:17
Date Received: 04/21/22 10:05

Parameters	Results	Units	Report Limit	DF	Analyzed	CAS No.	Qualifiers
Air							
Dichlorotetrafluoroethane	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	76-14-2	
Ethanol	ND	ppmv	1.5	1517	05/06/22 0:56 AJA	64-17-5	
Ethyl acetate	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	141-78-6	
Ethylbenzene	4.4	ppmv	0.3	1517	05/06/22 0:56 AJA	100-41-4	
Hexachloro-1,3-butadiene	ND	ppmv	0.76	1517	05/06/22 0:56 AJA	87-68-3	
m&p-Xylene	17.1	ppmv	0.61	1517	05/06/22 0:56 AJA	179601-23-1	
Methylene Chloride	ND	ppmv	1.5	1517	05/06/22 0:56 AJA	75-09-2	
Methyl-tert-butyl ether	ND	ppmv	1.5	1517	05/06/22 0:56 AJA	1634-04-4	
Naphthalene	ND	ppmv	0.76	1517	05/06/22 0:56 AJA	91-20-3	
n-Heptane	16.1	ppmv	0.3	1517	05/06/22 0:56 AJA	142-82-5	
n-Hexane	53	ppmv	0.3	1517	05/06/22 0:56 AJA	110-54-3	
o-Xylene	3.8	ppmv	0.3	1517	05/06/22 0:56 AJA	95-47-6	
Propylene	ND	ppmv	0.76	1517	05/06/22 0:56 AJA	115-07-1	
Styrene	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	100-42-5	
Tetrachloroethene	ND	ppmv	0.15	1517	05/06/22 0:56 AJA	127-18-4	
Tetrahydrofuran	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	109-99-9	
Toluene	5.8	ppmv	0.3	1517	05/06/22 0:56 AJA	108-88-3	
trans-1,2-Dichloroethene	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	156-60-5	
trans-1,3-Dichloropropene	ND	ppmv	0.76	1517	05/06/22 0:56 AJA	10061-02-6	
Trichloroethene	ND	ppmv	0.15	1517	05/06/22 0:56 AJA	79-01-6	
Trichlorofluoromethane	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	75-69-4	
Vinyl acetate	ND	ppmv	0.3	1517	05/06/22 0:56 AJA	108-05-4	
Vinyl chloride	ND	ppmv	0.15	1517	05/06/22 0:56 AJA	75-01-4	

DISCLAIMER: These results have been converted to the units shown from the original units of measurement assuming 20 degrees Celsius and 1 atmosphere pressure. Values were not rounded according to EPA rounding rules. THC is quantitated based on the average response factors of several compounds; the nominal molecular weight of THC used for units conversion is the average of the molecular weights of the compounds used for quantitation.

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ANALYTICAL RESULTS

Client: Ramboll - IL (AIR)
Phone: 513-641-8677

Lab Project Number: 10605432
Project Name: 1690021708-011 AOC-16 IM

PARAMETER FOOTNOTES

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

June 10, 2022

Ruta Deshpande
Ramboll
333 West Wacker Drive
Suite 2700
Chicago, IL 60606

RE: Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

Dear Ruta Deshpande:

Enclosed are the analytical results for sample(s) received by the laboratory on May 17, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Matt Ray
matt.ray@pacelabs.com
(612)607-1700
Project Manager

Enclosures

cc: Evan Leister, Ramboll

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CERTIFICATIONS

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414
A2LA Certification #: 2926.01*
1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009*
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014*
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605*
Georgia Certification #: 959
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: AI-03086*
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064*
Maryland Certification #: 322
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137*
Minnesota Dept of Ag Approval: via MN 027-053-137
Minnesota Petrofund Registration #: 1240*
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081*
New Jersey Certification #: MN002
New York Certification #: 11647*
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification (A2LA) #: R-036
North Dakota Certification (MN) #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification (1700) #: CL101
Ohio VAP Certification (1800) #: CL110*
Oklahoma Certification #: 9507*
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001*
Pennsylvania Certification #: 68-00563*
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192*
Utah Certification #: MN00064*
Vermont Certification #: VT-027053137
Virginia Certification #: 460163*
Washington Certification #: C486*
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01
USDA Permit #: P330-19-00208
*Please Note: Applicable air certifications are denoted with an asterisk (*).

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1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10608600001	**CMR-SP301-220511**	Air	05/11/22 14:14	05/17/22 09:55

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Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10608600001	**CMR-SP301-220511**	TO-15	GT	61	PASI-M

PASI-M = Pace Analytical Services - Minneapolis

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1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

Sample: CMR-SP301-220511 **Lab ID: 10608600001** Collected: 05/11/22 14:14 Received: 05/17/22 09:55 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
	Pace Analytical Services - Minneapolis							
Acetone	ND	ug/m3	35500	5875		06/09/22 06:11	67-64-1	
Benzene	**114000**	ug/m3	1910	5875		06/09/22 06:11	71-43-2	
Benzyl chloride	ND	ug/m3	15500	5875		06/09/22 06:11	100-44-7	
Bromodichloromethane	ND	ug/m3	7990	5875		06/09/22 06:11	75-27-4	
Bromoform	ND	ug/m3	30800	5875		06/09/22 06:11	75-25-2	
Bromomethane	ND	ug/m3	4640	5875		06/09/22 06:11	74-83-9	
1,3-Butadiene	ND	ug/m3	2640	5875		06/09/22 06:11	106-99-0	
2-Butanone (MEK)	ND	ug/m3	17600	5875		06/09/22 06:11	78-93-3	
Carbon disulfide	ND	ug/m3	3720	5875		06/09/22 06:11	75-15-0	
Carbon tetrachloride	ND	ug/m3	7520	5875		06/09/22 06:11	56-23-5	
Chlorobenzene	ND	ug/m3	5500	5875		06/09/22 06:11	108-90-7	
Chloroethane	ND	ug/m3	7880	5875		06/09/22 06:11	75-00-3	
Chloroform	ND	ug/m3	2910	5875		06/09/22 06:11	67-66-3	
Chloromethane	ND	ug/m3	2470	5875		06/09/22 06:11	74-87-3	
Cyclohexane	ND	ug/m3	10300	5875		06/09/22 06:11	110-82-7	
Dibromochloromethane	ND	ug/m3	10200	5875		06/09/22 06:11	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/m3	4590	5875		06/09/22 06:11	106-93-4	
1,2-Dichlorobenzene	ND	ug/m3	18000	5875		06/09/22 06:11	95-50-1	
1,3-Dichlorobenzene	ND	ug/m3	18000	5875		06/09/22 06:11	541-73-1	
1,4-Dichlorobenzene	ND	ug/m3	18000	5875		06/09/22 06:11	106-46-7	
Dichlorodifluoromethane	ND	ug/m3	5930	5875		06/09/22 06:11	75-71-8	
1,1-Dichloroethane	ND	ug/m3	4840	5875		06/09/22 06:11	75-34-3	
1,2-Dichloroethane	ND	ug/m3	4840	5875		06/09/22 06:11	107-06-2	
1,1-Dichloroethene	ND	ug/m3	4740	5875		06/09/22 06:11	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	4740	5875		06/09/22 06:11	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	4740	5875		06/09/22 06:11	156-60-5	
1,2-Dichloropropane	ND	ug/m3	5520	5875		06/09/22 06:11	78-87-5	
cis-1,3-Dichloropropene	ND	ug/m3	13600	5875		06/09/22 06:11	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/m3	13600	5875		06/09/22 06:11	10061-02-6	
Dichlorotetrafluoroethane	ND	ug/m3	8340	5875		06/09/22 06:11	76-14-2	
Ethanol	ND	ug/m3	11300	5875		06/09/22 06:11	64-17-5	
Ethyl acetate	ND	ug/m3	4310	5875		06/09/22 06:11	141-78-6	
Ethylbenzene	**59700**	ug/m3	5190	5875		06/09/22 06:11	100-41-4	
4-Ethyltoluene	ND	ug/m3	14700	5875		06/09/22 06:11	622-96-8	
n-Heptane	**292000**	ug/m3	4890	5875		06/09/22 06:11	142-82-5	
Hexachloro-1,3-butadiene	ND	ug/m3	31800	5875		06/09/22 06:11	87-68-3	
n-Hexane	**587000**	ug/m3	4210	5875		06/09/22 06:11	110-54-3	
2-Hexanone	ND	ug/m3	24400	5875		06/09/22 06:11	591-78-6	
Methylene Chloride	ND	ug/m3	20700	5875		06/09/22 06:11	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/m3	24400	5875		06/09/22 06:11	108-10-1	
Methyl-tert-butyl ether	ND	ug/m3	21500	5875		06/09/22 06:11	1634-04-4	
Naphthalene	ND	ug/m3	15600	5875		06/09/22 06:11	91-20-3	
2-Propanol	ND	ug/m3	14700	5875		06/09/22 06:11	67-63-0	
Propylene	ND	ug/m3	5140	5875		06/09/22 06:11	115-07-1	
Styrene	ND	ug/m3	5090	5875		06/09/22 06:11	100-42-5	
1,1,2,2-Tetrachloroethane	ND	ug/m3	8230	5875		06/09/22 06:11	79-34-5	

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1700 Elm Street
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(612)607-1700

ANALYTICAL RESULTS

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

Sample: CMR-SP301-220511 **Lab ID: 10608600001** Collected: 05/11/22 14:14 Received: 05/17/22 09:55 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
	Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	4050	5875		06/09/22 06:11	127-18-4	
Tetrahydrofuran	ND	ug/m3	3530	5875		06/09/22 06:11	109-99-9	
Toluene	**57000**	ug/m3	4500	5875		06/09/22 06:11	108-88-3	
1,2,4-Trichlorobenzene	ND	ug/m3	44300	5875		06/09/22 06:11	120-82-1	
1,1,1-Trichloroethane	ND	ug/m3	6520	5875		06/09/22 06:11	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	3260	5875		06/09/22 06:11	79-00-5	
Trichloroethene	ND	ug/m3	3210	5875		06/09/22 06:11	79-01-6	
Trichlorofluoromethane	ND	ug/m3	6700	5875		06/09/22 06:11	75-69-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/m3	9170	5875		06/09/22 06:11	76-13-1	
1,2,4-Trimethylbenzene	**9770**	ug/m3	5870	5875		06/09/22 06:11	95-63-6	
1,3,5-Trimethylbenzene	**10000**	ug/m3	5870	5875		06/09/22 06:11	108-67-8	
Vinyl acetate	ND	ug/m3	4210	5875		06/09/22 06:11	108-05-4	
Vinyl chloride	ND	ug/m3	3060	5875		06/09/22 06:11	75-01-4	
m&p-Xylene	**262000**	ug/m3	10400	5875		06/09/22 06:11	179601-23-1	
o-Xylene	**58000**	ug/m3	5190	5875		06/09/22 06:11	95-47-6	

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QUALITY CONTROL DATA

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

QC Batch: 820340
QC Batch Method: TO-15
Analysis Method: TO-15
Analysis Description: TO15 MSV AIR Low Level
Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10608600001

METHOD BLANK: 4346811
Matrix: Air
Associated Lab Samples: 10608600001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	0.56	06/08/22 11:49	
1,1,2,2-Tetrachloroethane	ug/m3	ND	0.70	06/08/22 11:49	
1,1,2-Trichloroethane	ug/m3	ND	0.28	06/08/22 11:49	
1,1,2-Trichlorotrifluoroethane	ug/m3	ND	0.78	06/08/22 11:49	
1,1-Dichloroethane	ug/m3	ND	0.41	06/08/22 11:49	
1,1-Dichloroethene	ug/m3	ND	0.40	06/08/22 11:49	
1,2,4-Trichlorobenzene	ug/m3	ND	3.8	06/08/22 11:49	
1,2,4-Trimethylbenzene	ug/m3	ND	0.50	06/08/22 11:49	
1,2-Dibromoethane (EDB)	ug/m3	ND	0.39	06/08/22 11:49	
1,2-Dichlorobenzene	ug/m3	ND	1.5	06/08/22 11:49	
1,2-Dichloroethane	ug/m3	ND	0.41	06/08/22 11:49	
1,2-Dichloropropane	ug/m3	ND	0.47	06/08/22 11:49	
1,3,5-Trimethylbenzene	ug/m3	ND	0.50	06/08/22 11:49	
1,3-Butadiene	ug/m3	ND	0.22	06/08/22 11:49	
1,3-Dichlorobenzene	ug/m3	ND	1.5	06/08/22 11:49	
1,4-Dichlorobenzene	ug/m3	ND	1.5	06/08/22 11:49	
2-Butanone (MEK)	ug/m3	ND	1.5	06/08/22 11:49	
2-Hexanone	ug/m3	ND	2.1	06/08/22 11:49	
2-Propanol	ug/m3	ND	1.2	06/08/22 11:49	
4-Ethyltoluene	ug/m3	ND	1.2	06/08/22 11:49	
4-Methyl-2-pentanone (MIBK)	ug/m3	ND	2.1	06/08/22 11:49	
Acetone	ug/m3	ND	3.0	06/08/22 11:49	
Benzene	ug/m3	ND	0.16	06/08/22 11:49	
Benzyl chloride	ug/m3	ND	1.3	06/08/22 11:49	
Bromodichloromethane	ug/m3	ND	0.68	06/08/22 11:49	
Bromoform	ug/m3	ND	2.6	06/08/22 11:49	
Bromomethane	ug/m3	ND	0.39	06/08/22 11:49	
Carbon disulfide	ug/m3	ND	0.32	06/08/22 11:49	
Carbon tetrachloride	ug/m3	ND	0.64	06/08/22 11:49	
Chlorobenzene	ug/m3	ND	0.47	06/08/22 11:49	
Chloroethane	ug/m3	ND	0.67	06/08/22 11:49	
Chloroform	ug/m3	ND	0.25	06/08/22 11:49	
Chloromethane	ug/m3	ND	0.21	06/08/22 11:49	
cis-1,2-Dichloroethene	ug/m3	ND	0.40	06/08/22 11:49	
cis-1,3-Dichloropropene	ug/m3	ND	1.2	06/08/22 11:49	
Cyclohexane	ug/m3	ND	0.88	06/08/22 11:49	
Dibromochloromethane	ug/m3	ND	0.86	06/08/22 11:49	
Dichlorodifluoromethane	ug/m3	ND	0.50	06/08/22 11:49	
Dichlorotetrafluoroethane	ug/m3	ND	0.71	06/08/22 11:49	
Ethanol	ug/m3	ND	0.96	06/08/22 11:49	

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REPORT OF LABORATORY ANALYSIS

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(612)607-1700

QUALITY CONTROL DATA

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

METHOD BLANK: 4346811 Matrix: Air
Associated Lab Samples: 10608600001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethyl acetate	ug/m3	ND	0.37	06/08/22 11:49	
Ethylbenzene	ug/m3	ND	0.44	06/08/22 11:49	
Hexachloro-1,3-butadiene	ug/m3	ND	2.7	06/08/22 11:49	
m&p-Xylene	ug/m3	ND	0.88	06/08/22 11:49	
Methyl-tert-butyl ether	ug/m3	ND	1.8	06/08/22 11:49	
Methylene Chloride	ug/m3	ND	1.8	06/08/22 11:49	
n-Heptane	ug/m3	ND	0.42	06/08/22 11:49	
n-Hexane	ug/m3	ND	0.36	06/08/22 11:49	
Naphthalene	ug/m3	ND	1.3	06/08/22 11:49	
o-Xylene	ug/m3	ND	0.44	06/08/22 11:49	
Propylene	ug/m3	ND	0.44	06/08/22 11:49	
Styrene	ug/m3	ND	0.43	06/08/22 11:49	
Tetrachloroethene	ug/m3	ND	0.34	06/08/22 11:49	
Tetrahydrofuran	ug/m3	ND	0.30	06/08/22 11:49	
Toluene	ug/m3	ND	0.38	06/08/22 11:49	
trans-1,2-Dichloroethene	ug/m3	ND	0.40	06/08/22 11:49	
trans-1,3-Dichloropropene	ug/m3	ND	1.2	06/08/22 11:49	
Trichloroethene	ug/m3	ND	0.27	06/08/22 11:49	
Trichlorofluoromethane	ug/m3	ND	0.57	06/08/22 11:49	
Vinyl acetate	ug/m3	ND	0.36	06/08/22 11:49	
Vinyl chloride	ug/m3	ND	0.26	06/08/22 11:49	

LABORATORY CONTROL SAMPLE: 4346812

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/m3	59.3	67.1	113	70-130	
1,1,2,2-Tetrachloroethane	ug/m3	75.4	84.6	112	70-132	
1,1,2-Trichloroethane	ug/m3	59.6	70.1	118	70-131	
1,1,2-Trichlorotrifluoroethane	ug/m3	83.6	84.0	100	70-130	
1,1-Dichloroethane	ug/m3	43.9	47.3	108	70-130	
1,1-Dichloroethene	ug/m3	43.5	46.8	107	70-130	
1,2,4-Trichlorobenzene	ug/m3	177	177	100	70-130	
1,2,4-Trimethylbenzene	ug/m3	54	57.6	107	70-137	
1,2-Dibromoethane (EDB)	ug/m3	82.5	93.8	114	70-137	
1,2-Dichlorobenzene	ug/m3	66.2	67.9	103	70-131	
1,2-Dichloroethane	ug/m3	44.4	48.4	109	70-134	
1,2-Dichloropropane	ug/m3	50.6	60.3	119	70-130	
1,3,5-Trimethylbenzene	ug/m3	53.7	57.9	108	70-131	
1,3-Butadiene	ug/m3	24.2	28.4	118	70-139	
1,3-Dichlorobenzene	ug/m3	66.3	66.9	101	70-134	
1,4-Dichlorobenzene	ug/m3	66.3	66.5	100	70-131	
2-Butanone (MEK)	ug/m3	32.3	37.3	116	70-133	
2-Hexanone	ug/m3	44.8	51.1	114	70-136	
2-Propanol	ug/m3	149	156	105	65-133	

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QUALITY CONTROL DATA

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

LABORATORY CONTROL SAMPLE: 4346812

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Ethyltoluene	ug/m3	53.7	57.0	106	70-130	
4-Methyl-2-pentanone (MIBK)	ug/m3	44.9	52.9	118	70-130	
Acetone	ug/m3	128	124	97	60-134	
Benzene	ug/m3	34.8	41.0	118	70-130	
Benzyl chloride	ug/m3	57.6	59.5	103	70-130	
Bromodichloromethane	ug/m3	73.1	88.6	121	70-130	
Bromoform	ug/m3	114	117	103	70-138	
Bromomethane	ug/m3	42.5	42.0	99	68-131	
Carbon disulfide	ug/m3	34.4	37.8	110	70-130	
Carbon tetrachloride	ug/m3	69.4	80.4	116	70-132	
Chlorobenzene	ug/m3	50.2	55.1	110	70-130	
Chloroethane	ug/m3	28.8	34.4	119	70-134	
Chloroform	ug/m3	52.4	61.3	117	70-130	
Chloromethane	ug/m3	22.6	25.9	115	68-131	
cis-1,2-Dichloroethene	ug/m3	43.4	52.9	122	70-136	
cis-1,3-Dichloropropene	ug/m3	49.4	57.9	117	70-130	
Cyclohexane	ug/m3	37.4	48.2	129	70-131	
Dibromochloromethane	ug/m3	93.2	109	117	70-134	
Dichlorodifluoromethane	ug/m3	54.6	58.1	106	70-130	
Dichlorotetrafluoroethane	ug/m3	71.2	79.3	111	70-130	
Ethanol	ug/m3	124	138	112	55-145	
Ethyl acetate	ug/m3	38.9	50.8	131	70-135	CH
Ethylbenzene	ug/m3	47.8	54.7	114	70-133	
Hexachloro-1,3-butadiene	ug/m3	133	144	109	70-132	
m&p-Xylene	ug/m3	95.4	105	110	70-134	
Methyl-tert-butyl ether	ug/m3	39.6	42.8	108	70-131	
Methylene Chloride	ug/m3	190	193	102	65-132	
n-Heptane	ug/m3	44.6	57.9	130	70-130	
n-Hexane	ug/m3	38	48.8	128	70-132	
Naphthalene	ug/m3	65.2	69.8	107	70-130	
o-Xylene	ug/m3	47.6	52.4	110	70-134	
Propylene	ug/m3	18.9	24.4	129	69-133	
Styrene	ug/m3	47	53.7	114	70-135	
Tetrachloroethene	ug/m3	73.4	76.8	105	70-134	
Tetrahydrofuran	ug/m3	32.1	38.1	119	70-140	
Toluene	ug/m3	41.6	47.0	113	70-136	
trans-1,2-Dichloroethene	ug/m3	43.6	47.3	109	70-134	
trans-1,3-Dichloropropene	ug/m3	50.5	57.3	113	70-131	
Trichloroethene	ug/m3	58.4	72.2	123	70-134	
Trichlorofluoromethane	ug/m3	62	63.7	103	63-130	
Vinyl acetate	ug/m3	46.4	54.4	117	70-139	
Vinyl chloride	ug/m3	28	32.1	115	70-132	

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QUALITY CONTROL DATA

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

SAMPLE DUPLICATE: 4348059

Parameter	Units	10609105001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	<0.30	ND		25	
1,1,2,2-Tetrachloroethane	ug/m3	<0.60	ND		25	
1,1,2-Trichloroethane	ug/m3	<0.32	ND		25	
1,1,2-Trichlorotrifluoroethane	ug/m3	0.62J	.79J		25	
1,1-Dichloroethane	ug/m3	<0.27	ND		25	
1,1-Dichloroethene	ug/m3	<0.22	ND		25	
1,2,4-Trichlorobenzene	ug/m3	<7.9	ND		25	
1,2,4-Trimethylbenzene	ug/m3	<0.57	ND		25	
1,2-Dibromoethane (EDB)	ug/m3	<0.48	ND		25	
1,2-Dichlorobenzene	ug/m3	<0.65	ND		25	
1,2-Dichloroethane	ug/m3	<0.31	ND		25	
1,2-Dichloropropane	ug/m3	<0.43	ND		25	
1,3,5-Trimethylbenzene	ug/m3	<0.47	ND		25	
1,3-Butadiene	ug/m3	<0.19	ND		25	
1,3-Dichlorobenzene	ug/m3	<0.82	ND		25	
1,4-Dichlorobenzene	ug/m3	<1.4	ND		25	
2-Butanone (MEK)	ug/m3	4.1J	3.4J		25	
2-Hexanone	ug/m3	<0.71	ND		25	
2-Propanol	ug/m3	2.2J	2.1J		25	
4-Ethyltoluene	ug/m3	<0.76	ND		25	
4-Methyl-2-pentanone (MIBK)	ug/m3	<0.52	ND		25	
Acetone	ug/m3	20.4	20.0	2	25	
Benzene	ug/m3	<0.18	ND		25	
Benzyl chloride	ug/m3	<1.4	ND		25	
Bromodichloromethane	ug/m3	<0.38	ND		25	
Bromoform	ug/m3	<2.6	ND		25	
Bromomethane	ug/m3	<0.24	ND		25	
Carbon disulfide	ug/m3	0.92J	1.2		25	
Carbon tetrachloride	ug/m3	<0.45	ND		25	
Chlorobenzene	ug/m3	<0.25	ND		25	
Chloroethane	ug/m3	<0.36	ND		25	
Chloroform	ug/m3	<0.29	ND		25	
Chloromethane	ug/m3	1.1	1.1	6	25	
cis-1,2-Dichloroethene	ug/m3	<0.31	ND		25	
cis-1,3-Dichloropropene	ug/m3	<0.41	ND		25	
Cyclohexane	ug/m3	<0.36	ND		25	
Dibromochloromethane	ug/m3	<0.83	ND		25	
Dichlorodifluoromethane	ug/m3	2.6	2.6	3	25	
Dichlorotetrafluoroethane	ug/m3	<0.33	ND		25	
Ethanol	ug/m3	8.3	7.8	7	25	
Ethyl acetate	ug/m3	<0.21	ND		25	
Ethylbenzene	ug/m3	<0.50	ND		25	
Hexachloro-1,3-butadiene	ug/m3	<2.0	ND		25	
m&p-Xylene	ug/m3	<1.0	ND		25	
Methyl-tert-butyl ether	ug/m3	<0.20	ND		25	
Methylene Chloride	ug/m3	<0.95	ND		25	
n-Heptane	ug/m3	2.3	2.3	3	25	

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QUALITY CONTROL DATA

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

SAMPLE DUPLICATE: 4348059

Parameter	Units	10609105001 Result	Dup Result	RPD	Max RPD	Qualifiers
n-Hexane	ug/m3	<0.31	ND		25	
Naphthalene	ug/m3	<3.5	ND		25	
o-Xylene	ug/m3	<0.44	ND		25	
Propylene	ug/m3	<0.21	ND		25	
Styrene	ug/m3	<0.62	ND		25	
Tetrachloroethene	ug/m3	0.86J	.78J		25	
Tetrahydrofuran	ug/m3	<0.29	ND		25	
Toluene	ug/m3	2.4	3.1	26	25	R1
trans-1,2-Dichloroethene	ug/m3	<0.27	ND		25	
trans-1,3-Dichloropropene	ug/m3	<0.88	ND		25	
Trichloroethene	ug/m3	<0.32	ND		25	
Trichlorofluoromethane	ug/m3	1.7J	1.7J		25	
Vinyl acetate	ug/m3	<0.33	ND		25	
Vinyl chloride	ug/m3	<0.14	ND		25	

SAMPLE DUPLICATE: 4348060

Parameter	Units	10609105002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	<0.27	ND		25	
1,1,2,2-Tetrachloroethane	ug/m3	<0.54	ND		25	
1,1,2-Trichloroethane	ug/m3	<0.29	ND		25	
1,1,2-Trichlorotrifluoroethane	ug/m3	<0.42	.54J		25	
1,1-Dichloroethane	ug/m3	<0.24	ND		25	
1,1-Dichloroethene	ug/m3	<0.20	ND		25	
1,2,4-Trichlorobenzene	ug/m3	<7.1	ND		25	
1,2,4-Trimethylbenzene	ug/m3	1.3J	1.3J		25	
1,2-Dibromoethane (EDB)	ug/m3	<0.44	ND		25	
1,2-Dichlorobenzene	ug/m3	<0.59	ND		25	
1,2-Dichloroethane	ug/m3	<0.28	ND		25	
1,2-Dichloropropane	ug/m3	<0.39	ND		25	
1,3,5-Trimethylbenzene	ug/m3	<0.42	ND		25	
1,3-Butadiene	ug/m3	<0.18	ND		25	
1,3-Dichlorobenzene	ug/m3	<0.74	ND		25	
1,4-Dichlorobenzene	ug/m3	256	259	1	25	
2-Butanone (MEK)	ug/m3	8.5	9.5	11	25	
2-Hexanone	ug/m3	<0.65	2.2J		25	
2-Propanol	ug/m3	32.5	33.7	4	25	
4-Ethyltoluene	ug/m3	<0.69	ND		25	
4-Methyl-2-pentanone (MIBK)	ug/m3	<0.47	ND		25	
Acetone	ug/m3	62.9	57.4	9	25	
Benzene	ug/m3	<0.17	ND		25	
Benzyl chloride	ug/m3	<1.3	ND		25	
Bromodichloromethane	ug/m3	<0.35	ND		25	
Bromoform	ug/m3	<2.4	ND		25	
Bromomethane	ug/m3	<0.22	ND		25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

SAMPLE DUPLICATE: 4348060

Parameter	Units	10609105002 Result	Dup Result	RPD	Max RPD	Qualifiers
Carbon disulfide	ug/m3	<0.19	.21J		25	
Carbon tetrachloride	ug/m3	<0.41	ND		25	
Chlorobenzene	ug/m3	<0.23	ND		25	
Chloroethane	ug/m3	<0.33	ND		25	
Chloroform	ug/m3	<0.27	ND		25	
Chloromethane	ug/m3	2.2	2.6	16	25	
cis-1,2-Dichloroethene	ug/m3	<0.28	ND		25	
cis-1,3-Dichloropropene	ug/m3	<0.37	ND		25	
Cyclohexane	ug/m3	<0.32	ND		25	
Dibromochloromethane	ug/m3	<0.75	ND		25	
Dichlorodifluoromethane	ug/m3	14.0	16.1	14	25	
Dichlorotetrafluoroethane	ug/m3	<0.29	ND		25	
Ethanol	ug/m3	1390	1370	2	25	
Ethyl acetate	ug/m3	<0.19	ND		25	
Ethylbenzene	ug/m3	<0.45	ND		25	
Hexachloro-1,3-butadiene	ug/m3	<1.8	ND		25	
m&p-Xylene	ug/m3	1.9J	1.9J		25	
Methyl-tert-butyl ether	ug/m3	<0.18	ND		25	
Methylene Chloride	ug/m3	<0.87	ND		25	
n-Heptane	ug/m3	<0.26	ND		25	
n-Hexane	ug/m3	<0.28	ND		25	
Naphthalene	ug/m3	4.0	4.1	1	25	
o-Xylene	ug/m3	0.52J	.57J		25	
Propylene	ug/m3	<0.19	ND		25	
Styrene	ug/m3	1.3	1.3	1	25	
Tetrachloroethene	ug/m3	3.3	3.3	2	25	
Tetrahydrofuran	ug/m3	<0.26	ND		25	
Toluene	ug/m3	2.8	2.8	1	25	
trans-1,2-Dichloroethene	ug/m3	<0.25	ND		25	
trans-1,3-Dichloropropene	ug/m3	<0.79	ND		25	
Trichloroethene	ug/m3	1.9	2.0	6	25	
Trichlorofluoromethane	ug/m3	1.7	1.8	2	25	
Vinyl acetate	ug/m3	<0.30	ND		25	
Vinyl chloride	ug/m3	<0.13	ND		25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
R1	RPD value was outside control limits.

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1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10608600001	**CMR-SP301-220511**	TO-15	820340		

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Pace Analytical
www.pacelabs.com

AIR: CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A
Required Client Information:

Company: Ramboll
Address: 333 W. Wacker Dr., Suite #2700
Chicago, IL. 60606
Email To:Rdeshpande@ramboll.com
Phone: 543-641-8677 Fax:
Requested Due Date/TAT:

Section B
Required Project Information:

Report To: rdeshpande@ramboll.com
Copy To: starmann@ramboll.com
Purchase Order No.:
Project Name: AOC-16 IM
Project Number: 1690021708-011

Section C
Invoice Information:

Attention: Ruta Deshpande
Company Name: Ramboll
Address: 333 W. Wacker Dr., Suite #2700, IL, 60606
Pace Quote Reference:
Pace Project Manager/Sales Rep.: Hannah Lucas
Pace Profile #: 43836

Program: ☐ UST ☐ Superfund ☐ Emissions ☐ Clean Air Act ☑ Voluntary Clean Up ☐ Dry Clean ☐ RCRA ☐ Other_____

Location of Sampling by State: MT

Reporting Units: ug/m³ X__ mg/m³ ___ PPBV ___ PPMV __X__ Other ___

Report Level II.___ III.___ IV.___ Other_____

*Section D Required Client Information
AIR SAMPLE ID
Sample IDs MUST BE UNIQUE

Valid Media Codes

MEDIA	CODE
Tedlar Bag	TB
1 Liter Summa Can	1LC
6 Liter Summa Can	6LC
Low Volume Puff	LVP
High Volume Puff	HVP
Other	PM10

ITEM #	*Section D Required Client Information: AIR SAMPLE ID (Sample IDs MUST BE UNIQUE)	MEDIA CODE	PID Reading (Client only)	COLLECTED: COMPOSITE START END/GRAB DATE	TIME	COMPOSITE - DATE	TIME	Initial Field reading (-inches of Hg)	Final Field reading (-inches of Hg)	Summa Can Number	Flow Control Number	Method: PM10	3C: Fixed Gas (%)	TO-3	TO-3M (Methane)	TO-4 (PCBs)	TO-13 (PAH)	TO-14	TO-15	TO15 Short List*	Pace Lab ID
1	CMR-SP301-220511	6LC		5/11/22	13:55	5/11/22	14:14	-28	-11	3036	3170							X			001
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

Comments :

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Mike Gipson	5/13	15:00	Matt / Pace	5/17/22	9:55

SAMPLE CONDITIONS

—	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
Temp in °C	Received on Ice	Custody Sealed Cooler	Samples Intact

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Mike Gipson
SIGNATURE of SAMPLER:
DATE Signed (MM / DD / YY): 5/13/22

WO#: 10608600
10608600

FC046Rev.01, 03Feb2010

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) - Air**	Document Revised: 13Oct2021 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0113 Rev.01**	Pace Analytical Services - **Minneapolis**

Air Sample Condition Upon Receipt

Client Name: Ramboll

Project #: **WO#: 10608600**

PM: MR2 **Due Date:** 05/24/22

CLIENT: Ramboll-IL

Courier: ☒ FedEx ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial

Tracking Number: 9753 8450 2239 ☐ See Exception

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No

Seals Intact? ☐ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ Foam ☐ None ☐ Tin Can ☐ Other: _____

Date & Initials of Person Examining Contents: 5-17-22 MI

				Comments:
Chain of Custody Present?	☒ Yes	☐ No		1.
Chain of Custody Filled Out?	☒ Yes	☐ No		2.
Chain of Custody Relinquished?	☒ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		6.
Rush Turn Around Time Requested?	☐ Yes	☒ No		7.
Sufficient Volume?	☒ Yes	☐ No		8.
Correct Containers Used? **(Tedlar bags not acceptable container for TO-15 or APH)** -Pace Containers Used?	☒ Yes ☒ Yes	☐ No ☐ No		9.
Containers Intact? **(visual inspection/no leaks when pressurized)**	☒ Yes	☐ No		10.
Media: (Air Can) | Airbag				11. Individually Certified Cans? Y | (N) (list which samples)
Is sufficient information available to reconcile samples to the COC?	☒ Yes	☐ No		12.
Do cans need to be pressurized? **(DO NOT PRESSURIZE 3C or ASTM 1946!!!)**	☒ Yes	☐ No		13.

Gauge #: ☐ 10AIR26 ☐ 10AIR34 ☐ 10AIR35 ☒ 10AIR17 ☐ 10AIR47 ☐ 10AIR48

Canisters					Canisters				
Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure	Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure
SP301	3036	3170	-13.5	+10					

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Matt Ray **Date:** 05/17/22

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers).

Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

ANALYTICAL RESULTS

Client: Ramboll - IL (AIR)
Phone: 513-641-8677

Lab Project Number: 10608600
Project Name: 1690021708-011 AOC-16 IM

Lab Sample No: 10608600001
Client Sample ID: CMR-SP301-220511

ProjSampleNum: 10608600001
Matrix: Air

Date Collected: 05/11/22 14:14
Date Received: 05/17/22 9:55

Air

TO-15

Parameters	Results	Units	Report Limit	DF	Analyzed	CAS No.	Qualifiers
1,1,1-Trichloroethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	71-55-6	
1,1,2,2-Tetrachloroethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	79-34-5	
1,1,2-Trichloroethane	ND	ppmv	0.59	5875	06/09/22 6:11 GT	79-00-5	
1,1,2-Trichlorotrifluoroethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	76-13-1	
1,1-Dichloroethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	75-34-3	
1,1-Dichloroethene	ND	ppmv	1.2	5875	06/09/22 6:11 GT	75-35-4	
1,2,4-Trichlorobenzene	ND	ppmv	5.9	5875	06/09/22 6:11 GT	120-82-1	
1,2,4-Trimethylbenzene	2	ppmv	1.2	5875	06/09/22 6:11 GT	95-63-6	
1,2-Dibromoethane (EDB)	ND	ppmv	0.59	5875	06/09/22 6:11 GT	106-93-4	
1,2-Dichlorobenzene	ND	ppmv	2.9	5875	06/09/22 6:11 GT	95-50-1	
1,2-Dichloroethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	107-06-2	
1,2-Dichloropropane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	78-87-5	
1,3,5-Trimethylbenzene	2	ppmv	1.2	5875	06/09/22 6:11 GT	108-67-8	
1,3-Butadiene	ND	ppmv	1.2	5875	06/09/22 6:11 GT	106-99-0	
1,3-Dichlorobenzene	ND	ppmv	2.9	5875	06/09/22 6:11 GT	541-73-1	
1,4-Dichlorobenzene	ND	ppmv	2.9	5875	06/09/22 6:11 GT	106-46-7	
2-Butanone (MEK)	ND	ppmv	5.9	5875	06/09/22 6:11 GT	78-93-3	
2-Hexanone	ND	ppmv	5.9	5875	06/09/22 6:11 GT	591-78-6	
2-Propanol	ND	ppmv	5.9	5875	06/09/22 6:11 GT	67-63-0	
4-Ethyltoluene	ND	ppmv	2.9	5875	06/09/22 6:11 GT	622-96-8	
4-Methyl-2-pentanone (MIBK)	ND	ppmv	5.9	5875	06/09/22 6:11 GT	108-10-1	
Acetone	ND	ppmv	14.7	5875	06/09/22 6:11 GT	67-64-1	
Benzene	35.1	ppmv	0.59	5875	06/09/22 6:11 GT	71-43-2	
Benzyl chloride	ND	ppmv	2.9	5875	06/09/22 6:11 GT	100-44-7	
Bromodichloromethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	75-27-4	
Bromoform	ND	ppmv	2.9	5875	06/09/22 6:11 GT	75-25-2	
Bromomethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	74-83-9	
Carbon disulfide	ND	ppmv	1.2	5875	06/09/22 6:11 GT	75-15-0	
Carbon tetrachloride	ND	ppmv	1.2	5875	06/09/22 6:11 GT	56-23-5	
Chlorobenzene	ND	ppmv	1.2	5875	06/09/22 6:11 GT	108-90-7	
Chloroethane	ND	ppmv	2.9	5875	06/09/22 6:11 GT	75-00-3	
Chloroform	ND	ppmv	0.59	5875	06/09/22 6:11 GT	67-66-3	
Chloromethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	74-87-3	
cis-1,2-Dichloroethene	ND	ppmv	1.2	5875	06/09/22 6:11 GT	156-59-2	
cis-1,3-Dichloropropene	ND	ppmv	2.9	5875	06/09/22 6:11 GT	10061-01-5	
Cyclohexane	ND	ppmv	2.9	5875	06/09/22 6:11 GT	110-82-7	
Dibromochloromethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	124-48-1	
Dichlorodifluoromethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	75-71-8	

SUPPLEMENTAL REPORT

Units Conversion Request

Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

ANALYTICAL RESULTS

Client: Ramboll - IL (AIR)
Phone: 513-641-8677

Lab Project Number: 10608600
Project Name: 1690021708-011 AOC-16 IM

Lab Sample No: 10608600001
Client Sample ID: CMR-SP301-220511

ProjSampleNum: 10608600001
Matrix: Air

Date Collected: 05/11/22 14:14
Date Received: 05/17/22 9:55

Parameters	Results	Units	Report Limit	DF	Analyzed	CAS No.	Qualifiers
Air							
Dichlorotetrafluoroethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	76-14-2	
Ethanol	ND	ppmv	5.9	5875	06/09/22 6:11 GT	64-17-5	
Ethyl acetate	ND	ppmv	1.2	5875	06/09/22 6:11 GT	141-78-6	
Ethylbenzene	13.5	ppmv	1.2	5875	06/09/22 6:11 GT	100-41-4	
Hexachloro-1,3-butadiene	ND	ppmv	2.9	5875	06/09/22 6:11 GT	87-68-3	
m&p-Xylene	59.4	ppmv	2.4	5875	06/09/22 6:11 GT	179601-23-1	
Methylene Chloride	ND	ppmv	5.9	5875	06/09/22 6:11 GT	75-09-2	
Methyl-tert-butyl ether	ND	ppmv	5.9	5875	06/09/22 6:11 GT	1634-04-4	
Naphthalene	ND	ppmv	2.9	5875	06/09/22 6:11 GT	91-20-3	
n-Heptane	70.1	ppmv	1.2	5875	06/09/22 6:11 GT	142-82-5	
n-Hexane	164	ppmv	1.2	5875	06/09/22 6:11 GT	110-54-3	
o-Xylene	13.1	ppmv	1.2	5875	06/09/22 6:11 GT	95-47-6	
Propylene	ND	ppmv	2.9	5875	06/09/22 6:11 GT	115-07-1	
Styrene	ND	ppmv	1.2	5875	06/09/22 6:11 GT	100-42-5	
Tetrachloroethene	ND	ppmv	0.59	5875	06/09/22 6:11 GT	127-18-4	
Tetrahydrofuran	ND	ppmv	1.2	5875	06/09/22 6:11 GT	109-99-9	
Toluene	14.9	ppmv	1.2	5875	06/09/22 6:11 GT	108-88-3	
trans-1,2-Dichloroethene	ND	ppmv	1.2	5875	06/09/22 6:11 GT	156-60-5	
trans-1,3-Dichloropropene	ND	ppmv	2.9	5875	06/09/22 6:11 GT	10061-02-6	
Trichloroethene	ND	ppmv	0.59	5875	06/09/22 6:11 GT	79-01-6	
Trichlorofluoromethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	75-69-4	
Vinyl acetate	ND	ppmv	1.2	5875	06/09/22 6:11 GT	108-05-4	
Vinyl chloride	ND	ppmv	1.2	5875	06/09/22 6:11 GT	75-01-4	

DISCLAIMER: These results have been converted to the units shown from the original units of measurement assuming 20 degrees Celsius and 1 atmosphere pressure. Values were not rounded according to EPA rounding rules. THC is quantitated based on the average response factors of several compounds; the nominal molecular weight of THC used for units conversion is the average of the molecular weights of the compounds used for quantitation.

Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
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ANALYTICAL RESULTS

Client: Ramboll - IL (AIR)
Phone: 513-641-8677

Lab Project Number: 10608600
Project Name: 1690021708-011 AOC-16 IM

PARAMETER FOOTNOTES

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

June 10, 2022

Ruta Deshpande
Ramboll
333 West Wacker Drive
Suite 2700
Chicago, IL 60606

RE: Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

Dear Ruta Deshpande:

Enclosed are the analytical results for sample(s) received by the laboratory on May 17, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Matt Ray
matt.ray@pacelabs.com
(612)607-1700
Project Manager

Enclosures

cc: Evan Leister, Ramboll

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Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414
A2LA Certification #: 2926.01*
1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009*
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014*
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605*
Georgia Certification #: 959
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: AI-03086*
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064*
Maryland Certification #: 322
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137*
Minnesota Dept of Ag Approval: via MN 027-053-137
Minnesota Petrofund Registration #: 1240*
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081*
New Jersey Certification #: MN002
New York Certification #: 11647*
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification (A2LA) #: R-036
North Dakota Certification (MN) #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification (1700) #: CL101
Ohio VAP Certification (1800) #: CL110*
Oklahoma Certification #: 9507*
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001*
Pennsylvania Certification #: 68-00563*
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192*
Utah Certification #: MN00064*
Vermont Certification #: VT-027053137
Virginia Certification #: 460163*
Washington Certification #: C486*
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01
USDA Permit #: P330-19-00208
*Please Note: Applicable air certifications are denoted with an asterisk (*).

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Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10608600001	**CMR-SP301-220511**	Air	05/11/22 14:14	05/17/22 09:55

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Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10608600001	**CMR-SP301-220511**	TO-15	GT	61	PASI-M

PASI-M = Pace Analytical Services - Minneapolis

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1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

Sample: CMR-SP301-220511 **Lab ID: 10608600001** Collected: 05/11/22 14:14 Received: 05/17/22 09:55 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
	Pace Analytical Services - Minneapolis							
Acetone	ND	ug/m3	35500	5875		06/09/22 06:11	67-64-1	
Benzene	**114000**	ug/m3	1910	5875		06/09/22 06:11	71-43-2	
Benzyl chloride	ND	ug/m3	15500	5875		06/09/22 06:11	100-44-7	
Bromodichloromethane	ND	ug/m3	7990	5875		06/09/22 06:11	75-27-4	
Bromoform	ND	ug/m3	30800	5875		06/09/22 06:11	75-25-2	
Bromomethane	ND	ug/m3	4640	5875		06/09/22 06:11	74-83-9	
1,3-Butadiene	ND	ug/m3	2640	5875		06/09/22 06:11	106-99-0	
2-Butanone (MEK)	ND	ug/m3	17600	5875		06/09/22 06:11	78-93-3	
Carbon disulfide	ND	ug/m3	3720	5875		06/09/22 06:11	75-15-0	
Carbon tetrachloride	ND	ug/m3	7520	5875		06/09/22 06:11	56-23-5	
Chlorobenzene	ND	ug/m3	5500	5875		06/09/22 06:11	108-90-7	
Chloroethane	ND	ug/m3	7880	5875		06/09/22 06:11	75-00-3	
Chloroform	ND	ug/m3	2910	5875		06/09/22 06:11	67-66-3	
Chloromethane	ND	ug/m3	2470	5875		06/09/22 06:11	74-87-3	
Cyclohexane	ND	ug/m3	10300	5875		06/09/22 06:11	110-82-7	
Dibromochloromethane	ND	ug/m3	10200	5875		06/09/22 06:11	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/m3	4590	5875		06/09/22 06:11	106-93-4	
1,2-Dichlorobenzene	ND	ug/m3	18000	5875		06/09/22 06:11	95-50-1	
1,3-Dichlorobenzene	ND	ug/m3	18000	5875		06/09/22 06:11	541-73-1	
1,4-Dichlorobenzene	ND	ug/m3	18000	5875		06/09/22 06:11	106-46-7	
Dichlorodifluoromethane	ND	ug/m3	5930	5875		06/09/22 06:11	75-71-8	
1,1-Dichloroethane	ND	ug/m3	4840	5875		06/09/22 06:11	75-34-3	
1,2-Dichloroethane	ND	ug/m3	4840	5875		06/09/22 06:11	107-06-2	
1,1-Dichloroethene	ND	ug/m3	4740	5875		06/09/22 06:11	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	4740	5875		06/09/22 06:11	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	4740	5875		06/09/22 06:11	156-60-5	
1,2-Dichloropropane	ND	ug/m3	5520	5875		06/09/22 06:11	78-87-5	
cis-1,3-Dichloropropene	ND	ug/m3	13600	5875		06/09/22 06:11	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/m3	13600	5875		06/09/22 06:11	10061-02-6	
Dichlorotetrafluoroethane	ND	ug/m3	8340	5875		06/09/22 06:11	76-14-2	
Ethanol	ND	ug/m3	11300	5875		06/09/22 06:11	64-17-5	
Ethyl acetate	ND	ug/m3	4310	5875		06/09/22 06:11	141-78-6	
Ethylbenzene	**59700**	ug/m3	5190	5875		06/09/22 06:11	100-41-4	
4-Ethyltoluene	ND	ug/m3	14700	5875		06/09/22 06:11	622-96-8	
n-Heptane	**292000**	ug/m3	4890	5875		06/09/22 06:11	142-82-5	
Hexachloro-1,3-butadiene	ND	ug/m3	31800	5875		06/09/22 06:11	87-68-3	
n-Hexane	**587000**	ug/m3	4210	5875		06/09/22 06:11	110-54-3	
2-Hexanone	ND	ug/m3	24400	5875		06/09/22 06:11	591-78-6	
Methylene Chloride	ND	ug/m3	20700	5875		06/09/22 06:11	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/m3	24400	5875		06/09/22 06:11	108-10-1	
Methyl-tert-butyl ether	ND	ug/m3	21500	5875		06/09/22 06:11	1634-04-4	
Naphthalene	ND	ug/m3	15600	5875		06/09/22 06:11	91-20-3	
2-Propanol	ND	ug/m3	14700	5875		06/09/22 06:11	67-63-0	
Propylene	ND	ug/m3	5140	5875		06/09/22 06:11	115-07-1	
Styrene	ND	ug/m3	5090	5875		06/09/22 06:11	100-42-5	
1,1,2,2-Tetrachloroethane	ND	ug/m3	8230	5875		06/09/22 06:11	79-34-5	

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Pace Analytical Services, LLC
1700 Elm Street
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ANALYTICAL RESULTS

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

Sample: CMR-SP301-220511 **Lab ID: 10608600001** Collected: 05/11/22 14:14 Received: 05/17/22 09:55 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
	Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	4050	5875		06/09/22 06:11	127-18-4	
Tetrahydrofuran	ND	ug/m3	3530	5875		06/09/22 06:11	109-99-9	
Toluene	**57000**	ug/m3	4500	5875		06/09/22 06:11	108-88-3	
1,2,4-Trichlorobenzene	ND	ug/m3	44300	5875		06/09/22 06:11	120-82-1	
1,1,1-Trichloroethane	ND	ug/m3	6520	5875		06/09/22 06:11	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	3260	5875		06/09/22 06:11	79-00-5	
Trichloroethene	ND	ug/m3	3210	5875		06/09/22 06:11	79-01-6	
Trichlorofluoromethane	ND	ug/m3	6700	5875		06/09/22 06:11	75-69-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/m3	9170	5875		06/09/22 06:11	76-13-1	
1,2,4-Trimethylbenzene	**9770**	ug/m3	5870	5875		06/09/22 06:11	95-63-6	
1,3,5-Trimethylbenzene	**10000**	ug/m3	5870	5875		06/09/22 06:11	108-67-8	
Vinyl acetate	ND	ug/m3	4210	5875		06/09/22 06:11	108-05-4	
Vinyl chloride	ND	ug/m3	3060	5875		06/09/22 06:11	75-01-4	
m&p-Xylene	**262000**	ug/m3	10400	5875		06/09/22 06:11	179601-23-1	
o-Xylene	**58000**	ug/m3	5190	5875		06/09/22 06:11	95-47-6	

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QUALITY CONTROL DATA

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

QC Batch: 820340
QC Batch Method: TO-15
Analysis Method: TO-15
Analysis Description: TO15 MSV AIR Low Level
Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10608600001

METHOD BLANK: 4346811
Matrix: Air
Associated Lab Samples: 10608600001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	0.56	06/08/22 11:49	
1,1,2,2-Tetrachloroethane	ug/m3	ND	0.70	06/08/22 11:49	
1,1,2-Trichloroethane	ug/m3	ND	0.28	06/08/22 11:49	
1,1,2-Trichlorotrifluoroethane	ug/m3	ND	0.78	06/08/22 11:49	
1,1-Dichloroethane	ug/m3	ND	0.41	06/08/22 11:49	
1,1-Dichloroethene	ug/m3	ND	0.40	06/08/22 11:49	
1,2,4-Trichlorobenzene	ug/m3	ND	3.8	06/08/22 11:49	
1,2,4-Trimethylbenzene	ug/m3	ND	0.50	06/08/22 11:49	
1,2-Dibromoethane (EDB)	ug/m3	ND	0.39	06/08/22 11:49	
1,2-Dichlorobenzene	ug/m3	ND	1.5	06/08/22 11:49	
1,2-Dichloroethane	ug/m3	ND	0.41	06/08/22 11:49	
1,2-Dichloropropane	ug/m3	ND	0.47	06/08/22 11:49	
1,3,5-Trimethylbenzene	ug/m3	ND	0.50	06/08/22 11:49	
1,3-Butadiene	ug/m3	ND	0.22	06/08/22 11:49	
1,3-Dichlorobenzene	ug/m3	ND	1.5	06/08/22 11:49	
1,4-Dichlorobenzene	ug/m3	ND	1.5	06/08/22 11:49	
2-Butanone (MEK)	ug/m3	ND	1.5	06/08/22 11:49	
2-Hexanone	ug/m3	ND	2.1	06/08/22 11:49	
2-Propanol	ug/m3	ND	1.2	06/08/22 11:49	
4-Ethyltoluene	ug/m3	ND	1.2	06/08/22 11:49	
4-Methyl-2-pentanone (MIBK)	ug/m3	ND	2.1	06/08/22 11:49	
Acetone	ug/m3	ND	3.0	06/08/22 11:49	
Benzene	ug/m3	ND	0.16	06/08/22 11:49	
Benzyl chloride	ug/m3	ND	1.3	06/08/22 11:49	
Bromodichloromethane	ug/m3	ND	0.68	06/08/22 11:49	
Bromoform	ug/m3	ND	2.6	06/08/22 11:49	
Bromomethane	ug/m3	ND	0.39	06/08/22 11:49	
Carbon disulfide	ug/m3	ND	0.32	06/08/22 11:49	
Carbon tetrachloride	ug/m3	ND	0.64	06/08/22 11:49	
Chlorobenzene	ug/m3	ND	0.47	06/08/22 11:49	
Chloroethane	ug/m3	ND	0.67	06/08/22 11:49	
Chloroform	ug/m3	ND	0.25	06/08/22 11:49	
Chloromethane	ug/m3	ND	0.21	06/08/22 11:49	
cis-1,2-Dichloroethene	ug/m3	ND	0.40	06/08/22 11:49	
cis-1,3-Dichloropropene	ug/m3	ND	1.2	06/08/22 11:49	
Cyclohexane	ug/m3	ND	0.88	06/08/22 11:49	
Dibromochloromethane	ug/m3	ND	0.86	06/08/22 11:49	
Dichlorodifluoromethane	ug/m3	ND	0.50	06/08/22 11:49	
Dichlorotetrafluoroethane	ug/m3	ND	0.71	06/08/22 11:49	
Ethanol	ug/m3	ND	0.96	06/08/22 11:49	

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REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

METHOD BLANK: 4346811 Matrix: Air
Associated Lab Samples: 10608600001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethyl acetate	ug/m3	ND	0.37	06/08/22 11:49	
Ethylbenzene	ug/m3	ND	0.44	06/08/22 11:49	
Hexachloro-1,3-butadiene	ug/m3	ND	2.7	06/08/22 11:49	
m&p-Xylene	ug/m3	ND	0.88	06/08/22 11:49	
Methyl-tert-butyl ether	ug/m3	ND	1.8	06/08/22 11:49	
Methylene Chloride	ug/m3	ND	1.8	06/08/22 11:49	
n-Heptane	ug/m3	ND	0.42	06/08/22 11:49	
n-Hexane	ug/m3	ND	0.36	06/08/22 11:49	
Naphthalene	ug/m3	ND	1.3	06/08/22 11:49	
o-Xylene	ug/m3	ND	0.44	06/08/22 11:49	
Propylene	ug/m3	ND	0.44	06/08/22 11:49	
Styrene	ug/m3	ND	0.43	06/08/22 11:49	
Tetrachloroethene	ug/m3	ND	0.34	06/08/22 11:49	
Tetrahydrofuran	ug/m3	ND	0.30	06/08/22 11:49	
Toluene	ug/m3	ND	0.38	06/08/22 11:49	
trans-1,2-Dichloroethene	ug/m3	ND	0.40	06/08/22 11:49	
trans-1,3-Dichloropropene	ug/m3	ND	1.2	06/08/22 11:49	
Trichloroethene	ug/m3	ND	0.27	06/08/22 11:49	
Trichlorofluoromethane	ug/m3	ND	0.57	06/08/22 11:49	
Vinyl acetate	ug/m3	ND	0.36	06/08/22 11:49	
Vinyl chloride	ug/m3	ND	0.26	06/08/22 11:49	

LABORATORY CONTROL SAMPLE: 4346812

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/m3	59.3	67.1	113	70-130	
1,1,2,2-Tetrachloroethane	ug/m3	75.4	84.6	112	70-132	
1,1,2-Trichloroethane	ug/m3	59.6	70.1	118	70-131	
1,1,2-Trichlorotrifluoroethane	ug/m3	83.6	84.0	100	70-130	
1,1-Dichloroethane	ug/m3	43.9	47.3	108	70-130	
1,1-Dichloroethene	ug/m3	43.5	46.8	107	70-130	
1,2,4-Trichlorobenzene	ug/m3	177	177	100	70-130	
1,2,4-Trimethylbenzene	ug/m3	54	57.6	107	70-137	
1,2-Dibromoethane (EDB)	ug/m3	82.5	93.8	114	70-137	
1,2-Dichlorobenzene	ug/m3	66.2	67.9	103	70-131	
1,2-Dichloroethane	ug/m3	44.4	48.4	109	70-134	
1,2-Dichloropropane	ug/m3	50.6	60.3	119	70-130	
1,3,5-Trimethylbenzene	ug/m3	53.7	57.9	108	70-131	
1,3-Butadiene	ug/m3	24.2	28.4	118	70-139	
1,3-Dichlorobenzene	ug/m3	66.3	66.9	101	70-134	
1,4-Dichlorobenzene	ug/m3	66.3	66.5	100	70-131	
2-Butanone (MEK)	ug/m3	32.3	37.3	116	70-133	
2-Hexanone	ug/m3	44.8	51.1	114	70-136	
2-Propanol	ug/m3	149	156	105	65-133	

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QUALITY CONTROL DATA

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

LABORATORY CONTROL SAMPLE: 4346812

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Ethyltoluene	ug/m3	53.7	57.0	106	70-130	
4-Methyl-2-pentanone (MIBK)	ug/m3	44.9	52.9	118	70-130	
Acetone	ug/m3	128	124	97	60-134	
Benzene	ug/m3	34.8	41.0	118	70-130	
Benzyl chloride	ug/m3	57.6	59.5	103	70-130	
Bromodichloromethane	ug/m3	73.1	88.6	121	70-130	
Bromoform	ug/m3	114	117	103	70-138	
Bromomethane	ug/m3	42.5	42.0	99	68-131	
Carbon disulfide	ug/m3	34.4	37.8	110	70-130	
Carbon tetrachloride	ug/m3	69.4	80.4	116	70-132	
Chlorobenzene	ug/m3	50.2	55.1	110	70-130	
Chloroethane	ug/m3	28.8	34.4	119	70-134	
Chloroform	ug/m3	52.4	61.3	117	70-130	
Chloromethane	ug/m3	22.6	25.9	115	68-131	
cis-1,2-Dichloroethene	ug/m3	43.4	52.9	122	70-136	
cis-1,3-Dichloropropene	ug/m3	49.4	57.9	117	70-130	
Cyclohexane	ug/m3	37.4	48.2	129	70-131	
Dibromochloromethane	ug/m3	93.2	109	117	70-134	
Dichlorodifluoromethane	ug/m3	54.6	58.1	106	70-130	
Dichlorotetrafluoroethane	ug/m3	71.2	79.3	111	70-130	
Ethanol	ug/m3	124	138	112	55-145	
Ethyl acetate	ug/m3	38.9	50.8	131	70-135	CH
Ethylbenzene	ug/m3	47.8	54.7	114	70-133	
Hexachloro-1,3-butadiene	ug/m3	133	144	109	70-132	
m&p-Xylene	ug/m3	95.4	105	110	70-134	
Methyl-tert-butyl ether	ug/m3	39.6	42.8	108	70-131	
Methylene Chloride	ug/m3	190	193	102	65-132	
n-Heptane	ug/m3	44.6	57.9	130	70-130	
n-Hexane	ug/m3	38	48.8	128	70-132	
Naphthalene	ug/m3	65.2	69.8	107	70-130	
o-Xylene	ug/m3	47.6	52.4	110	70-134	
Propylene	ug/m3	18.9	24.4	129	69-133	
Styrene	ug/m3	47	53.7	114	70-135	
Tetrachloroethene	ug/m3	73.4	76.8	105	70-134	
Tetrahydrofuran	ug/m3	32.1	38.1	119	70-140	
Toluene	ug/m3	41.6	47.0	113	70-136	
trans-1,2-Dichloroethene	ug/m3	43.6	47.3	109	70-134	
trans-1,3-Dichloropropene	ug/m3	50.5	57.3	113	70-131	
Trichloroethene	ug/m3	58.4	72.2	123	70-134	
Trichlorofluoromethane	ug/m3	62	63.7	103	63-130	
Vinyl acetate	ug/m3	46.4	54.4	117	70-139	
Vinyl chloride	ug/m3	28	32.1	115	70-132	

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QUALITY CONTROL DATA

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

SAMPLE DUPLICATE: 4348059

Parameter	Units	10609105001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	<0.30	ND		25	
1,1,2,2-Tetrachloroethane	ug/m3	<0.60	ND		25	
1,1,2-Trichloroethane	ug/m3	<0.32	ND		25	
1,1,2-Trichlorotrifluoroethane	ug/m3	0.62J	.79J		25	
1,1-Dichloroethane	ug/m3	<0.27	ND		25	
1,1-Dichloroethene	ug/m3	<0.22	ND		25	
1,2,4-Trichlorobenzene	ug/m3	<7.9	ND		25	
1,2,4-Trimethylbenzene	ug/m3	<0.57	ND		25	
1,2-Dibromoethane (EDB)	ug/m3	<0.48	ND		25	
1,2-Dichlorobenzene	ug/m3	<0.65	ND		25	
1,2-Dichloroethane	ug/m3	<0.31	ND		25	
1,2-Dichloropropane	ug/m3	<0.43	ND		25	
1,3,5-Trimethylbenzene	ug/m3	<0.47	ND		25	
1,3-Butadiene	ug/m3	<0.19	ND		25	
1,3-Dichlorobenzene	ug/m3	<0.82	ND		25	
1,4-Dichlorobenzene	ug/m3	<1.4	ND		25	
2-Butanone (MEK)	ug/m3	4.1J	3.4J		25	
2-Hexanone	ug/m3	<0.71	ND		25	
2-Propanol	ug/m3	2.2J	2.1J		25	
4-Ethyltoluene	ug/m3	<0.76	ND		25	
4-Methyl-2-pentanone (MIBK)	ug/m3	<0.52	ND		25	
Acetone	ug/m3	20.4	20.0	2	25	
Benzene	ug/m3	<0.18	ND		25	
Benzyl chloride	ug/m3	<1.4	ND		25	
Bromodichloromethane	ug/m3	<0.38	ND		25	
Bromoform	ug/m3	<2.6	ND		25	
Bromomethane	ug/m3	<0.24	ND		25	
Carbon disulfide	ug/m3	0.92J	1.2		25	
Carbon tetrachloride	ug/m3	<0.45	ND		25	
Chlorobenzene	ug/m3	<0.25	ND		25	
Chloroethane	ug/m3	<0.36	ND		25	
Chloroform	ug/m3	<0.29	ND		25	
Chloromethane	ug/m3	1.1	1.1	6	25	
cis-1,2-Dichloroethene	ug/m3	<0.31	ND		25	
cis-1,3-Dichloropropene	ug/m3	<0.41	ND		25	
Cyclohexane	ug/m3	<0.36	ND		25	
Dibromochloromethane	ug/m3	<0.83	ND		25	
Dichlorodifluoromethane	ug/m3	2.6	2.6	3	25	
Dichlorotetrafluoroethane	ug/m3	<0.33	ND		25	
Ethanol	ug/m3	8.3	7.8	7	25	
Ethyl acetate	ug/m3	<0.21	ND		25	
Ethylbenzene	ug/m3	<0.50	ND		25	
Hexachloro-1,3-butadiene	ug/m3	<2.0	ND		25	
m&p-Xylene	ug/m3	<1.0	ND		25	
Methyl-tert-butyl ether	ug/m3	<0.20	ND		25	
Methylene Chloride	ug/m3	<0.95	ND		25	
n-Heptane	ug/m3	2.3	2.3	3	25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

SAMPLE DUPLICATE: 4348059

Parameter	Units	10609105001 Result	Dup Result	RPD	Max RPD	Qualifiers
n-Hexane	ug/m3	<0.31	ND		25	
Naphthalene	ug/m3	<3.5	ND		25	
o-Xylene	ug/m3	<0.44	ND		25	
Propylene	ug/m3	<0.21	ND		25	
Styrene	ug/m3	<0.62	ND		25	
Tetrachloroethene	ug/m3	0.86J	.78J		25	
Tetrahydrofuran	ug/m3	<0.29	ND		25	
Toluene	ug/m3	2.4	3.1	26	25	R1
trans-1,2-Dichloroethene	ug/m3	<0.27	ND		25	
trans-1,3-Dichloropropene	ug/m3	<0.88	ND		25	
Trichloroethene	ug/m3	<0.32	ND		25	
Trichlorofluoromethane	ug/m3	1.7J	1.7J		25	
Vinyl acetate	ug/m3	<0.33	ND		25	
Vinyl chloride	ug/m3	<0.14	ND		25	

SAMPLE DUPLICATE: 4348060

Parameter	Units	10609105002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	<0.27	ND		25	
1,1,2,2-Tetrachloroethane	ug/m3	<0.54	ND		25	
1,1,2-Trichloroethane	ug/m3	<0.29	ND		25	
1,1,2-Trichlorotrifluoroethane	ug/m3	<0.42	.54J		25	
1,1-Dichloroethane	ug/m3	<0.24	ND		25	
1,1-Dichloroethene	ug/m3	<0.20	ND		25	
1,2,4-Trichlorobenzene	ug/m3	<7.1	ND		25	
1,2,4-Trimethylbenzene	ug/m3	1.3J	1.3J		25	
1,2-Dibromoethane (EDB)	ug/m3	<0.44	ND		25	
1,2-Dichlorobenzene	ug/m3	<0.59	ND		25	
1,2-Dichloroethane	ug/m3	<0.28	ND		25	
1,2-Dichloropropane	ug/m3	<0.39	ND		25	
1,3,5-Trimethylbenzene	ug/m3	<0.42	ND		25	
1,3-Butadiene	ug/m3	<0.18	ND		25	
1,3-Dichlorobenzene	ug/m3	<0.74	ND		25	
1,4-Dichlorobenzene	ug/m3	256	259	1	25	
2-Butanone (MEK)	ug/m3	8.5	9.5	11	25	
2-Hexanone	ug/m3	<0.65	2.2J		25	
2-Propanol	ug/m3	32.5	33.7	4	25	
4-Ethyltoluene	ug/m3	<0.69	ND		25	
4-Methyl-2-pentanone (MIBK)	ug/m3	<0.47	ND		25	
Acetone	ug/m3	62.9	57.4	9	25	
Benzene	ug/m3	<0.17	ND		25	
Benzyl chloride	ug/m3	<1.3	ND		25	
Bromodichloromethane	ug/m3	<0.35	ND		25	
Bromoform	ug/m3	<2.4	ND		25	
Bromomethane	ug/m3	<0.22	ND		25	

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1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

SAMPLE DUPLICATE: 4348060

Parameter	Units	10609105002 Result	Dup Result	RPD	Max RPD	Qualifiers
Carbon disulfide	ug/m3	<0.19	.21J		25	
Carbon tetrachloride	ug/m3	<0.41	ND		25	
Chlorobenzene	ug/m3	<0.23	ND		25	
Chloroethane	ug/m3	<0.33	ND		25	
Chloroform	ug/m3	<0.27	ND		25	
Chloromethane	ug/m3	2.2	2.6	16	25	
cis-1,2-Dichloroethene	ug/m3	<0.28	ND		25	
cis-1,3-Dichloropropene	ug/m3	<0.37	ND		25	
Cyclohexane	ug/m3	<0.32	ND		25	
Dibromochloromethane	ug/m3	<0.75	ND		25	
Dichlorodifluoromethane	ug/m3	14.0	16.1	14	25	
Dichlorotetrafluoroethane	ug/m3	<0.29	ND		25	
Ethanol	ug/m3	1390	1370	2	25	
Ethyl acetate	ug/m3	<0.19	ND		25	
Ethylbenzene	ug/m3	<0.45	ND		25	
Hexachloro-1,3-butadiene	ug/m3	<1.8	ND		25	
m&p-Xylene	ug/m3	1.9J	1.9J		25	
Methyl-tert-butyl ether	ug/m3	<0.18	ND		25	
Methylene Chloride	ug/m3	<0.87	ND		25	
n-Heptane	ug/m3	<0.26	ND		25	
n-Hexane	ug/m3	<0.28	ND		25	
Naphthalene	ug/m3	4.0	4.1	1	25	
o-Xylene	ug/m3	0.52J	.57J		25	
Propylene	ug/m3	<0.19	ND		25	
Styrene	ug/m3	1.3	1.3	1	25	
Tetrachloroethene	ug/m3	3.3	3.3	2	25	
Tetrahydrofuran	ug/m3	<0.26	ND		25	
Toluene	ug/m3	2.8	2.8	1	25	
trans-1,2-Dichloroethene	ug/m3	<0.25	ND		25	
trans-1,3-Dichloropropene	ug/m3	<0.79	ND		25	
Trichloroethene	ug/m3	1.9	2.0	6	25	
Trichlorofluoromethane	ug/m3	1.7	1.8	2	25	
Vinyl acetate	ug/m3	<0.30	ND		25	
Vinyl chloride	ug/m3	<0.13	ND		25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
R1	RPD value was outside control limits.

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1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1690021708-011 AOC-16 IM
Pace Project No.: 10608600

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10608600001	**CMR-SP301-220511**	TO-15	820340		

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Pace Analytical
www.pacelabs.com

AIR: CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A
Required Client Information:

Company: Ramboll
Address: 333 W. Wacker Dr., Suite #2700
Chicago, IL. 60606
Email To:Rdeshpande@ramboll.com
Phone: 543-641-8677 Fax:
Requested Due Date/TAT:

Section B
Required Project Information:

Report To: rdeshpande@ramboll.com
Copy To: starmann@ramboll.com
Purchase Order No.:
Project Name: AOC-16 IM
Project Number: 1690021708-011

Section C
Invoice Information:

Attention: Ruta Deshpande
Company Name: Ramboll
Address: 333 W. Wacker Dr., Suite #2700, IL, 60606
Pace Quote Reference:
Pace Project Manager/Sales Rep.: Hannah Lucas
Pace Profile #: 43836

Program
☐ UST ☐ Superfund ☐ Emissions ☐ Clean Air Act
☑ Voluntary Clean Up ☐ Dry Clean ☐ RCRA ☐ Other_____

Location of Sampling by State: MT

Reporting Units
ug/m³ X__ mg/m³ ___
PPBV ___ PPMV __X__
Other ___

Report Level II.___ III.___ IV.___ Other_____

Method:

*Section D Required Client Information
AIR SAMPLE ID
Sample IDs MUST BE UNIQUE

Valid Media Codes

MEDIA	CODE
Tedlar Bag	TB
1 Liter Summa Can	1LC
6 Liter Summa Can	6LC
Low Volume Puff	LVP
High Volume Puff	HVP
Other	PM10

ITEM #	AIR SAMPLE ID	MEDIA CODE	PID Reading (Client only)	COLLECTED Composite Start End/Grab DATE	TIME	Composite - DATE	TIME	Initial Field reading (-inches of Hg)	Final Field reading (-inches of Hg)	Summa Can Number	Flow Control Number	PM10	3C: Fixed Gas (%)	TO-3	TO-3M (Methane)	TO-4 (PCBs)	TO-13 (PAH)	TO-14	TO-15	TO15 Short List*	Pace Lab ID
1	CMR-SP301-220511	6LC		5/11/22	13:55	5/11/22	14:14	-28	-11	3036	3170							X			001
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

Comments :

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Mike Gipson	5/13	15:00	Matt / Pace	5/17/22	9:55

SAMPLE CONDITIONS

Temp in °C	Received on Ice	Custody Sealed Cooler	Samples Intact
—	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Mike Gipson
SIGNATURE of SAMPLER:
DATE Signed (MM / DD / YY): 5/13/22

WO#: 10608600
10608600

FC046Rev.01, 03Feb2010

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) - Air**	Document Revised: 13Oct2021 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0113 Rev.01**	Pace Analytical Services - **Minneapolis**

Air Sample Condition Upon Receipt

Client Name: Ramboll

Project #: **WO#: 10608600**

PM: MR2 **Due Date: 05/24/22**

CLIENT: Ramboll-IL

Courier: ☒ FedEx ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial

Tracking Number: 9753 8450 2239 ☐ See Exception

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No

Seals Intact? ☐ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ Foam ☐ None ☐ Tin Can ☐ Other: _____

Date & Initials of Person Examining Contents: 5-17-22 MI

				Comments:
Chain of Custody Present?	☒ Yes	☐ No		1.
Chain of Custody Filled Out?	☒ Yes	☐ No		2.
Chain of Custody Relinquished?	☒ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		6.
Rush Turn Around Time Requested?	☐ Yes	☒ No		7.
Sufficient Volume?	☒ Yes	☐ No		8.
Correct Containers Used? **(Tedlar bags not acceptable container for TO-15 or APH)** -Pace Containers Used?	☒ Yes ☒ Yes	☐ No ☐ No		9.
Containers Intact? **(visual inspection/no leaks when pressurized)**	☒ Yes	☐ No		10.
Media: (Air Can) | Airbag				11. Individually Certified Cans? Y | (N) (list which samples)
Is sufficient information available to reconcile samples to the COC?	☒ Yes	☐ No		12.
Do cans need to be pressurized? **(DO NOT PRESSURIZE 3C or ASTM 1946!!!)**	☒ Yes	☐ No		13.

Gauge #: ☐ 10AIR26 ☐ 10AIR34 ☐ 10AIR35 ☒ 10AIR17 ☐ 10AIR47 ☐ 10AIR48

Canisters					Canisters				
Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure	Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure
SP301	3036	3170	-13.5	+10					

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Matt Ray **Date:** 05/17/22

Note: *Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers).*

Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

ANALYTICAL RESULTS

Client: Ramboll - IL (AIR)
Phone: 513-641-8677

Lab Project Number: 10608600
Project Name: 1690021708-011 AOC-16 IM

Lab Sample No: 10608600001
Client Sample ID: CMR-SP301-220511

ProjSampleNum: 10608600001
Matrix: Air

Date Collected: 05/11/22 14:14
Date Received: 05/17/22 9:55

Air

TO-15

Parameters	Results	Units	Report Limit	DF	Analyzed	CAS No.	Qualifiers
1,1,1-Trichloroethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	71-55-6	
1,1,2,2-Tetrachloroethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	79-34-5	
1,1,2-Trichloroethane	ND	ppmv	0.59	5875	06/09/22 6:11 GT	79-00-5	
1,1,2-Trichlorotrifluoroethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	76-13-1	
1,1-Dichloroethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	75-34-3	
1,1-Dichloroethene	ND	ppmv	1.2	5875	06/09/22 6:11 GT	75-35-4	
1,2,4-Trichlorobenzene	ND	ppmv	5.9	5875	06/09/22 6:11 GT	120-82-1	
1,2,4-Trimethylbenzene	2	ppmv	1.2	5875	06/09/22 6:11 GT	95-63-6	
1,2-Dibromoethane (EDB)	ND	ppmv	0.59	5875	06/09/22 6:11 GT	106-93-4	
1,2-Dichlorobenzene	ND	ppmv	2.9	5875	06/09/22 6:11 GT	95-50-1	
1,2-Dichloroethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	107-06-2	
1,2-Dichloropropane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	78-87-5	
1,3,5-Trimethylbenzene	2	ppmv	1.2	5875	06/09/22 6:11 GT	108-67-8	
1,3-Butadiene	ND	ppmv	1.2	5875	06/09/22 6:11 GT	106-99-0	
1,3-Dichlorobenzene	ND	ppmv	2.9	5875	06/09/22 6:11 GT	541-73-1	
1,4-Dichlorobenzene	ND	ppmv	2.9	5875	06/09/22 6:11 GT	106-46-7	
2-Butanone (MEK)	ND	ppmv	5.9	5875	06/09/22 6:11 GT	78-93-3	
2-Hexanone	ND	ppmv	5.9	5875	06/09/22 6:11 GT	591-78-6	
2-Propanol	ND	ppmv	5.9	5875	06/09/22 6:11 GT	67-63-0	
4-Ethyltoluene	ND	ppmv	2.9	5875	06/09/22 6:11 GT	622-96-8	
4-Methyl-2-pentanone (MIBK)	ND	ppmv	5.9	5875	06/09/22 6:11 GT	108-10-1	
Acetone	ND	ppmv	14.7	5875	06/09/22 6:11 GT	67-64-1	
Benzene	35.1	ppmv	0.59	5875	06/09/22 6:11 GT	71-43-2	
Benzyl chloride	ND	ppmv	2.9	5875	06/09/22 6:11 GT	100-44-7	
Bromodichloromethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	75-27-4	
Bromoform	ND	ppmv	2.9	5875	06/09/22 6:11 GT	75-25-2	
Bromomethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	74-83-9	
Carbon disulfide	ND	ppmv	1.2	5875	06/09/22 6:11 GT	75-15-0	
Carbon tetrachloride	ND	ppmv	1.2	5875	06/09/22 6:11 GT	56-23-5	
Chlorobenzene	ND	ppmv	1.2	5875	06/09/22 6:11 GT	108-90-7	
Chloroethane	ND	ppmv	2.9	5875	06/09/22 6:11 GT	75-00-3	
Chloroform	ND	ppmv	0.59	5875	06/09/22 6:11 GT	67-66-3	
Chloromethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	74-87-3	
cis-1,2-Dichloroethene	ND	ppmv	1.2	5875	06/09/22 6:11 GT	156-59-2	
cis-1,3-Dichloropropene	ND	ppmv	2.9	5875	06/09/22 6:11 GT	10061-01-5	
Cyclohexane	ND	ppmv	2.9	5875	06/09/22 6:11 GT	110-82-7	
Dibromochloromethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	124-48-1	
Dichlorodifluoromethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	75-71-8	

SUPPLEMENTAL REPORT

Units Conversion Request

Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

ANALYTICAL RESULTS

Client: Ramboll - IL (AIR)
Phone: 513-641-8677

Lab Project Number: 10608600
Project Name: 1690021708-011 AOC-16 IM

Lab Sample No: 10608600001
Client Sample ID: CMR-SP301-220511

ProjSampleNum: 10608600001
Matrix: Air

Date Collected: 05/11/22 14:14
Date Received: 05/17/22 9:55

Parameters	Results	Units	Report Limit	DF	Analyzed	CAS No.	Qualifiers
Air							
Dichlorotetrafluoroethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	76-14-2	
Ethanol	ND	ppmv	5.9	5875	06/09/22 6:11 GT	64-17-5	
Ethyl acetate	ND	ppmv	1.2	5875	06/09/22 6:11 GT	141-78-6	
Ethylbenzene	13.5	ppmv	1.2	5875	06/09/22 6:11 GT	100-41-4	
Hexachloro-1,3-butadiene	ND	ppmv	2.9	5875	06/09/22 6:11 GT	87-68-3	
m&p-Xylene	59.4	ppmv	2.4	5875	06/09/22 6:11 GT	179601-23-1	
Methylene Chloride	ND	ppmv	5.9	5875	06/09/22 6:11 GT	75-09-2	
Methyl-tert-butyl ether	ND	ppmv	5.9	5875	06/09/22 6:11 GT	1634-04-4	
Naphthalene	ND	ppmv	2.9	5875	06/09/22 6:11 GT	91-20-3	
n-Heptane	70.1	ppmv	1.2	5875	06/09/22 6:11 GT	142-82-5	
n-Hexane	164	ppmv	1.2	5875	06/09/22 6:11 GT	110-54-3	
o-Xylene	13.1	ppmv	1.2	5875	06/09/22 6:11 GT	95-47-6	
Propylene	ND	ppmv	2.9	5875	06/09/22 6:11 GT	115-07-1	
Styrene	ND	ppmv	1.2	5875	06/09/22 6:11 GT	100-42-5	
Tetrachloroethene	ND	ppmv	0.59	5875	06/09/22 6:11 GT	127-18-4	
Tetrahydrofuran	ND	ppmv	1.2	5875	06/09/22 6:11 GT	109-99-9	
Toluene	14.9	ppmv	1.2	5875	06/09/22 6:11 GT	108-88-3	
trans-1,2-Dichloroethene	ND	ppmv	1.2	5875	06/09/22 6:11 GT	156-60-5	
trans-1,3-Dichloropropene	ND	ppmv	2.9	5875	06/09/22 6:11 GT	10061-02-6	
Trichloroethene	ND	ppmv	0.59	5875	06/09/22 6:11 GT	79-01-6	
Trichlorofluoromethane	ND	ppmv	1.2	5875	06/09/22 6:11 GT	75-69-4	
Vinyl acetate	ND	ppmv	1.2	5875	06/09/22 6:11 GT	108-05-4	
Vinyl chloride	ND	ppmv	1.2	5875	06/09/22 6:11 GT	75-01-4	

DISCLAIMER: These results have been converted to the units shown from the original units of measurement assuming 20 degrees Celsius and 1 atmosphere pressure. Values were not rounded according to EPA rounding rules. THC is quantitated based on the average response factors of several compounds; the nominal molecular weight of THC used for units conversion is the average of the molecular weights of the compounds used for quantitation.

Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

ANALYTICAL RESULTS

Client: Ramboll - IL (AIR)
Phone: 513-641-8677

Lab Project Number: 10608600
Project Name: 1690021708-011 AOC-16 IM

PARAMETER FOOTNOTES

Report of Analysis

Ramboll US Corporation
333 West Wacker Drive
Suite 2700
Chicago, IL 60606
Attention: David Heidlauf

Project Name: Calumet - AOC16 Performance Monitoring

Lot Number:**XF23073**

Date Completed:07/13/2022

07/22/2022 6:54 PM
Approved and released by:
Project Manager II: **Cathy S. Dover**

The electronic signature above is the equivalent of a handwritten signature.
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Pace Analytical Services, LLC (*formerly Shealy Environmental Services, Inc.*)
106 Vantage Point Drive West Columbia, SC 29172
Tel: 803-791-9700 Fax: 803-791-9111 www.pacelabs.com

Case Narrative
Ramboll US Corporation
Lot Number: XF23073

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report. Where sampling is conducted by the client, results relate to the accuracy of the information provided, and as the samples are received.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

VOA 8260D

Reanalysis of sample XF23073-001 (MW41S-GW-220622) was performed outside of the analytical holding time. The sample was initially run within hold time but was out of tune time due to instrument stopping for time out error. The re-analysis confirms results in the original analysis. Both runs have been reported.

The laboratory control sample (LCS) for analytical batch 47499 exceeded acceptance criteria for the following analytes: Bromoform (131%) and 1,2-Dibromo-3-chloropropane (133%). These analytes were biased high and were not detected in the associated sample XF23073-001 (MW41S-GW-220622).

RSK175 (MEE)

The method blank associated with batch 46690 had Methane detected at a concentration that was above the DL but below the LOQ. All samples associated with this method blank that have detections for Methane have been flagged with a "B”.

Montana VPH

The method blank associated with batch 46251 had Naphthalene detected at a concentration that was above the DL but below the LOQ. All samples associated with this method blank that have detections for Naphthalene have been flagged with a "B”.

SVOA 8270E

Sample XF23073-001 (MW41S-GW-220622), required a 50x dilution and some of the surrogates were affected by the dilution and were outside the control limits.

Sample XF23073-002 (MW106-GW-220622) was diluted due to the nature of the sample matrix. The LOQ has been elevated to reflect the dilution.

The method blank for analytical batch 46876 (prep batch 46231) contained Di-n-butyl phthalate, Phenol and butylbenzyl phthalate greater than the acceptance criteria. The associated samples, XF23073-001 (MW41S-GW-220622), XF23073-002 (MW106-GW-220622), and XF23073-003 (MW105-GW-220622), did not contain detections for the target analyte; therefore, re-extraction or re-analysis of samples was not performed. The data has been reported.

The MS/MSD for batch 46231 and parent sample XF23073-001 (MW41S-GW-220622), recovered outside control limits for multiple analytes. The associated LCS passed acceptance criteria.

Montana EPH
The method blank associated with batch 46731 had TEH (post fractionation) detected at a concentration that was above the DL but below the LOQ. All samples associated with this method blank that have detections for TEH (post fractionation) have been flagged with a "B".

MT EPH screening analysis was performed @ 10x and surrogate 2-Bromonaphthalene was outside the upper limit.

A dilution was done in the extraction lab when the EPH aromatic sample extract was fractionated. The dilution affected the surrogate recovery.

Nitrate
Sample XF23073-002 (MW106-GW-220622) showed shifting due to significant non-target matrix. As a result, the sample was reanalyzed out of hold at a 50x dilution during the same sequence to reduce matrix effects. The sample was also spiked. Because of the high dilution that reduced the matrix effects, the peaks did not shift as they did in the original analysis. The sample was reanalyzed at a 2x (lower) dilution and showed shifting. Because the third analysis was also spike, the known targets showed that nitrate had shifted and confirmed the other two analyses. When the peak identified to be nitrate in the diluted analyses that eluted outside the retention time window in the initial analysis was assigned, the result confirmed the diluted results. Therefore, the in hold analysis is reported as a positive result for nitrate.

The method blank associated with batch 46217 had Nitrate detected at a concentration that was above the DL but below the LOQ. All samples associated with this method blank that have detections for Nitrate have been flagged with a "B".

Sulfate
The MS/MSD for batch 46220 and parent sample XF23073-002 (MW106-GW-220622), recovered outside the control limits. The associated LCS passed acceptance criteria.

BOD
The seed correction factor was above the method range of 0.6 to 1.0. The SCF factor generated for BOD_46025 using all passing depletion values is 1.1 mg/L. Results may be biased low. The associated sample, XF23073-002 (MW106-GW-220622), has been flagged with a 7 qualifier.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Sample Summary

Ramboll US Corporation

Lot Number: XF23073

Project Name: Calumet - AOC16 Performance Monitoring

Project Number:

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW41S-GW-220622	Aqueous	06/22/2022 1400	06/23/2022
002	MW106-GW-220622	Aqueous	06/22/2022 1445	06/23/2022
003	MW105-GW-220622	Aqueous	06/22/2022 1545	06/23/2022
004	TB-01-220622	Aqueous	06/22/2022	06/23/2022

(4 samples)

Detection Summary
Ramboll US Corporation
Lot Number: XF23073

Project Name: Calumet - AOC16 Performance Monitoring

Project Number:

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW41S-GW-220622	Aqueous	Benzene	8260D	1200	H	ug/L	9
001	MW41S-GW-220622	Aqueous	Cyclohexane	8260D	22	H	ug/L	9
001	MW41S-GW-220622	Aqueous	Ethylbenzene	8260D	410	H	ug/L	9
001	MW41S-GW-220622	Aqueous	Isopropylbenzene	8260D	16	H	ug/L	9
001	MW41S-GW-220622	Aqueous	Methylcyclohexane	8260D	12	HJ	ug/L	9
001	MW41S-GW-220622	Aqueous	Naphthalene	8260D	77	H	ug/L	9
001	MW41S-GW-220622	Aqueous	Toluene	8260D	180	H	ug/L	9
001	MW41S-GW-220622	Aqueous	Xylenes (total)	8260D	2700	H	ug/L	10
001	MW41S-GW-220622	Aqueous	m+p - Xylenes	8260D	2000	H	ug/L	10
001	MW41S-GW-220622	Aqueous	o - Xylenes	8260D	750	H	ug/L	10
001	MW41S-GW-220622	Aqueous	2,4-Dimethylphenol	8270E	36	JQS	ug/L	11
001	MW41S-GW-220622	Aqueous	Fluorene	8270E	2.3	JQ	ug/L	11
001	MW41S-GW-220622	Aqueous	2-Methylnaphthalene	8270E	33	Q	ug/L	12
001	MW41S-GW-220622	Aqueous	Naphthalene	8270E	60	Q	ug/L	12
001	MW41S-GW-220622	Aqueous	TEH	Montana EPH	5700	Q	ug/L	13
001	MW41S-GW-220622	Aqueous	C9 - C18 Aliphatics	Montana EPH	990		ug/L	14
001	MW41S-GW-220622	Aqueous	TEH, post-fractionation	Montana EPH	5000	B	ug/L	14
001	MW41S-GW-220622	Aqueous	C11 - C22 Aromatics	Montana EPH	4000	Q	ug/L	15
001	MW41S-GW-220622	Aqueous	C5 - C8 Aliphatics,	Montana VPH	990		ug/L	16
001	MW41S-GW-220622	Aqueous	C9 - C12 Aliphatics,	Montana VPH	710	J	ug/L	16
001	MW41S-GW-220622	Aqueous	Benzene	Montana VPH	1100		ug/L	17
001	MW41S-GW-220622	Aqueous	C9 - C10 Aromatics	Montana VPH	3100		ug/L	17
001	MW41S-GW-220622	Aqueous	Ethylbenzene	Montana VPH	420		ug/L	17
001	MW41S-GW-220622	Aqueous	Naphthalene	Montana VPH	100	B	ug/L	17
001	MW41S-GW-220622	Aqueous	Toluene	Montana VPH	170		ug/L	17
001	MW41S-GW-220622	Aqueous	m+p - Xylenes	Montana VPH	1800		ug/L	17
001	MW41S-GW-220622	Aqueous	o - Xylenes	Montana VPH	710		ug/L	17
001	MW41S-GW-220622	Aqueous	TPH	Montana VPH	9800		ug/L	18
002	MW106-GW-220622	Aqueous	Alkalinity @ pH 4.5 su	SM 2320B-	830		mg CaCO3/L	19
002	MW106-GW-220622	Aqueous	BOD, 5 day	SM 5210B-	26	7	mg/L	19
002	MW106-GW-220622	Aqueous	CO2 (calculation)	SM 4500-CO2	810		mg/L	19
002	MW106-GW-220622	Aqueous	Nitrate - N	9056A	4.7	B	mg/L	19
002	MW106-GW-220622	Aqueous	Sulfate	9056A	210	S	mg/L	19
002	MW106-GW-220622	Aqueous	Methane	RSK - 175	62	B	ug/L	27
002	MW106-GW-220622	Aqueous	Dissolved Iron	6020B	130	J	ug/L	31
002	MW106-GW-220622	Aqueous	Dissolved Manganese	6020B	890		ug/L	31
002	MW106-GW-220622	Aqueous	Iron	6020B	15	J	ug/L	32
002	MW106-GW-220622	Aqueous	Manganese	6020B	880		ug/L	32
003	MW105-GW-220622	Aqueous	Benzene	8260D	110		ug/L	33
003	MW105-GW-220622	Aqueous	2-Butanone (MEK)	8260D	3.0	J	ug/L	33
003	MW105-GW-220622	Aqueous	Carbon disulfide	8260D	1.4		ug/L	33
003	MW105-GW-220622	Aqueous	Cyclohexane	8260D	50		ug/L	33
003	MW105-GW-220622	Aqueous	Ethylbenzene	8260D	200		ug/L	33

Detection Summary (Continued)

Lot Number: XF23073

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
003	MW105-GW-220622	Aqueous	Isopropylbenzene	8260D	2.9		ug/L	33
003	MW105-GW-220622	Aqueous	Methylcyclohexane	8260D	14		ug/L	33
003	MW105-GW-220622	Aqueous	Naphthalene	8260D	4.9		ug/L	33
003	MW105-GW-220622	Aqueous	Toluene	8260D	12		ug/L	33
003	MW105-GW-220622	Aqueous	Xylenes (total)	8260D	31		ug/L	34
003	MW105-GW-220622	Aqueous	m+p - Xylenes	8260D	28		ug/L	34
003	MW105-GW-220622	Aqueous	o - Xylenes	8260D	3.9		ug/L	34
003	MW105-GW-220622	Aqueous	Naphthalene	8270E	2.1		ug/L	36
003	MW105-GW-220622	Aqueous	Methane	RSK - 175	55	B	ug/L	37
003	MW105-GW-220622	Aqueous	C5 - C8 Aliphatics,	Montana VPH	830		ug/L	38
003	MW105-GW-220622	Aqueous	C9 - C12 Aliphatics,	Montana VPH	37	J	ug/L	38
003	MW105-GW-220622	Aqueous	Benzene	Montana VPH	86		ug/L	39
003	MW105-GW-220622	Aqueous	C9 - C10 Aromatics	Montana VPH	150		ug/L	39
003	MW105-GW-220622	Aqueous	Ethylbenzene	Montana VPH	100		ug/L	39
003	MW105-GW-220622	Aqueous	Naphthalene	Montana VPH	3.3	BJ	ug/L	39
003	MW105-GW-220622	Aqueous	Toluene	Montana VPH	8.2		ug/L	39
003	MW105-GW-220622	Aqueous	m+p - Xylenes	Montana VPH	21		ug/L	39
003	MW105-GW-220622	Aqueous	o - Xylenes	Montana VPH	4.0	J	ug/L	39
003	MW105-GW-220622	Aqueous	TPH	Montana VPH	1100		ug/L	40

(62 detections)

Volatile Organic Compounds by GC/MS

Client: Ramboll US Corporation
Laboratory ID: XF23073-001
Description: MW41S-GW-220622
Matrix: Aqueous
Date Sampled: 06/22/2022 1400
Project Name: Calumet - AOC16
Date Received: 06/23/2022
Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	20	07/06/2022 2135	BBW		47150
2	5030B	8260D	20	07/09/2022 1841	BBW		47499

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	300		200	80	ug/L	1
Benzene	71-43-2	8260D	1400		10	8.0	ug/L	1
Bromochloromethane	74-97-5	8260D	ND		10	8.0	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND		10	8.0	ug/L	1
Bromoform	75-25-2	8260D	ND		10	8.0	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND		10	8.0	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND		200	40	ug/L	1
Carbon disulfide	75-15-0	8260D	ND		10	8.0	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND		10	8.0	ug/L	1
Chlorobenzene	108-90-7	8260D	ND		10	8.0	ug/L	1
Chloroethane	75-00-3	8260D	ND		10	8.0	ug/L	1
Chloroform	67-66-3	8260D	ND		10	8.0	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND		10	8.0	ug/L	1
Cyclohexane	110-82-7	8260D	60		10	8.0	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND		10	8.0	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND		10	8.0	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND		10	8.0	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND		10	8.0	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND		10	8.0	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND		10	8.0	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND		10	8.0	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND		10	8.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		10	8.0	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND		10	8.0	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	ND		10	8.0	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND		10	8.0	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND		10	8.0	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND		10	8.0	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND		10	8.0	ug/L	1
1,4-Dioxane	123-91-1	8260D	ND		400	270	ug/L	1
Ethylbenzene	100-41-4	8260D	410		10	8.0	ug/L	1
2-Hexanone	591-78-6	8260D	ND		200	40	ug/L	1
Isopropylbenzene	98-82-8	8260D	15		10	8.0	ug/L	1
Methyl acetate	79-20-9	8260D	27		20	8.0	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		10	8.0	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND		200	40	ug/L	1
Methylcyclohexane	108-87-2	8260D	29	J	100	8.0	ug/L	1
Methylene chloride	75-09-2	8260D	ND		10	8.0	ug/L	1
Naphthalene	91-20-3	8260D	74		10	8.0	ug/L	1
Styrene	100-42-5	8260D	ND		10	8.2	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND		10	8.0	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND		10	8.0	ug/L	1
Toluene	108-88-3	8260D	180		10	8.0	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Volatile Organic Compounds by GC/MS

Client: Ramboll US Corporation			Laboratory ID: XF23073-001
Description: MW41S-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1400	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	20	07/06/2022 2135	BBW		47150
2	5030B	8260D	20	07/09/2022 1841	BBW		47499

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND		20	8.4	ug/L	1
1,2,3-Trichlorobenzene	87-61-6	8260D	ND		10	8.0	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND		10	8.0	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND		10	8.0	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND		10	8.0	ug/L	1
Trichloroethene	79-01-6	8260D	ND		10	8.0	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	ND		10	8.0	ug/L	1
Vinyl chloride	75-01-4	8260D	ND		10	8.0	ug/L	1
Xylenes (total)	1330-20-7	8260D	3000		20	8.0	ug/L	1
m+p - Xylenes	179601-23-1	8260D	2200		10	8.0	ug/L	1
o - Xylenes	95-47-6	8260D	800		10	8.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene		104	70-130	H	111	70-130
1,2-Dichloroethane-d4		110	70-130	H	105	70-130
Toluene-d8		106	70-130	H	103	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: Ramboll US Corporation
Laboratory ID: XF23073-001
Description: MW41S-GW-220622
Matrix: Aqueous
Date Sampled: 06/22/2022 1400
Project Name: Calumet - AOC16
Date Received: 06/23/2022
Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	20	07/06/2022 2135	BBW		47150
2	5030B	8260D	20	07/09/2022 1841	BBW		47499

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND	H	200	80	ug/L	2
Benzene	71-43-2	8260D	1200	H	10	8.0	ug/L	2
Bromochloromethane	74-97-5	8260D	ND	H	10	8.0	ug/L	2
Bromodichloromethane	75-27-4	8260D	ND	H	10	8.0	ug/L	2
Bromoform	75-25-2	8260D	ND	HL	10	8.0	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	H	10	8.0	ug/L	2
2-Butanone (MEK)	78-93-3	8260D	ND	H	200	40	ug/L	2
Carbon disulfide	75-15-0	8260D	ND	H	10	8.0	ug/L	2
Carbon tetrachloride	56-23-5	8260D	ND	H	10	8.0	ug/L	2
Chlorobenzene	108-90-7	8260D	ND	H	10	8.0	ug/L	2
Chloroethane	75-00-3	8260D	ND	H	10	8.0	ug/L	2
Chloroform	67-66-3	8260D	ND	H	10	8.0	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	H	10	8.0	ug/L	2
Cyclohexane	110-82-7	8260D	22	H	10	8.0	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	HL	10	8.0	ug/L	2
Dibromochloromethane	124-48-1	8260D	ND	H	10	8.0	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	H	10	8.0	ug/L	2
1,2-Dichlorobenzene	95-50-1	8260D	ND	H	10	8.0	ug/L	2
1,3-Dichlorobenzene	541-73-1	8260D	ND	H	10	8.0	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260D	ND	H	10	8.0	ug/L	2
Dichlorodifluoromethane	75-71-8	8260D	ND	H	10	8.0	ug/L	2
1,1-Dichloroethane	75-34-3	8260D	ND	H	10	8.0	ug/L	2
1,2-Dichloroethane	107-06-2	8260D	ND	H	10	8.0	ug/L	2
1,1-Dichloroethene	75-35-4	8260D	ND	H	10	8.0	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260D	ND	H	10	8.0	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260D	ND	H	10	8.0	ug/L	2
1,2-Dichloropropane	78-87-5	8260D	ND	H	10	8.0	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	H	10	8.0	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	H	10	8.0	ug/L	2
1,4-Dioxane	123-91-1	8260D	ND	H	400	270	ug/L	2
Ethylbenzene	100-41-4	8260D	410	H	10	8.0	ug/L	2
2-Hexanone	591-78-6	8260D	ND	H	200	40	ug/L	2
Isopropylbenzene	98-82-8	8260D	16	H	10	8.0	ug/L	2
Methyl acetate	79-20-9	8260D	ND	H	20	8.0	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	H	10	8.0	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260D	ND	H	200	40	ug/L	2
Methylcyclohexane	108-87-2	8260D	12	HJ	100	8.0	ug/L	2
Methylene chloride	75-09-2	8260D	ND	H	10	8.0	ug/L	2
Naphthalene	91-20-3	8260D	77	H	10	8.0	ug/L	2
Styrene	100-42-5	8260D	ND	H	10	8.2	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	H	10	8.0	ug/L	2
Tetrachloroethene	127-18-4	8260D	ND	H	10	8.0	ug/L	2
Toluene	108-88-3	8260D	180	H	10	8.0	ug/L	2

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: Ramboll US Corporation	Laboratory ID: XF23073-001
Description: MW41S-GW-220622	Matrix: Aqueous
Date Sampled: 06/22/2022 1400	Project Name: Calumet - AOC16
Date Received: 06/23/2022	Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	20	07/06/2022 2135	BBW		47150
2	5030B	8260D	20	07/09/2022 1841	BBW		47499

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	H	20	8.4	ug/L	2
1,2,3-Trichlorobenzene	87-61-6	8260D	ND	H	10	8.0	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	H	10	8.0	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260D	ND	H	10	8.0	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260D	ND	H	10	8.0	ug/L	2
Trichloroethene	79-01-6	8260D	ND	H	10	8.0	ug/L	2
Trichlorofluoromethane	75-69-4	8260D	ND	H	10	8.0	ug/L	2
Vinyl chloride	75-01-4	8260D	ND	H	10	8.0	ug/L	2
Xylenes (total)	1330-20-7	8260D	2700	H	20	8.0	ug/L	2
m+p - Xylenes	179601-23-1	8260D	2000	H	10	8.0	ug/L	2
o - Xylenes	95-47-6	8260D	750	H	10	8.0	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene		104	70-130	H	111	70-130
1,2-Dichloroethane-d4		110	70-130	H	105	70-130
Toluene-d8		106	70-130	H	103	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Semivolatile Organic Compounds by GC/MS

Client: Ramboll US Corporation
Laboratory ID: XF23073-001
Description: MW41S-GW-220622
Matrix: Aqueous
Date Sampled: 06/22/2022 1400
Project Name: Calumet - AOC16
Date Received: 06/23/2022
Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	50	07/02/2022 1853	SCD	06/27/2022 1107	46231

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270E	ND	Q	10	2.0	ug/L	1
Acenaphthylene	208-96-8	8270E	ND	Q	10	2.0	ug/L	1
Anthracene	120-12-7	8270E	ND	Q	10	3.0	ug/L	1
Benzo(a)anthracene	56-55-3	8270E	ND	Q	10	2.0	ug/L	1
Benzo(a)pyrene	50-32-8	8270E	ND	Q	10	3.5	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270E	ND	Q	10	2.0	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270E	ND	Q	10	2.0	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270E	ND	Q	10	2.0	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270E	ND	QS	40	25	ug/L	1
Butyl benzyl phthalate	85-68-7	8270E	ND	QS	40	25	ug/L	1
Carbazole	86-74-8	8270E	ND	Q	40	25	ug/L	1
bis (2-Chloro-1-methylethyl) ether	108-60-1	8270E	ND	Q	40	25	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270E	ND	QS	40	25	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270E	ND	QS	40	25	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270E	ND	QS	40	25	ug/L	1
2-Chloronaphthalene	91-58-7	8270E	ND	QS	40	25	ug/L	1
2-Chlorophenol	95-57-8	8270E	ND	QS	40	25	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270E	ND	QS	40	25	ug/L	1
Chrysene	218-01-9	8270E	ND	Q	10	1.5	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270E	ND	Q	10	1.5	ug/L	1
Dibenzofuran	132-64-9	8270E	ND	QS	40	25	ug/L	1
1,2-Dichlorobenzene	95-50-1	8270E	ND	QS	40	25	ug/L	1
1,3-Dichlorobenzene	541-73-1	8270E	ND	QS	40	25	ug/L	1
1,4-Dichlorobenzene	106-46-7	8270E	ND	QS	40	25	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270E	ND	QS	200	88	ug/L	1
2,4-Dichlorophenol	120-83-2	8270E	ND	QS	80	13	ug/L	1
Diethylphthalate	84-66-2	8270E	ND	QS	40	25	ug/L	1
Dimethyl phthalate	131-11-3	8270E	ND	QS	40	25	ug/L	1
2,4-Dimethylphenol	105-67-9	8270E	36	JQS	40	24	ug/L	1
Di-n-butyl phthalate	84-74-2	8270E	ND	QS	40	25	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270E	ND	QS	200	50	ug/L	1
2,4-Dinitrophenol	51-28-5	8270E	ND	QS	200	50	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270E	ND	QS	80	25	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270E	ND	QS	80	25	ug/L	1
Di-n-octylphthalate	117-84-0	8270E	ND	QS	40	25	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270E	ND	QS	200	100	ug/L	1
Fluoranthene	206-44-0	8270E	ND	Q	10	5.0	ug/L	1
Fluorene	86-73-7	8270E	2.3	JQ	10	1.5	ug/L	1
Hexachlorobenzene	118-74-1	8270E	ND	QS	40	25	ug/L	1
Hexachlorobutadiene	87-68-3	8270E	ND	QS	40	25	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270E	ND	QS	200	100	ug/L	1
Hexachloroethane	67-72-1	8270E	ND	QS	40	16	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270E	ND	Q	10	2.0	ug/L	1
Isophorone	78-59-1	8270E	ND	QS	40	25	ug/L	1

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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Semivolatile Organic Compounds by GC/MS

Client: Ramboll US Corporation
Laboratory ID: XF23073-001
Description: MW41S-GW-220622
Matrix: Aqueous
Date Sampled: 06/22/2022 1400
Project Name: Calumet - AOC16
Date Received: 06/23/2022
Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	50	07/02/2022 1853	SCD	06/27/2022 1107	46231

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
2-Methylnaphthalene	91-57-6	8270E	33	Q	10	2.0	ug/L	1
2-Methylphenol	95-48-7	8270E	ND	Q	40	11	ug/L	1
3+4-Methylphenol	106-44-5	8270E	ND	QS	80	75	ug/L	1
Naphthalene	91-20-3	8270E	60	Q	10	2.5	ug/L	1
2-Nitroaniline	88-74-4	8270E	ND	QS	80	25	ug/L	1
3-Nitroaniline	99-09-2	8270E	ND	QS	80	50	ug/L	1
4-Nitroaniline	100-01-6	8270E	ND	QS	80	75	ug/L	1
Nitrobenzene	98-95-3	8270E	ND	QS	40	28	ug/L	1
2-Nitrophenol	88-75-5	8270E	ND	QS	80	50	ug/L	1
4-Nitrophenol	100-02-7	8270E	ND	QS	200	100	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270E	ND	QS	40	25	ug/L	1
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270E	ND	QS	40	25	ug/L	1
Pentachlorophenol	87-86-5	8270E	ND	Q	200	100	ug/L	1
Phenanthrene	85-01-8	8270E	ND	Q	10	3.0	ug/L	1
Phenol	108-95-2	8270E	ND	Q	40	25	ug/L	1
Pyrene	129-00-0	8270E	ND	Q	10	5.0	ug/L	1
1,2,4,5-Tetrachlorobenzene	95-94-3	8270E	ND	QS	40	13	ug/L	1
2,3,4,6-Tetrachlorophenol	58-90-2	8270E	ND	QS	80	28	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8270E	ND	QS	40	19	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270E	ND	QS	40	25	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270E	ND	QS	40	25	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Fluorobiphenyl		78	37-129
2-Fluorophenol		41	24-127
Nitrobenzene-d5	N	144	38-127
Phenol-d5		43	28-128
Terphenyl-d14		79	10-148
2,4,6-Tribromophenol	N	299	35-144

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana EPH (screening)

Client: Ramboll US Corporation			Laboratory ID: XF23073-001
Description: MW41S-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1400	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	Montana EPH	Montana EPH	10	07/12/2022 1218	NCM	06/30/2022 1150	46678

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
TEH		Montana EPH	5700	Q	2000	2000	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Bromonaphthalene (fractionation 2)	N	162	40-140
1-Chloro-octadecane (aliphatic)		77	40-140
2-Fluorobiphenyl (fractionation 1)		86	40-140
o - Terphenyl (aromatic)		82	40-140

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana EPH (aliphatics)

Client: Ramboll US Corporation			Laboratory ID: XF23073-001
Description: MW41S-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1400	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	Montana EPH	Montana EPH	1	07/12/2022 1238	NCM	06/30/2022 1150	46731

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
C19 - C36 Aliphatics		Montana EPH	ND		100	100	ug/L	1
C9 - C18 Aliphatics		Montana EPH	990		100	100	ug/L	1
TEH, post-fractionation	68334-30-5S	Montana EPH	5000	B	200	100	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1-Chloro-octadecane (aliphatic)		61	40-140

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana EPH (aromatics)

Client: Ramboll US Corporation			Laboratory ID: XF23073-001
Description: MW41S-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1400	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	Montana EPH	Montana EPH	1	07/12/2022 1258	NCM	06/30/2022 1150	46732

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
C11 - C22 Aromatics		Montana EPH	4000	Q	100	100	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Bromonaphthalene (fractionation 2)	N	176	40-140
2-Fluorobiphenyl (fractionation 1)	N	0.00	40-140
o - Terphenyl (aromatic)		77	40-140

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana VPH (aliphatics)

Client: Ramboll US Corporation			Laboratory ID: XF23073-001
Description: MW41S-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1400	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	VPH	Montana VPH	10	06/24/2022 2012	ECB		46252

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
C5 - C8 Aliphatics, Adjusted		Montana VPH	990		750	150	ug/L	1
C9 - C12 Aliphatics, Adjusted		Montana VPH	710	J	750	150	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2,5-Dibromotoluene (FID)		104	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana VPH (aromatics)

Client: Ramboll US Corporation			Laboratory ID: XF23073-001
Description: MW41S-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1400	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	VPH	Montana VPH	10	06/24/2022 2012	ECB		46251

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Benzene	71-43-2	Montana VPH	1100		50	5.1	ug/L	1
C9 - C10 Aromatics		Montana VPH	3100		250	50	ug/L	1
Ethylbenzene	100-41-4	Montana VPH	420		50	6.2	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	Montana VPH	ND		50	12	ug/L	1
Naphthalene	91-20-3	Montana VPH	100	B	50	7.0	ug/L	1
Toluene	108-88-3	Montana VPH	170		50	5.3	ug/L	1
m+p - Xylenes	179601-23-1	Montana VPH	1800		50	12	ug/L	1
o - Xylenes	95-47-6	Montana VPH	710		50	5.8	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2,5-Dibromotoluene (PID)		110	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana VPH (TPH)

Client: Ramboll US Corporation			Laboratory ID: XF23073-001
Description: MW41S-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1400	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	VPH	Montana VPH	10	06/24/2022 2012	ECB		46254

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
TPH		Montana VPH	9800		1800	350	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2,5-Dibromotoluene (FID)		98	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Inorganic non-metals

Client: Ramboll US Corporation			Laboratory ID: XF23073-002
Description: MW106-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1445	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Alkalinity @) SM 2320B-2011	1	06/28/2022 2315	TAD		46698
1		(BOD, 5 day) SM 5210B-2011	1	06/28/2022 2340	CLL	06/24/2022 0019	46025
1		(CO2 (calcula) SM 4500-CO2 D	1	06/28/2022 2315	TAD		
2		(Nitrate - N) 9056A	1	06/24/2022 1131	BMG2		46217
1		(Sulfate) 9056A	50	06/25/2022 0416	BMG2		46220

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Alkalinity @ pH 4.5 su		SM 2320B-2011	830		20	20	mg CaCO3/L	1
BOD, 5 day		SM 5210B-2011	26	7	2.0	0.18	mg/L	1
CO2 (calculation)	124-38-9	SM 4500-CO2 D	810		27	27	mg/L	1
Nitrate - N		9056A	4.7	B	0.020	0.0050	mg/L	2
Sulfate		9056A	210	S	50	13	mg/L	1

Footnote(s): 7-SCF Out of range

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: Ramboll US Corporation
Laboratory ID: XF23073-002
Description: MW106-GW-220622
Matrix: Aqueous
Date Sampled: 06/22/2022 1445
Project Name: Calumet - AOC16
Date Received: 06/23/2022
Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	06/30/2022 1535	BBW		46684

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND		10	4.0	ug/L	1
Benzene	71-43-2	8260D	ND		0.50	0.40	ug/L	1
Bromochloromethane	74-97-5	8260D	ND		0.50	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND		0.50	0.40	ug/L	1
Bromoform	75-25-2	8260D	ND		0.50	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND		0.50	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND		10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	ND		0.50	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND		0.50	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	ND		0.50	0.40	ug/L	1
Chloroethane	75-00-3	8260D	ND		0.50	0.40	ug/L	1
Chloroform	67-66-3	8260D	ND		0.50	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND		0.50	0.40	ug/L	1
Cyclohexane	110-82-7	8260D	ND		0.50	0.40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND		0.50	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND		0.50	0.40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND		0.50	0.40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND		0.50	0.40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND		0.50	0.40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND		0.50	0.40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND		0.50	0.40	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND		0.50	0.40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		0.50	0.40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND		0.50	0.40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	ND		0.50	0.40	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND		0.50	0.40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND		0.50	0.40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND		0.50	0.40	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND		0.50	0.40	ug/L	1
1,4-Dioxane	123-91-1	8260D	ND		20	13	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		0.50	0.40	ug/L	1
2-Hexanone	591-78-6	8260D	ND		10	2.0	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND		0.50	0.40	ug/L	1
Methyl acetate	79-20-9	8260D	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		0.50	0.40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND		10	2.0	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND		5.0	0.40	ug/L	1
Methylene chloride	75-09-2	8260D	ND		0.50	0.40	ug/L	1
Naphthalene	91-20-3	8260D	ND		0.50	0.40	ug/L	1
Styrene	100-42-5	8260D	ND		0.50	0.41	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND		0.50	0.40	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND		0.50	0.40	ug/L	1
Toluene	108-88-3	8260D	ND		0.50	0.40	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND		1.0	0.42	ug/L	1

Footnote(s): 7-SCF Out of range

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: Ramboll US Corporation	Laboratory ID: XF23073-002
Description: MW106-GW-220622	Matrix: Aqueous
Date Sampled: 06/22/2022 1445	Project Name: Calumet - AOC16
Date Received: 06/23/2022	Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	06/30/2022 1535	BBW		46684

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2,3-Trichlorobenzene	87-61-6	8260D	ND		0.50	0.40	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND		0.50	0.40	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND		0.50	0.40	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND		0.50	0.40	ug/L	1
Trichloroethene	79-01-6	8260D	ND		0.50	0.40	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	ND		0.50	0.40	ug/L	1
Vinyl chloride	75-01-4	8260D	ND		0.50	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND		1.0	0.40	ug/L	1
m+p - Xylenes	179601-23-1	8260D	ND		0.50	0.40	ug/L	1
o - Xylenes	95-47-6	8260D	ND		0.50	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		101	70-130
1,2-Dichloroethane-d4		92	70-130
Toluene-d8		98	70-130

Footnote(s): 7-SCF Out of range

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Semivolatile Organic Compounds by GC/MS

Client: Ramboll US Corporation
Laboratory ID: XF23073-002
Description: MW106-GW-220622
Matrix: Aqueous
Date Sampled: 06/22/2022 1445
Project Name: Calumet - AOC16
Date Received: 06/23/2022
Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	5	07/01/2022 2352	SCD	06/27/2022 1107	46231

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270E	ND		1.0	0.20	ug/L	1
Acenaphthylene	208-96-8	8270E	ND		1.0	0.20	ug/L	1
Anthracene	120-12-7	8270E	ND		1.0	0.30	ug/L	1
Benzo(a)anthracene	56-55-3	8270E	ND		1.0	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270E	ND		1.0	0.35	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270E	ND		1.0	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270E	ND		1.0	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270E	ND		1.0	0.20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270E	ND		4.0	2.5	ug/L	1
Butyl benzyl phthalate	85-68-7	8270E	ND		4.0	2.5	ug/L	1
Carbazole	86-74-8	8270E	ND		4.0	2.5	ug/L	1
bis (2-Chloro-1-methylethyl) ether	108-60-1	8270E	ND		4.0	2.5	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270E	ND		4.0	2.5	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270E	ND		4.0	2.5	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270E	ND		4.0	2.5	ug/L	1
2-Chloronaphthalene	91-58-7	8270E	ND		4.0	2.5	ug/L	1
2-Chlorophenol	95-57-8	8270E	ND		4.0	2.5	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270E	ND		4.0	2.5	ug/L	1
Chrysene	218-01-9	8270E	ND		1.0	0.15	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270E	ND		1.0	0.15	ug/L	1
Dibenzofuran	132-64-9	8270E	ND		4.0	2.5	ug/L	1
1,2-Dichlorobenzene	95-50-1	8270E	ND		4.0	2.5	ug/L	1
1,3-Dichlorobenzene	541-73-1	8270E	ND		4.0	2.5	ug/L	1
1,4-Dichlorobenzene	106-46-7	8270E	ND		4.0	2.5	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270E	ND		20	8.8	ug/L	1
2,4-Dichlorophenol	120-83-2	8270E	ND		8.0	1.3	ug/L	1
Diethylphthalate	84-66-2	8270E	ND		4.0	2.5	ug/L	1
Dimethyl phthalate	131-11-3	8270E	ND		4.0	2.5	ug/L	1
2,4-Dimethylphenol	105-67-9	8270E	ND		4.0	2.4	ug/L	1
Di-n-butyl phthalate	84-74-2	8270E	ND		4.0	2.5	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270E	ND		20	5.0	ug/L	1
2,4-Dinitrophenol	51-28-5	8270E	ND		20	5.0	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270E	ND		8.0	2.5	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270E	ND		8.0	2.5	ug/L	1
Di-n-octylphthalate	117-84-0	8270E	ND		4.0	2.5	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270E	ND		20	10	ug/L	1
Fluoranthene	206-44-0	8270E	ND		1.0	0.50	ug/L	1
Fluorene	86-73-7	8270E	ND		1.0	0.15	ug/L	1
Hexachlorobenzene	118-74-1	8270E	ND		4.0	2.5	ug/L	1
Hexachlorobutadiene	87-68-3	8270E	ND		4.0	2.5	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270E	ND		20	10	ug/L	1
Hexachloroethane	67-72-1	8270E	ND		4.0	1.6	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270E	ND		1.0	0.20	ug/L	1
Isophorone	78-59-1	8270E	ND		4.0	2.5	ug/L	1

Footnote(s): 7-SCF Out of range

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Semivolatile Organic Compounds by GC/MS

Client: Ramboll US Corporation	Laboratory ID: XF23073-002
Description: MW106-GW-220622	Matrix: Aqueous
Date Sampled: 06/22/2022 1445	Project Name: Calumet - AOC16
Date Received: 06/23/2022	Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	5	07/01/2022 2352	SCD	06/27/2022 1107	46231

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
2-Methylnaphthalene	91-57-6	8270E	ND		1.0	0.20	ug/L	1
2-Methylphenol	95-48-7	8270E	ND		4.0	1.1	ug/L	1
3+4-Methylphenol	106-44-5	8270E	ND		8.0	7.5	ug/L	1
Naphthalene	91-20-3	8270E	ND		1.0	0.25	ug/L	1
2-Nitroaniline	88-74-4	8270E	ND		8.0	2.5	ug/L	1
3-Nitroaniline	99-09-2	8270E	ND		8.0	5.0	ug/L	1
4-Nitroaniline	100-01-6	8270E	ND		8.0	7.5	ug/L	1
Nitrobenzene	98-95-3	8270E	ND		4.0	2.8	ug/L	1
2-Nitrophenol	88-75-5	8270E	ND		8.0	5.0	ug/L	1
4-Nitrophenol	100-02-7	8270E	ND		20	10	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270E	ND		4.0	2.5	ug/L	1
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270E	ND		4.0	2.5	ug/L	1
Pentachlorophenol	87-86-5	8270E	ND		20	10	ug/L	1
Phenanthrene	85-01-8	8270E	ND		1.0	0.30	ug/L	1
Phenol	108-95-2	8270E	ND		4.0	2.5	ug/L	1
Pyrene	129-00-0	8270E	ND		1.0	0.50	ug/L	1
1,2,4,5-Tetrachlorobenzene	95-94-3	8270E	ND		4.0	1.3	ug/L	1
2,3,4,6-Tetrachlorophenol	58-90-2	8270E	ND		8.0	2.8	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8270E	ND		4.0	1.9	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270E	ND		4.0	2.5	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270E	ND		4.0	2.5	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Fluorobiphenyl		63	37-129
2-Fluorophenol		33	24-127
Nitrobenzene-d5		54	38-127
Phenol-d5		38	28-128
Terphenyl-d14		50	10-148
2,4,6-Tribromophenol		65	35-144

Footnote(s): 7-SCF Out of range

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana EPH (screening)

Client: Ramboll US Corporation	Laboratory ID: XF23073-002
Description: MW106-GW-220622	Matrix: Aqueous
Date Sampled: 06/22/2022 1445	Project Name: Calumet - AOC16
Date Received: 06/23/2022	Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	Montana EPH	Montana EPH	1	07/05/2022 1514	NCM	06/30/2022 1150	46678

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
TEH		Montana EPH	ND		200	200	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Bromonaphthalene (fractionation 2)		103	40-140
1-Chloro-octadecane (aliphatic)		87	40-140
2-Fluorobiphenyl (fractionation 1)		103	40-140
o - Terphenyl (aromatic)		83	40-140

Footnote(s): 7-SCF Out of range

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana EPH (aliphatics)

Client: Ramboll US Corporation			Laboratory ID: XF23073-002
Description: MW106-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1445	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	Montana EPH	Montana EPH	1	07/12/2022 1248	NCM	06/30/2022 1150	46731

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
C19 - C36 Aliphatics		Montana EPH	ND		100	100	ug/L	1
C9 - C18 Aliphatics		Montana EPH	ND		100	100	ug/L	1
TEH, post-fractionation	68334-30-5S	Montana EPH	ND		200	100	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1-Chloro-octadecane (aliphatic)		74	40-140

Footnote(s): 7-SCF Out of range

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana EPH (aromatics)

Client: Ramboll US Corporation	Laboratory ID: XF23073-002
Description: MW106-GW-220622	Matrix: Aqueous
Date Sampled: 06/22/2022 1445	Project Name: Calumet - AOC16
Date Received: 06/23/2022	Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	Montana EPH	Montana EPH	1	07/12/2022 1308	NCM	06/30/2022 1150	46732

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
C11 - C22 Aromatics		Montana EPH	ND		100	100	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Bromonaphthalene (fractionation 2)		76	40-140
2-Fluorobiphenyl (fractionation 1)		77	40-140
o - Terphenyl (aromatic)		64	40-140

Footnote(s): 7-SCF Out of range

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Methane

Client: Ramboll US Corporation			Laboratory ID: XF23073-002
Description: MW106-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1445	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	07/01/2022 1048	JM1		46690

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Methane	74-82-8	RSK - 175	62	B	10	2.5	ug/L	1

Footnote(s): 7-SCF Out of range

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana VPH (aliphatics)

Client: Ramboll US Corporation			Laboratory ID: XF23073-002
Description: MW106-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1445	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	VPH	Montana VPH	1	06/28/2022 1516	ECB		46444

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
C5 - C8 Aliphatics, Adjusted		Montana VPH	ND		75	15	ug/L	2
C9 - C12 Aliphatics, Adjusted		Montana VPH	ND		75	15	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
2,5-Dibromotoluene (FID)		92	70-130

Footnote(s): 7-SCF Out of range

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana VPH (aromatics)

Client: Ramboll US Corporation			Laboratory ID: XF23073-002
Description: MW106-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1445	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	VPH	Montana VPH	1	06/28/2022 1516	ECB		46443

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Benzene	71-43-2	Montana VPH	ND		5.0	0.51	ug/L	2
C9 - C10 Aromatics		Montana VPH	ND		25	5.0	ug/L	2
Ethylbenzene	100-41-4	Montana VPH	ND		5.0	0.62	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	Montana VPH	ND		5.0	1.2	ug/L	2
Naphthalene	91-20-3	Montana VPH	ND		5.0	0.70	ug/L	2
Toluene	108-88-3	Montana VPH	ND		5.0	0.53	ug/L	2
m+p - Xylenes	179601-23-1	Montana VPH	ND		5.0	1.2	ug/L	2
o - Xylenes	95-47-6	Montana VPH	ND		5.0	0.58	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
2,5-Dibromotoluene (PID)		89	70-130

Footnote(s): 7-SCF Out of range

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana VPH (TPH)

Client: Ramboll US Corporation			Laboratory ID: XF23073-002
Description: MW106-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1445	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	VPH	Montana VPH	1	06/28/2022 1516	ECB		46446

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
TPH		Montana VPH	ND		180	35	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
2,5-Dibromotoluene (FID)		95	70-130

Footnote(s): 7-SCF Out of range

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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ICP-MS

Client: Ramboll US Corporation			Laboratory ID: XF23073-002
Description: MW106-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1445	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
3	3005A	6020B	10	07/06/2022 1153	BNW	06/29/2022 1340	46558

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Dissolved Iron	7439-89-6	6020B	130	J	500	130	ug/L	3
Dissolved Manganese	7439-96-5	6020B	890		50	13	ug/L	3

Footnote(s): 7-SCF Out of range

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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ICP-MS Metals

Client: Ramboll US Corporation			Laboratory ID: XF23073-002
Description: MW106-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1445	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6020B	1	07/02/2022 2325	BPK	06/24/2022 1234	46079

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Iron	7439-89-6	6020B	15	J	50	13	ug/L	1
Manganese	7439-96-5	6020B	880		5.0	1.3	ug/L	1

Footnote(s): 7-SCF Out of range

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: Ramboll US Corporation
Laboratory ID: XF23073-003
Description: MW105-GW-220622
Matrix: Aqueous
Date Sampled: 06/22/2022 1545
Project Name: Calumet - AOC16
Date Received: 06/23/2022
Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	07/01/2022 0431	SDC		46782

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND		10	4.0	ug/L	1
Benzene	71-43-2	8260D	110		0.50	0.40	ug/L	1
Bromochloromethane	74-97-5	8260D	ND		0.50	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND		0.50	0.40	ug/L	1
Bromoform	75-25-2	8260D	ND		0.50	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND		0.50	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	3.0	J	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	1.4		0.50	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND		0.50	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	ND		0.50	0.40	ug/L	1
Chloroethane	75-00-3	8260D	ND		0.50	0.40	ug/L	1
Chloroform	67-66-3	8260D	ND		0.50	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND		0.50	0.40	ug/L	1
Cyclohexane	110-82-7	8260D	50		0.50	0.40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND		0.50	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND		0.50	0.40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND		0.50	0.40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND		0.50	0.40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND		0.50	0.40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND		0.50	0.40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND		0.50	0.40	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND		0.50	0.40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		0.50	0.40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND		0.50	0.40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	ND		0.50	0.40	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND		0.50	0.40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND		0.50	0.40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND		0.50	0.40	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND		0.50	0.40	ug/L	1
1,4-Dioxane	123-91-1	8260D	ND		20	13	ug/L	1
Ethylbenzene	100-41-4	8260D	200		0.50	0.40	ug/L	1
2-Hexanone	591-78-6	8260D	ND		10	2.0	ug/L	1
Isopropylbenzene	98-82-8	8260D	2.9		0.50	0.40	ug/L	1
Methyl acetate	79-20-9	8260D	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		0.50	0.40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND		10	2.0	ug/L	1
Methylcyclohexane	108-87-2	8260D	14		5.0	0.40	ug/L	1
Methylene chloride	75-09-2	8260D	ND		0.50	0.40	ug/L	1
Naphthalene	91-20-3	8260D	4.9		0.50	0.40	ug/L	1
Styrene	100-42-5	8260D	ND		0.50	0.41	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND		0.50	0.40	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND		0.50	0.40	ug/L	1
Toluene	108-88-3	8260D	12		0.50	0.40	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND		1.0	0.42	ug/L	1

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: Ramboll US Corporation			Laboratory ID: XF23073-003
Description: MW105-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1545	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	07/01/2022 0431	SDC		46782

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2,3-Trichlorobenzene	87-61-6	8260D	ND		0.50	0.40	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND		0.50	0.40	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND		0.50	0.40	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND		0.50	0.40	ug/L	1
Trichloroethene	79-01-6	8260D	ND		0.50	0.40	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	ND		0.50	0.40	ug/L	1
Vinyl chloride	75-01-4	8260D	ND		0.50	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	31		1.0	0.40	ug/L	1
m+p - Xylenes	179601-23-1	8260D	28		0.50	0.40	ug/L	1
o - Xylenes	95-47-6	8260D	3.9		0.50	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		97	70-130
1,2-Dichloroethane-d4		89	70-130
Toluene-d8		97	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Semivolatile Organic Compounds by GC/MS

Client: Ramboll US Corporation
Laboratory ID: XF23073-003
Description: MW105-GW-220622
Matrix: Aqueous
Date Sampled: 06/22/2022 1545
Project Name: Calumet - AOC16
Date Received: 06/23/2022
Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	5	07/02/2022 0018	SCD	06/27/2022 1107	46231

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270E	ND		1.3	0.25	ug/L	1
Acenaphthylene	208-96-8	8270E	ND		1.3	0.25	ug/L	1
Anthracene	120-12-7	8270E	ND		1.3	0.38	ug/L	1
Benzo(a)anthracene	56-55-3	8270E	ND		1.3	0.25	ug/L	1
Benzo(a)pyrene	50-32-8	8270E	ND		1.3	0.44	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270E	ND		1.3	0.25	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270E	ND		1.3	0.25	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270E	ND		1.3	0.25	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270E	ND		5.0	3.1	ug/L	1
Butyl benzyl phthalate	85-68-7	8270E	ND		5.0	3.1	ug/L	1
Carbazole	86-74-8	8270E	ND		5.0	3.1	ug/L	1
bis (2-Chloro-1-methylethyl) ether	108-60-1	8270E	ND		5.0	3.1	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270E	ND		5.0	3.1	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270E	ND		5.0	3.1	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270E	ND		5.0	3.1	ug/L	1
2-Chloronaphthalene	91-58-7	8270E	ND		5.0	3.1	ug/L	1
2-Chlorophenol	95-57-8	8270E	ND		5.0	3.1	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270E	ND		5.0	3.1	ug/L	1
Chrysene	218-01-9	8270E	ND		1.3	0.19	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270E	ND		1.3	0.19	ug/L	1
Dibenzofuran	132-64-9	8270E	ND		5.0	3.1	ug/L	1
1,2-Dichlorobenzene	95-50-1	8270E	ND		5.0	3.1	ug/L	1
1,3-Dichlorobenzene	541-73-1	8270E	ND		5.0	3.1	ug/L	1
1,4-Dichlorobenzene	106-46-7	8270E	ND		5.0	3.1	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270E	ND		25	11	ug/L	1
2,4-Dichlorophenol	120-83-2	8270E	ND		10	1.6	ug/L	1
Diethylphthalate	84-66-2	8270E	ND		5.0	3.1	ug/L	1
Dimethyl phthalate	131-11-3	8270E	ND		5.0	3.1	ug/L	1
2,4-Dimethylphenol	105-67-9	8270E	ND		5.0	3.0	ug/L	1
Di-n-butyl phthalate	84-74-2	8270E	ND		5.0	3.1	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270E	ND		25	6.3	ug/L	1
2,4-Dinitrophenol	51-28-5	8270E	ND		25	6.3	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270E	ND		10	3.1	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270E	ND		10	3.1	ug/L	1
Di-n-octylphthalate	117-84-0	8270E	ND		5.0	3.1	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270E	ND		25	13	ug/L	1
Fluoranthene	206-44-0	8270E	ND		1.3	0.63	ug/L	1
Fluorene	86-73-7	8270E	ND		1.3	0.19	ug/L	1
Hexachlorobenzene	118-74-1	8270E	ND		5.0	3.1	ug/L	1
Hexachlorobutadiene	87-68-3	8270E	ND		5.0	3.1	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270E	ND		25	13	ug/L	1
Hexachloroethane	67-72-1	8270E	ND		5.0	1.9	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270E	ND		1.3	0.25	ug/L	1
Isophorone	78-59-1	8270E	ND		5.0	3.1	ug/L	1

LOQ = Limit of Quantitation
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E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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Semivolatile Organic Compounds by GC/MS

Client: Ramboll US Corporation	Laboratory ID: XF23073-003
Description: MW105-GW-220622	Matrix: Aqueous
Date Sampled: 06/22/2022 1545	Project Name: Calumet - AOC16
Date Received: 06/23/2022	Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270E	5	07/02/2022 0018	SCD	06/27/2022 1107	46231

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
2-Methylnaphthalene	91-57-6	8270E	ND		1.3	0.25	ug/L	1
2-Methylphenol	95-48-7	8270E	ND		5.0	1.3	ug/L	1
3+4-Methylphenol	106-44-5	8270E	ND		10	9.4	ug/L	1
Naphthalene	91-20-3	8270E	2.1		1.3	0.31	ug/L	1
2-Nitroaniline	88-74-4	8270E	ND		10	3.1	ug/L	1
3-Nitroaniline	99-09-2	8270E	ND		10	6.3	ug/L	1
4-Nitroaniline	100-01-6	8270E	ND		10	9.4	ug/L	1
Nitrobenzene	98-95-3	8270E	ND		5.0	3.4	ug/L	1
2-Nitrophenol	88-75-5	8270E	ND		10	6.3	ug/L	1
4-Nitrophenol	100-02-7	8270E	ND		25	13	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270E	ND		5.0	3.1	ug/L	1
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270E	ND		5.0	3.1	ug/L	1
Pentachlorophenol	87-86-5	8270E	ND		25	13	ug/L	1
Phenanthrene	85-01-8	8270E	ND		1.3	0.38	ug/L	1
Phenol	108-95-2	8270E	ND		5.0	3.1	ug/L	1
Pyrene	129-00-0	8270E	ND		1.3	0.63	ug/L	1
1,2,4,5-Tetrachlorobenzene	95-94-3	8270E	ND		5.0	1.6	ug/L	1
2,3,4,6-Tetrachlorophenol	58-90-2	8270E	ND		10	3.4	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8270E	ND		5.0	2.3	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270E	ND		5.0	3.1	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270E	ND		5.0	3.1	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Fluorobiphenyl		64	37-129
2-Fluorophenol		32	24-127
Nitrobenzene-d5		56	38-127
Phenol-d5		39	28-128
Terphenyl-d14		74	10-148
2,4,6-Tribromophenol		77	35-144

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Methane

Client: Ramboll US Corporation			Laboratory ID: XF23073-003
Description: MW105-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1545	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		RSK - 175	1	07/01/2022 1104	JM1		46690

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Methane	74-82-8	RSK - 175	55	B	10	2.5	ug/L	1

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana VPH (aliphatics)

Client: Ramboll US Corporation			Laboratory ID: XF23073-003
Description: MW105-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1545	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	VPH	Montana VPH	1	06/24/2022 1943	ECB		46252

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
C5 - C8 Aliphatics, Adjusted		Montana VPH	830		75	15	ug/L	1
C9 - C12 Aliphatics, Adjusted		Montana VPH	37	J	75	15	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2,5-Dibromotoluene (FID)		102	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana VPH (aromatics)

Client: Ramboll US Corporation			Laboratory ID: XF23073-003
Description: MW105-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1545	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	VPH	Montana VPH	1	06/24/2022 1943	ECB		46251

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Benzene	71-43-2	Montana VPH	86		5.0	0.51	ug/L	1
C9 - C10 Aromatics		Montana VPH	150		25	5.0	ug/L	1
Ethylbenzene	100-41-4	Montana VPH	100		5.0	0.62	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	Montana VPH	ND		5.0	1.2	ug/L	1
Naphthalene	91-20-3	Montana VPH	3.3	BJ	5.0	0.70	ug/L	1
Toluene	108-88-3	Montana VPH	8.2		5.0	0.53	ug/L	1
m+p - Xylenes	179601-23-1	Montana VPH	21		5.0	1.2	ug/L	1
o - Xylenes	95-47-6	Montana VPH	4.0	J	5.0	0.58	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2,5-Dibromotoluene (PID)		103	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Montana VPH (TPH)

Client: Ramboll US Corporation			Laboratory ID: XF23073-003
Description: MW105-GW-220622			Matrix: Aqueous
Date Sampled: 06/22/2022 1545	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	VPH	Montana VPH	1	06/24/2022 1943	ECB		46254

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
TPH		Montana VPH	1100		180	35	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2,5-Dibromotoluene (FID)		105	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: Ramboll US Corporation
Laboratory ID: XF23073-004
Description: TB-01-220622
Matrix: Aqueous
Date Sampled: 06/22/2022
Project Name: Calumet - AOC16
Date Received: 06/23/2022
Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260D	1	07/01/2022 0456	SDC		46782

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND		10	4.0	ug/L	2
Benzene	71-43-2	8260D	ND		0.50	0.40	ug/L	2
Bromochloromethane	74-97-5	8260D	ND		0.50	0.40	ug/L	2
Bromodichloromethane	75-27-4	8260D	ND		0.50	0.40	ug/L	2
Bromoform	75-25-2	8260D	ND		0.50	0.40	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260D	ND		0.50	0.40	ug/L	2
2-Butanone (MEK)	78-93-3	8260D	ND		10	2.0	ug/L	2
Carbon disulfide	75-15-0	8260D	ND		0.50	0.40	ug/L	2
Carbon tetrachloride	56-23-5	8260D	ND		0.50	0.40	ug/L	2
Chlorobenzene	108-90-7	8260D	ND		0.50	0.40	ug/L	2
Chloroethane	75-00-3	8260D	ND		0.50	0.40	ug/L	2
Chloroform	67-66-3	8260D	ND		0.50	0.40	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260D	ND		0.50	0.40	ug/L	2
Cyclohexane	110-82-7	8260D	ND		0.50	0.40	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND		0.50	0.40	ug/L	2
Dibromochloromethane	124-48-1	8260D	ND		0.50	0.40	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND		0.50	0.40	ug/L	2
1,2-Dichlorobenzene	95-50-1	8260D	ND		0.50	0.40	ug/L	2
1,3-Dichlorobenzene	541-73-1	8260D	ND		0.50	0.40	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260D	ND		0.50	0.40	ug/L	2
Dichlorodifluoromethane	75-71-8	8260D	ND		0.50	0.40	ug/L	2
1,1-Dichloroethane	75-34-3	8260D	ND		0.50	0.40	ug/L	2
1,2-Dichloroethane	107-06-2	8260D	ND		0.50	0.40	ug/L	2
1,1-Dichloroethene	75-35-4	8260D	ND		0.50	0.40	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260D	ND		0.50	0.40	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260D	ND		0.50	0.40	ug/L	2
1,2-Dichloropropane	78-87-5	8260D	ND		0.50	0.40	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260D	ND		0.50	0.40	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260D	ND		0.50	0.40	ug/L	2
1,4-Dioxane	123-91-1	8260D	ND		20	13	ug/L	2
Ethylbenzene	100-41-4	8260D	ND		0.50	0.40	ug/L	2
2-Hexanone	591-78-6	8260D	ND		10	2.0	ug/L	2
Isopropylbenzene	98-82-8	8260D	ND		0.50	0.40	ug/L	2
Methyl acetate	79-20-9	8260D	ND		1.0	0.40	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		0.50	0.40	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260D	ND		10	2.0	ug/L	2
Methylcyclohexane	108-87-2	8260D	ND		5.0	0.40	ug/L	2
Methylene chloride	75-09-2	8260D	ND		0.50	0.40	ug/L	2
Naphthalene	91-20-3	8260D	ND		0.50	0.40	ug/L	2
Styrene	100-42-5	8260D	ND		0.50	0.41	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND		0.50	0.40	ug/L	2
Tetrachloroethene	127-18-4	8260D	ND		0.50	0.40	ug/L	2
Toluene	108-88-3	8260D	ND		0.50	0.40	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND		1.0	0.42	ug/L	2

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: Ramboll US Corporation			Laboratory ID: XF23073-004
Description: TB-01-220622			Matrix: Aqueous
Date Sampled: 06/22/2022	Project Name: Calumet - AOC16		
Date Received: 06/23/2022	Project Number:		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260D	1	07/01/2022 0456	SDC		46782

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2,3-Trichlorobenzene	87-61-6	8260D	ND		0.50	0.40	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260D	ND		0.50	0.40	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260D	ND		0.50	0.40	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260D	ND		0.50	0.40	ug/L	2
Trichloroethene	79-01-6	8260D	ND		0.50	0.40	ug/L	2
Trichlorofluoromethane	75-69-4	8260D	ND		0.50	0.40	ug/L	2
Vinyl chloride	75-01-4	8260D	ND		0.50	0.40	ug/L	2
Xylenes (total)	1330-20-7	8260D	ND		1.0	0.40	ug/L	2
m+p - Xylenes	179601-23-1	8260D	ND		0.50	0.40	ug/L	2
o - Xylenes	95-47-6	8260D	ND		0.50	0.40	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene		100	70-130
1,2-Dichloroethane-d4		95	70-130
Toluene-d8		99	70-130

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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QC Summary

Inorganic non-metals - BOD Blank and GGA

Batch: 46025
Analytical Method: SM 5210B-2011

Matrix: Aqueous
SCF: 1.1
SCF Range: 0.6 - 1.0

Sample ID	Depl	Avg. Depl	Result (mg/L)	Avg. Result (mg/L)	Q	Limit	Prep Date	Analysis Date
XQ46025-041 (Blank)	0.11					0.2	06/23/2022 2241	06/28/2022 2212
XQ46025-141 (Blank)	0.17					0.2	06/23/2022 2241	06/28/2022 2212
XQ46025-241 (Blank)	0.33	0.2			4	0.2	06/23/2022 2241	06/28/2022 2212
XQ46025-035 (GGA)			188.3		7	167.5-228.5	06/23/2022 2247	06/28/2022 2217
XQ46025-135 (GGA)			177.3		7	167.5-228.5	06/23/2022 2247	06/28/2022 2216
XQ46025-235 (GGA)			205.3	190.3	7	167.5-228.5	06/23/2022 2247	06/28/2022 2217

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MB

Sample ID: XQ46217-001
Batch: 46217
Analytical Method: 9056A

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Nitrate - N	0.0078	J	1	0.020	0.0050	mg/L	06/24/2022 0953

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - LCS

Sample ID: XQ46217-002
Batch: 46217
Analytical Method: 9056A

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Nitrate - N	0.80	0.87		1	108	80-120	06/24/2022 1031

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Inorganic non-metals - MB

Sample ID: XQ46220-001
Batch: 46220
Analytical Method: 9056A

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Sulfate	ND		1	1.0	0.25	mg/L	06/24/2022 1757

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Inorganic non-metals - LCS

Sample ID: XQ46220-002
Batch: 46220
Analytical Method: 9056A

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Sulfate	20	22		1	110	80-120	06/24/2022 2023

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Inorganic non-metals - MS

Sample ID: XF23073-002MS
Batch: 46220
Analytical Method: 9056A

Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Sulfate	210	10	210	N	50	-29	80-120	06/25/2022 0435

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MSD

Sample ID: XF23073-002MD
Batch: 46220
Analytical Method: 9056A

Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Sulfate	210	10	210	N	50	-69	2.0	80-120	20	06/25/2022 0532

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - LCS

Sample ID: XQ46698-002
Batch: 46698
Analytical Method: SM 2320B-2011

Matrix: Aqueous

Parameter	Spike Amount (mg CaCO3/L)	Result (mg CaCO3/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Alkalinity @ pH 4.5 su	100	100		1	103	90-110	06/28/2022 2116

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ46684-001
Batch: 46684
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	06/30/2022 1034
Benzene	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Bromochloromethane	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Bromodichloromethane	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Bromoform	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	06/30/2022 1034
2-Butanone (MEK)	ND		1	10	2.0	ug/L	06/30/2022 1034
Carbon disulfide	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Chlorobenzene	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Chloroethane	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Chloroform	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Cyclohexane	ND		1	0.50	0.40	ug/L	06/30/2022 1034
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Dibromochloromethane	ND		1	0.50	0.40	ug/L	06/30/2022 1034
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	06/30/2022 1034
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	06/30/2022 1034
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	06/30/2022 1034
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	06/30/2022 1034
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	06/30/2022 1034
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	06/30/2022 1034
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	06/30/2022 1034
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	06/30/2022 1034
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	06/30/2022 1034
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	06/30/2022 1034
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	06/30/2022 1034
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	06/30/2022 1034
1,4-Dioxane	ND		1	20	13	ug/L	06/30/2022 1034
Ethylbenzene	ND		1	0.50	0.40	ug/L	06/30/2022 1034
2-Hexanone	ND		1	10	2.0	ug/L	06/30/2022 1034
Isopropylbenzene	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Methyl acetate	ND		1	1.0	0.40	ug/L	06/30/2022 1034
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	06/30/2022 1034
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	06/30/2022 1034
Methylcyclohexane	ND		1	5.0	0.40	ug/L	06/30/2022 1034
Methylene chloride	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Naphthalene	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Styrene	ND		1	0.50	0.41	ug/L	06/30/2022 1034
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Tetrachloroethene	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Toluene	ND		1	0.50	0.40	ug/L	06/30/2022 1034
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	06/30/2022 1034

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ46684-001
Batch: 46684
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
1,2,3-Trichlorobenzene	ND		1	0.50	0.40	ug/L	06/30/2022 1034
1,2,4-Trichlorobenzene	ND		1	0.50	0.40	ug/L	06/30/2022 1034
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	06/30/2022 1034
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Trichloroethene	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Trichlorofluoromethane	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Vinyl chloride	ND		1	0.50	0.40	ug/L	06/30/2022 1034
Xylenes (total)	ND		1	1.0	0.40	ug/L	06/30/2022 1034
m+p - Xylenes	ND		1	0.50	0.40	ug/L	06/30/2022 1034
o - Xylenes	ND		1	0.50	0.40	ug/L	06/30/2022 1034

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		96	70-130
1,2-Dichloroethane-d4		90	70-130
Toluene-d8		94	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ46684-002
Batch: 46684
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acetone	100	81		1	81	60-140	06/30/2022 0928
Benzene	50	44		1	88	70-130	06/30/2022 0928
Bromochloromethane	50	42		1	84	70-130	06/30/2022 0928
Bromodichloromethane	50	41		1	82	70-130	06/30/2022 0928
Bromoform	50	40		1	81	70-130	06/30/2022 0928
Bromomethane (Methyl bromide)	50	50		1	100	70-130	06/30/2022 0928
2-Butanone (MEK)	100	85		1	85	70-130	06/30/2022 0928
Carbon disulfide	50	40		1	80	70-130	06/30/2022 0928
Carbon tetrachloride	50	40		1	81	70-130	06/30/2022 0928
Chlorobenzene	50	45		1	90	70-130	06/30/2022 0928
Chloroethane	50	46		1	92	70-130	06/30/2022 0928
Chloroform	50	42		1	85	70-130	06/30/2022 0928
Chloromethane (Methyl chloride)	50	42		1	85	60-140	06/30/2022 0928
Cyclohexane	50	38		1	76	70-130	06/30/2022 0928
1,2-Dibromo-3-chloropropane (DBCP)	50	37		1	75	70-130	06/30/2022 0928
Dibromochloromethane	50	43		1	86	70-130	06/30/2022 0928
1,2-Dibromoethane (EDB)	50	47		1	93	70-130	06/30/2022 0928
1,2-Dichlorobenzene	50	44		1	88	70-130	06/30/2022 0928
1,3-Dichlorobenzene	50	46		1	92	70-130	06/30/2022 0928
1,4-Dichlorobenzene	50	46		1	92	70-130	06/30/2022 0928
Dichlorodifluoromethane	50	43		1	85	60-140	06/30/2022 0928
1,1-Dichloroethane	50	41		1	82	70-130	06/30/2022 0928
1,2-Dichloroethane	50	40		1	80	70-130	06/30/2022 0928
1,1-Dichloroethene	50	41		1	83	70-130	06/30/2022 0928
cis-1,2-Dichloroethene	50	43		1	86	70-130	06/30/2022 0928
trans-1,2-Dichloroethene	50	42		1	84	70-130	06/30/2022 0928
1,2-Dichloropropane	50	42		1	84	70-130	06/30/2022 0928
cis-1,3-Dichloropropene	50	43		1	85	70-130	06/30/2022 0928
trans-1,3-Dichloropropene	50	44		1	88	70-130	06/30/2022 0928
1,4-Dioxane	500	410		1	82	60-140	06/30/2022 0928
Ethylbenzene	50	43		1	87	70-130	06/30/2022 0928
2-Hexanone	100	92		1	92	70-130	06/30/2022 0928
Isopropylbenzene	50	40		1	81	70-130	06/30/2022 0928
Methyl acetate	50	44		1	87	70-130	06/30/2022 0928
Methyl tertiary butyl ether (MTBE)	50	42		1	84	70-130	06/30/2022 0928
4-Methyl-2-pentanone	100	88		1	88	70-130	06/30/2022 0928
Methylcyclohexane	50	41		1	81	70-130	06/30/2022 0928
Methylene chloride	50	40		1	80	70-130	06/30/2022 0928
Naphthalene	50	39		1	78	70-130	06/30/2022 0928
Styrene	50	45		1	90	70-130	06/30/2022 0928
1,1,2,2-Tetrachloroethane	50	45		1	89	70-130	06/30/2022 0928
Tetrachloroethene	50	47		1	93	70-130	06/30/2022 0928
Toluene	50	45		1	90	70-130	06/30/2022 0928
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	42		1	84	70-130	06/30/2022 0928

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ46684-002
Batch: 46684
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
1,2,3-Trichlorobenzene	50	38		1	76	70-130	06/30/2022 0928
1,2,4-Trichlorobenzene	50	40		1	80	70-130	06/30/2022 0928
1,1,1-Trichloroethane	50	40		1	81	70-130	06/30/2022 0928
1,1,2-Trichloroethane	50	46		1	91	70-130	06/30/2022 0928
Trichloroethene	50	45		1	90	70-130	06/30/2022 0928
Trichlorofluoromethane	50	43		1	87	70-130	06/30/2022 0928
Vinyl chloride	50	52		1	103	70-130	06/30/2022 0928
Xylenes (total)	100	87		1	87	70-130	06/30/2022 0928
m+p - Xylenes	50	44		1	88	70-130	06/30/2022 0928
o - Xylenes	50	43		1	85	70-130	06/30/2022 0928

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		79	70-130
1,2-Dichloroethane-d4		74	70-130
Toluene-d8		79	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ46782-001
Batch: 46782
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	07/01/2022 0029
Benzene	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Bromochloromethane	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Bromodichloromethane	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Bromoform	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	07/01/2022 0029
2-Butanone (MEK)	ND		1	10	2.0	ug/L	07/01/2022 0029
Carbon disulfide	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Chlorobenzene	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Chloroethane	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Chloroform	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Cyclohexane	ND		1	0.50	0.40	ug/L	07/01/2022 0029
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Dibromochloromethane	ND		1	0.50	0.40	ug/L	07/01/2022 0029
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	07/01/2022 0029
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	07/01/2022 0029
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	07/01/2022 0029
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	07/01/2022 0029
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	07/01/2022 0029
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	07/01/2022 0029
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	07/01/2022 0029
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	07/01/2022 0029
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	07/01/2022 0029
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	07/01/2022 0029
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	07/01/2022 0029
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	07/01/2022 0029
1,4-Dioxane	ND		1	20	13	ug/L	07/01/2022 0029
Ethylbenzene	ND		1	0.50	0.40	ug/L	07/01/2022 0029
2-Hexanone	ND		1	10	2.0	ug/L	07/01/2022 0029
Isopropylbenzene	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Methyl acetate	ND		1	1.0	0.40	ug/L	07/01/2022 0029
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	07/01/2022 0029
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	07/01/2022 0029
Methylcyclohexane	ND		1	5.0	0.40	ug/L	07/01/2022 0029
Methylene chloride	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Naphthalene	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Styrene	ND		1	0.50	0.41	ug/L	07/01/2022 0029
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Tetrachloroethene	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Toluene	ND		1	0.50	0.40	ug/L	07/01/2022 0029
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	07/01/2022 0029

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ46782-001
Batch: 46782
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
1,2,3-Trichlorobenzene	ND		1	0.50	0.40	ug/L	07/01/2022 0029
1,2,4-Trichlorobenzene	ND		1	0.50	0.40	ug/L	07/01/2022 0029
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	07/01/2022 0029
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Trichloroethene	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Trichlorofluoromethane	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Vinyl chloride	ND		1	0.50	0.40	ug/L	07/01/2022 0029
Xylenes (total)	ND		1	1.0	0.40	ug/L	07/01/2022 0029
m+p - Xylenes	ND		1	0.50	0.40	ug/L	07/01/2022 0029
o - Xylenes	ND		1	0.50	0.40	ug/L	07/01/2022 0029

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		101	70-130
1,2-Dichloroethane-d4		94	70-130
Toluene-d8		100	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ46782-002
Batch: 46782
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acetone	100	120		1	124	60-140	06/30/2022 2032
Benzene	50	52		1	103	70-130	06/30/2022 2032
Bromochloromethane	50	53		1	105	70-130	06/30/2022 2032
Bromodichloromethane	50	52		1	104	70-130	06/30/2022 2032
Bromoform	50	53		1	105	70-130	06/30/2022 2032
Bromomethane (Methyl bromide)	50	54		1	108	70-130	06/30/2022 2032
2-Butanone (MEK)	100	110		1	106	70-130	06/30/2022 2032
Carbon disulfide	50	57		1	115	70-130	06/30/2022 2032
Carbon tetrachloride	50	53		1	106	70-130	06/30/2022 2032
Chlorobenzene	50	51		1	102	70-130	06/30/2022 2032
Chloroethane	50	54		1	107	70-130	06/30/2022 2032
Chloroform	50	51		1	102	70-130	06/30/2022 2032
Chloromethane (Methyl chloride)	50	50		1	101	60-140	06/30/2022 2032
Cyclohexane	50	57		1	114	70-130	06/30/2022 2032
1,2-Dibromo-3-chloropropane (DBCP)	50	51		1	102	70-130	06/30/2022 2032
Dibromochloromethane	50	52		1	105	70-130	06/30/2022 2032
1,2-Dibromoethane (EDB)	50	52		1	104	70-130	06/30/2022 2032
1,2-Dichlorobenzene	50	52		1	105	70-130	06/30/2022 2032
1,3-Dichlorobenzene	50	51		1	101	70-130	06/30/2022 2032
1,4-Dichlorobenzene	50	50		1	100	70-130	06/30/2022 2032
Dichlorodifluoromethane	50	56		1	111	60-140	06/30/2022 2032
1,1-Dichloroethane	50	52		1	104	70-130	06/30/2022 2032
1,2-Dichloroethane	50	51		1	103	70-130	06/30/2022 2032
1,1-Dichloroethene	50	57		1	114	70-130	06/30/2022 2032
cis-1,2-Dichloroethene	50	51		1	102	70-130	06/30/2022 2032
trans-1,2-Dichloroethene	50	53		1	106	70-130	06/30/2022 2032
1,2-Dichloropropane	50	51		1	103	70-130	06/30/2022 2032
cis-1,3-Dichloropropene	50	55		1	109	70-130	06/30/2022 2032
trans-1,3-Dichloropropene	50	54		1	108	70-130	06/30/2022 2032
1,4-Dioxane	500	620		1	125	60-140	06/30/2022 2032
Ethylbenzene	50	52		1	103	70-130	06/30/2022 2032
2-Hexanone	100	110		1	106	70-130	06/30/2022 2032
Isopropylbenzene	50	55		1	110	70-130	06/30/2022 2032
Methyl acetate	50	53		1	106	70-130	06/30/2022 2032
Methyl tertiary butyl ether (MTBE)	50	54		1	108	70-130	06/30/2022 2032
4-Methyl-2-pentanone	100	100		1	105	70-130	06/30/2022 2032
Methylcyclohexane	50	55		1	110	70-130	06/30/2022 2032
Methylene chloride	50	53		1	105	70-130	06/30/2022 2032
Naphthalene	50	56		1	112	70-130	06/30/2022 2032
Styrene	50	54		1	109	70-130	06/30/2022 2032
1,1,2,2-Tetrachloroethane	50	51		1	103	70-130	06/30/2022 2032
Tetrachloroethene	50	52		1	104	70-130	06/30/2022 2032
Toluene	50	53		1	106	70-130	06/30/2022 2032
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	55		1	110	70-130	06/30/2022 2032

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ46782-002
Batch: 46782
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
1,2,3-Trichlorobenzene	50	53		1	107	70-130	06/30/2022 2032
1,2,4-Trichlorobenzene	50	52		1	104	70-130	06/30/2022 2032
1,1,1-Trichloroethane	50	53		1	105	70-130	06/30/2022 2032
1,1,2-Trichloroethane	50	50		1	100	70-130	06/30/2022 2032
Trichloroethene	50	51		1	101	70-130	06/30/2022 2032
Trichlorofluoromethane	50	55		1	110	70-130	06/30/2022 2032
Vinyl chloride	50	54		1	108	70-130	06/30/2022 2032
Xylenes (total)	100	110		1	107	70-130	06/30/2022 2032
m+p - Xylenes	50	53		1	106	70-130	06/30/2022 2032
o - Xylenes	50	54		1	109	70-130	06/30/2022 2032

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		100	70-130
1,2-Dichloroethane-d4		97	70-130
Toluene-d8		98	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ47150-001
Batch: 47150
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	07/06/2022 1020
Benzene	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Bromochloromethane	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Bromodichloromethane	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Bromoform	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	07/06/2022 1020
2-Butanone (MEK)	ND		1	10	2.0	ug/L	07/06/2022 1020
Carbon disulfide	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Chlorobenzene	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Chloroethane	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Chloroform	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Cyclohexane	ND		1	0.50	0.40	ug/L	07/06/2022 1020
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Dibromochloromethane	ND		1	0.50	0.40	ug/L	07/06/2022 1020
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	07/06/2022 1020
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	07/06/2022 1020
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	07/06/2022 1020
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	07/06/2022 1020
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	07/06/2022 1020
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	07/06/2022 1020
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	07/06/2022 1020
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	07/06/2022 1020
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	07/06/2022 1020
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	07/06/2022 1020
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	07/06/2022 1020
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	07/06/2022 1020
1,4-Dioxane	ND		1	20	13	ug/L	07/06/2022 1020
Ethylbenzene	ND		1	0.50	0.40	ug/L	07/06/2022 1020
2-Hexanone	ND		1	10	2.0	ug/L	07/06/2022 1020
Isopropylbenzene	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Methyl acetate	ND		1	1.0	0.40	ug/L	07/06/2022 1020
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	07/06/2022 1020
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	07/06/2022 1020
Methylcyclohexane	ND		1	5.0	0.40	ug/L	07/06/2022 1020
Methylene chloride	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Naphthalene	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Styrene	ND		1	0.50	0.41	ug/L	07/06/2022 1020
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Tetrachloroethene	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Toluene	ND		1	0.50	0.40	ug/L	07/06/2022 1020
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	07/06/2022 1020

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ47150-001
Batch: 47150
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
1,2,3-Trichlorobenzene	ND		1	0.50	0.40	ug/L	07/06/2022 1020
1,2,4-Trichlorobenzene	ND		1	0.50	0.40	ug/L	07/06/2022 1020
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	07/06/2022 1020
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Trichloroethene	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Trichlorofluoromethane	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Vinyl chloride	ND		1	0.50	0.40	ug/L	07/06/2022 1020
Xylenes (total)	ND		1	1.0	0.40	ug/L	07/06/2022 1020
m+p - Xylenes	ND		1	0.50	0.40	ug/L	07/06/2022 1020
o - Xylenes	ND		1	0.50	0.40	ug/L	07/06/2022 1020

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		91	70-130
1,2-Dichloroethane-d4		100	70-130
Toluene-d8		95	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ47150-002
Batch: 47150
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acetone	100	120		1	124	60-140	07/06/2022 0916
Benzene	50	51		1	101	70-130	07/06/2022 0916
Bromochloromethane	50	54		1	108	70-130	07/06/2022 0916
Bromodichloromethane	50	50		1	100	70-130	07/06/2022 0916
Bromoform	50	46		1	93	70-130	07/06/2022 0916
Bromomethane (Methyl bromide)	50	62		1	125	70-130	07/06/2022 0916
2-Butanone (MEK)	100	110		1	110	70-130	07/06/2022 0916
Carbon disulfide	50	55		1	110	70-130	07/06/2022 0916
Carbon tetrachloride	50	50		1	101	70-130	07/06/2022 0916
Chlorobenzene	50	47		1	94	70-130	07/06/2022 0916
Chloroethane	50	58		1	116	70-130	07/06/2022 0916
Chloroform	50	53		1	107	70-130	07/06/2022 0916
Chloromethane (Methyl chloride)	50	61		1	121	60-140	07/06/2022 0916
Cyclohexane	50	60		1	121	70-130	07/06/2022 0916
1,2-Dibromo-3-chloropropane (DBCP)	50	53		1	106	70-130	07/06/2022 0916
Dibromochloromethane	50	48		1	96	70-130	07/06/2022 0916
1,2-Dibromoethane (EDB)	50	49		1	97	70-130	07/06/2022 0916
1,2-Dichlorobenzene	50	49		1	99	70-130	07/06/2022 0916
1,3-Dichlorobenzene	50	46		1	92	70-130	07/06/2022 0916
1,4-Dichlorobenzene	50	46		1	92	70-130	07/06/2022 0916
Dichlorodifluoromethane	50	54		1	107	60-140	07/06/2022 0916
1,1-Dichloroethane	50	56		1	113	70-130	07/06/2022 0916
1,2-Dichloroethane	50	53		1	105	70-130	07/06/2022 0916
1,1-Dichloroethene	50	54		1	108	70-130	07/06/2022 0916
cis-1,2-Dichloroethene	50	52		1	105	70-130	07/06/2022 0916
trans-1,2-Dichloroethene	50	53		1	105	70-130	07/06/2022 0916
1,2-Dichloropropane	50	52		1	103	70-130	07/06/2022 0916
cis-1,3-Dichloropropene	50	53		1	106	70-130	07/06/2022 0916
trans-1,3-Dichloropropene	50	53		1	107	70-130	07/06/2022 0916
1,4-Dioxane	500	600		1	120	60-140	07/06/2022 0916
Ethylbenzene	50	48		1	96	70-130	07/06/2022 0916
2-Hexanone	100	100		1	104	70-130	07/06/2022 0916
Isopropylbenzene	50	51		1	102	70-130	07/06/2022 0916
Methyl acetate	50	63		1	126	70-130	07/06/2022 0916
Methyl tertiary butyl ether (MTBE)	50	57		1	113	70-130	07/06/2022 0916
4-Methyl-2-pentanone	100	110		1	111	70-130	07/06/2022 0916
Methylcyclohexane	50	50		1	100	70-130	07/06/2022 0916
Methylene chloride	50	56		1	112	70-130	07/06/2022 0916
Naphthalene	50	55		1	110	70-130	07/06/2022 0916
Styrene	50	51		1	101	70-130	07/06/2022 0916
1,1,2,2-Tetrachloroethane	50	54		1	108	70-130	07/06/2022 0916
Tetrachloroethene	50	45		1	91	70-130	07/06/2022 0916
Toluene	50	50		1	101	70-130	07/06/2022 0916
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	52		1	104	70-130	07/06/2022 0916

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ47150-002
Batch: 47150
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
1,2,3-Trichlorobenzene	50	50		1	101	70-130	07/06/2022 0916
1,2,4-Trichlorobenzene	50	47		1	93	70-130	07/06/2022 0916
1,1,1-Trichloroethane	50	50		1	101	70-130	07/06/2022 0916
1,1,2-Trichloroethane	50	49		1	99	70-130	07/06/2022 0916
Trichloroethene	50	44		1	88	70-130	07/06/2022 0916
Trichlorofluoromethane	50	53		1	106	70-130	07/06/2022 0916
Vinyl chloride	50	62		1	125	70-130	07/06/2022 0916
Xylenes (total)	100	98		1	98	70-130	07/06/2022 0916
m+p - Xylenes	50	48		1	97	70-130	07/06/2022 0916
o - Xylenes	50	50		1	99	70-130	07/06/2022 0916

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		97	70-130
1,2-Dichloroethane-d4		103	70-130
Toluene-d8		97	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ47499-001
Batch: 47499
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	07/09/2022 1508
Benzene	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Bromochloromethane	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Bromodichloromethane	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Bromoform	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	07/09/2022 1508
2-Butanone (MEK)	ND		1	10	2.0	ug/L	07/09/2022 1508
Carbon disulfide	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Chlorobenzene	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Chloroethane	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Chloroform	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Cyclohexane	ND		1	0.50	0.40	ug/L	07/09/2022 1508
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Dibromochloromethane	ND		1	0.50	0.40	ug/L	07/09/2022 1508
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	07/09/2022 1508
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	07/09/2022 1508
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	07/09/2022 1508
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	07/09/2022 1508
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	07/09/2022 1508
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	07/09/2022 1508
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	07/09/2022 1508
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	07/09/2022 1508
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	07/09/2022 1508
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	07/09/2022 1508
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	07/09/2022 1508
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	07/09/2022 1508
1,4-Dioxane	ND		1	20	13	ug/L	07/09/2022 1508
Ethylbenzene	ND		1	0.50	0.40	ug/L	07/09/2022 1508
2-Hexanone	ND		1	10	2.0	ug/L	07/09/2022 1508
Isopropylbenzene	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Methyl acetate	ND		1	1.0	0.40	ug/L	07/09/2022 1508
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	07/09/2022 1508
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	07/09/2022 1508
Methylcyclohexane	ND		1	5.0	0.40	ug/L	07/09/2022 1508
Methylene chloride	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Naphthalene	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Styrene	ND		1	0.50	0.41	ug/L	07/09/2022 1508
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Tetrachloroethene	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Toluene	ND		1	0.50	0.40	ug/L	07/09/2022 1508
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	07/09/2022 1508

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ47499-001
Batch: 47499
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
1,2,3-Trichlorobenzene	ND		1	0.50	0.40	ug/L	07/09/2022 1508
1,2,4-Trichlorobenzene	ND		1	0.50	0.40	ug/L	07/09/2022 1508
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	07/09/2022 1508
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Trichloroethene	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Trichlorofluoromethane	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Vinyl chloride	ND		1	0.50	0.40	ug/L	07/09/2022 1508
Xylenes (total)	ND		1	1.0	0.40	ug/L	07/09/2022 1508
m+p - Xylenes	ND		1	0.50	0.40	ug/L	07/09/2022 1508
o - Xylenes	ND		1	0.50	0.40	ug/L	07/09/2022 1508

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		107	70-130
1,2-Dichloroethane-d4		106	70-130
Toluene-d8		104	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
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Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ47499-002
Batch: 47499
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acetone	100	120		1	118	60-140	07/09/2022 1404
Benzene	50	53		1	107	70-130	07/09/2022 1404
Bromochloromethane	50	57		1	113	70-130	07/09/2022 1404
Bromodichloromethane	50	58		1	115	70-130	07/09/2022 1404
Bromoform	50	65	N	1	131	70-130	07/09/2022 1404
Bromomethane (Methyl bromide)	50	55		1	110	70-130	07/09/2022 1404
2-Butanone (MEK)	100	120		1	122	70-130	07/09/2022 1404
Carbon disulfide	50	55		1	111	70-130	07/09/2022 1404
Carbon tetrachloride	50	62		1	125	70-130	07/09/2022 1404
Chlorobenzene	50	51		1	102	70-130	07/09/2022 1404
Chloroethane	50	54		1	109	70-130	07/09/2022 1404
Chloroform	50	53		1	106	70-130	07/09/2022 1404
Chloromethane (Methyl chloride)	50	53		1	106	60-140	07/09/2022 1404
Cyclohexane	50	52		1	104	70-130	07/09/2022 1404
1,2-Dibromo-3-chloropropane (DBCP)	50	66	N	1	133	70-130	07/09/2022 1404
Dibromochloromethane	50	53		1	105	70-130	07/09/2022 1404
1,2-Dibromoethane (EDB)	50	56		1	112	70-130	07/09/2022 1404
1,2-Dichlorobenzene	50	52		1	104	70-130	07/09/2022 1404
1,3-Dichlorobenzene	50	53		1	105	70-130	07/09/2022 1404
1,4-Dichlorobenzene	50	49		1	98	70-130	07/09/2022 1404
Dichlorodifluoromethane	50	49		1	98	60-140	07/09/2022 1404
1,1-Dichloroethane	50	55		1	109	70-130	07/09/2022 1404
1,2-Dichloroethane	50	55		1	110	70-130	07/09/2022 1404
1,1-Dichloroethene	50	54		1	108	70-130	07/09/2022 1404
cis-1,2-Dichloroethene	50	54		1	109	70-130	07/09/2022 1404
trans-1,2-Dichloroethene	50	53		1	105	70-130	07/09/2022 1404
1,2-Dichloropropane	50	54		1	108	70-130	07/09/2022 1404
cis-1,3-Dichloropropene	50	53		1	107	70-130	07/09/2022 1404
trans-1,3-Dichloropropene	50	50		1	100	70-130	07/09/2022 1404
1,4-Dioxane	500	610		1	122	60-140	07/09/2022 1404
Ethylbenzene	50	54		1	107	70-130	07/09/2022 1404
2-Hexanone	100	100		1	103	70-130	07/09/2022 1404
Isopropylbenzene	50	55		1	110	70-130	07/09/2022 1404
Methyl acetate	50	57		1	113	70-130	07/09/2022 1404
Methyl tertiary butyl ether (MTBE)	50	55		1	109	70-130	07/09/2022 1404
4-Methyl-2-pentanone	100	110		1	114	70-130	07/09/2022 1404
Methylcyclohexane	50	54		1	109	70-130	07/09/2022 1404
Methylene chloride	50	53		1	107	70-130	07/09/2022 1404
Naphthalene	50	60		1	120	70-130	07/09/2022 1404
Styrene	50	57		1	114	70-130	07/09/2022 1404
1,1,2,2-Tetrachloroethane	50	55		1	110	70-130	07/09/2022 1404
Tetrachloroethene	50	51		1	102	70-130	07/09/2022 1404
Toluene	50	54		1	107	70-130	07/09/2022 1404
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	55		1	110	70-130	07/09/2022 1404

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ47499-002
Batch: 47499
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
1,2,3-Trichlorobenzene	50	56		1	111	70-130	07/09/2022 1404
1,2,4-Trichlorobenzene	50	56		1	111	70-130	07/09/2022 1404
1,1,1-Trichloroethane	50	55		1	110	70-130	07/09/2022 1404
1,1,2-Trichloroethane	50	53		1	105	70-130	07/09/2022 1404
Trichloroethene	50	53		1	107	70-130	07/09/2022 1404
Trichlorofluoromethane	50	56		1	112	70-130	07/09/2022 1404
Vinyl chloride	50	54		1	109	70-130	07/09/2022 1404
Xylenes (total)	100	110		1	108	70-130	07/09/2022 1404
m+p - Xylenes	50	54		1	108	70-130	07/09/2022 1404
o - Xylenes	50	54		1	108	70-130	07/09/2022 1404

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		101	70-130
1,2-Dichloroethane-d4		93	70-130
Toluene-d8		92	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - MB

Sample ID: XQ46231-001
Batch: 46231
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 06/27/2022 1107

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acenaphthene	ND		1	0.20	0.040	ug/L	06/30/2022 1113
Acenaphthylene	ND		1	0.20	0.040	ug/L	06/30/2022 1113
Anthracene	ND		1	0.20	0.060	ug/L	06/30/2022 1113
Benzo(a)anthracene	ND		1	0.20	0.040	ug/L	06/30/2022 1113
Benzo(a)pyrene	ND		1	0.20	0.070	ug/L	06/30/2022 1113
Benzo(b)fluoranthene	ND		1	0.20	0.040	ug/L	06/30/2022 1113
Benzo(g,h,i)perylene	ND		1	0.20	0.040	ug/L	06/30/2022 1113
Benzo(k)fluoranthene	ND		1	0.20	0.040	ug/L	06/30/2022 1113
4-Bromophenyl phenyl ether	ND		1	0.80	0.50	ug/L	06/30/2022 1113
Butyl benzyl phthalate	0.57	J	1	0.80	0.50	ug/L	06/30/2022 1113
Carbazole	ND		1	0.80	0.50	ug/L	06/30/2022 1113
bis (2-Chloro-1-methylethyl) ether	ND		1	0.80	0.50	ug/L	06/30/2022 1113
4-Chloro-3-methyl phenol	ND		1	0.80	0.50	ug/L	06/30/2022 1113
bis(2-Chloroethoxy)methane	ND		1	0.80	0.50	ug/L	06/30/2022 1113
bis(2-Chloroethyl)ether	ND		1	0.80	0.50	ug/L	06/30/2022 1113
2-Chloronaphthalene	ND		1	0.80	0.50	ug/L	06/30/2022 1113
2-Chlorophenol	ND		1	0.80	0.50	ug/L	06/30/2022 1113
4-Chlorophenyl phenyl ether	ND		1	0.80	0.50	ug/L	06/30/2022 1113
Chrysene	ND		1	0.20	0.030	ug/L	06/30/2022 1113
Dibenzo(a,h)anthracene	ND		1	0.20	0.030	ug/L	06/30/2022 1113
Dibenzofuran	ND		1	0.80	0.50	ug/L	06/30/2022 1113
1,2-Dichlorobenzene	ND		1	0.80	0.50	ug/L	06/30/2022 1113
1,3-Dichlorobenzene	ND		1	0.80	0.50	ug/L	06/30/2022 1113
1,4-Dichlorobenzene	ND		1	0.80	0.50	ug/L	06/30/2022 1113
3,3'-Dichlorobenzidine	ND		1	4.0	1.8	ug/L	06/30/2022 1113
2,4-Dichlorophenol	ND		1	1.6	0.25	ug/L	06/30/2022 1113
Diethylphthalate	ND		1	0.80	0.50	ug/L	06/30/2022 1113
Dimethyl phthalate	ND		1	0.80	0.50	ug/L	06/30/2022 1113
2,4-Dimethylphenol	ND		1	0.80	0.48	ug/L	06/30/2022 1113
Di-n-butyl phthalate	1.3		1	0.80	0.50	ug/L	06/30/2022 1113
4,6-Dinitro-2-methylphenol	ND		1	4.0	1.0	ug/L	06/30/2022 1113
2,4-Dinitrophenol	ND		1	4.0	1.0	ug/L	06/30/2022 1113
2,4-Dinitrotoluene	ND		1	1.6	0.50	ug/L	06/30/2022 1113
2,6-Dinitrotoluene	ND		1	1.6	0.50	ug/L	06/30/2022 1113
Di-n-octylphthalate	ND		1	0.80	0.50	ug/L	06/30/2022 1113
bis(2-Ethylhexyl)phthalate	ND		1	4.0	2.0	ug/L	06/30/2022 1113
Fluoranthene	ND		1	0.20	0.10	ug/L	06/30/2022 1113
Fluorene	ND		1	0.20	0.030	ug/L	06/30/2022 1113
Hexachlorobenzene	ND		1	0.80	0.50	ug/L	06/30/2022 1113
Hexachlorobutadiene	ND		1	0.80	0.50	ug/L	06/30/2022 1113
Hexachlorocyclopentadiene	ND		1	4.0	2.0	ug/L	06/30/2022 1113
Hexachloroethane	ND		1	0.80	0.31	ug/L	06/30/2022 1113
Indeno(1,2,3-c,d)pyrene	ND		1	0.20	0.040	ug/L	06/30/2022 1113
Isophorone	ND		1	0.80	0.50	ug/L	06/30/2022 1113

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - MB

Sample ID: XQ46231-001
Batch: 46231
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 06/27/2022 1107

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
2-Methylnaphthalene	ND		1	0.20	0.040	ug/L	06/30/2022 1113
2-Methylphenol	ND		1	0.80	0.21	ug/L	06/30/2022 1113
3+4-Methylphenol	ND		1	1.6	1.5	ug/L	06/30/2022 1113
Naphthalene	ND		1	0.20	0.050	ug/L	06/30/2022 1113
2-Nitroaniline	ND		1	1.6	0.50	ug/L	06/30/2022 1113
3-Nitroaniline	ND		1	1.6	1.0	ug/L	06/30/2022 1113
4-Nitroaniline	ND		1	1.6	1.5	ug/L	06/30/2022 1113
Nitrobenzene	ND		1	0.80	0.55	ug/L	06/30/2022 1113
2-Nitrophenol	ND		1	1.6	1.0	ug/L	06/30/2022 1113
4-Nitrophenol	ND		1	4.0	2.0	ug/L	06/30/2022 1113
N-Nitrosodi-n-propylamine	ND		1	0.80	0.50	ug/L	06/30/2022 1113
N-Nitrosodiphenylamine (Diphenylamine)	ND		1	0.80	0.50	ug/L	06/30/2022 1113
Pentachlorophenol	ND		1	4.0	2.0	ug/L	06/30/2022 1113
Phenanthrene	ND		1	0.20	0.060	ug/L	06/30/2022 1113
Phenol	0.51	J	1	0.80	0.50	ug/L	06/30/2022 1113
Pyrene	ND		1	0.20	0.10	ug/L	06/30/2022 1113
1,2,4,5-Tetrachlorobenzene	ND		1	0.80	0.25	ug/L	06/30/2022 1113
2,3,4,6-Tetrachlorophenol	ND		1	1.6	0.55	ug/L	06/30/2022 1113
1,2,4-Trichlorobenzene	ND		1	0.80	0.37	ug/L	06/30/2022 1113
2,4,5-Trichlorophenol	ND		1	0.80	0.50	ug/L	06/30/2022 1113
2,4,6-Trichlorophenol	ND		1	0.80	0.50	ug/L	06/30/2022 1113

Surrogate	Q	% Rec	Acceptance Limit
2-Fluorobiphenyl		77	37-129
2-Fluorophenol		36	24-127
Nitrobenzene-d5		65	38-127
Phenol-d5		48	28-128
Terphenyl-d14		92	10-148
2,4,6-Tribromophenol		77	35-144

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: XQ46231-002
Batch: 46231
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 06/27/2022 1107

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acenaphthene	8.0	7.0		1	87	30-122	06/30/2022 1138
Acenaphthylene	8.0	6.9		1	86	30-130	06/30/2022 1138
Anthracene	8.0	7.4		1	93	30-123	06/30/2022 1138
Benzo(a)anthracene	8.0	6.9		1	86	40-125	06/30/2022 1138
Benzo(a)pyrene	8.0	7.0		1	87	40-128	06/30/2022 1138
Benzo(b)fluoranthene	8.0	7.0		1	87	32-145	06/30/2022 1138
Benzo(g,h,i)perylene	8.0	7.1		1	89	42-128	06/30/2022 1138
Benzo(k)fluoranthene	8.0	7.1		1	89	50-135	06/30/2022 1138
4-Bromophenyl phenyl ether	8.0	7.3		1	91	30-124	06/30/2022 1138
Butyl benzyl phthalate	8.0	7.2		1	90	54-135	06/30/2022 1138
Carbazole	8.0	7.3		1	91	30-130	06/30/2022 1138
bis (2-Chloro-1-methylethyl) ether	8.0	7.4		1	93	34-110	06/30/2022 1138
4-Chloro-3-methyl phenol	8.0	6.4		1	80	30-123	06/30/2022 1138
bis(2-Chloroethoxy)methane	8.0	6.7		1	84	40-119	06/30/2022 1138
bis(2-Chloroethyl)ether	8.0	7.4		1	92	35-114	06/30/2022 1138
2-Chloronaphthalene	8.0	6.5		1	81	39-128	06/30/2022 1138
2-Chlorophenol	8.0	5.4		1	67	39-115	06/30/2022 1138
4-Chlorophenyl phenyl ether	8.0	7.1		1	89	30-121	06/30/2022 1138
Chrysene	8.0	7.0		1	87	50-130	06/30/2022 1138
Dibenzo(a,h)anthracene	8.0	7.2		1	90	30-130	06/30/2022 1138
Dibenzofuran	8.0	6.2		1	78	30-118	06/30/2022 1138
1,2-Dichlorobenzene	8.0	5.9		1	74	20-110	06/30/2022 1138
1,3-Dichlorobenzene	8.0	5.1		1	64	17-112	06/30/2022 1138
1,4-Dichlorobenzene	8.0	5.3		1	66	18-113	06/30/2022 1138
3,3'-Dichlorobenzidine	8.0	5.5		1	69	10-126	06/30/2022 1138
2,4-Dichlorophenol	8.0	6.1		1	77	30-121	06/30/2022 1138
Diethylphthalate	8.0	7.6		1	94	40-125	06/30/2022 1138
Dimethyl phthalate	8.0	7.4		1	93	40-127	06/30/2022 1138
2,4-Dimethylphenol	8.0	9.2		1	115	20-125	06/30/2022 1138
Di-n-butyl phthalate	8.0	8.3		1	104	40-127	06/30/2022 1138
4,6-Dinitro-2-methylphenol	8.0	7.6		1	95	46-134	06/30/2022 1138
2,4-Dinitrophenol	16	12		1	75	11-126	06/30/2022 1138
2,4-Dinitrotoluene	8.0	6.5		1	81	51-128	06/30/2022 1138
2,6-Dinitrotoluene	8.0	7.1		1	88	48-133	06/30/2022 1138
Di-n-octylphthalate	8.0	7.2		1	89	55-143	06/30/2022 1138
bis(2-Ethylhexyl)phthalate	8.0	7.8		1	98	50-133	06/30/2022 1138
Fluoranthene	8.0	7.5		1	94	40-128	06/30/2022 1138
Fluorene	8.0	6.8		1	85	30-124	06/30/2022 1138
Hexachlorobenzene	8.0	7.1		1	88	30-125	06/30/2022 1138
Hexachlorobutadiene	8.0	5.6		1	70	24-110	06/30/2022 1138
Hexachlorocyclopentadiene	40	21		1	52	22-122	06/30/2022 1138
Hexachloroethane	8.0	5.1		1	63	28-116	06/30/2022 1138
Indeno(1,2,3-c,d)pyrene	8.0	6.8		1	85	50-125	06/30/2022 1138
Isophorone	8.0	5.9		1	74	30-130	06/30/2022 1138

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: XQ46231-002
Batch: 46231
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 06/27/2022 1107

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
2-Methylnaphthalene	8.0	6.4		1	80	40-132	06/30/2022 1138
2-Methylphenol	8.0	8.3		1	104	37-115	06/30/2022 1138
3+4-Methylphenol	8.0	8.0		1	100	44-112	06/30/2022 1138
Naphthalene	8.0	6.4		1	80	40-122	06/30/2022 1138
2-Nitroaniline	8.0	8.8		1	110	49-128	06/30/2022 1138
3-Nitroaniline	8.0	8.4		1	104	31-128	06/30/2022 1138
4-Nitroaniline	8.0	8.3		1	104	30-135	06/30/2022 1138
Nitrobenzene	8.0	5.8		1	73	39-123	06/30/2022 1138
2-Nitrophenol	8.0	6.5		1	81	36-123	06/30/2022 1138
4-Nitrophenol	16	12		1	78	31-145	06/30/2022 1138
N-Nitrosodi-n-propylamine	8.0	8.5		1	106	39-119	06/30/2022 1138
N-Nitrosodiphenylamine (Diphenylamine)	8.0	6.9		1	86	30-123	06/30/2022 1138
Pentachlorophenol	16	14		1	88	34-137	06/30/2022 1138
Phenanthrene	8.0	7.1		1	89	40-123	06/30/2022 1138
Phenol	8.0	5.4		1	67	30-130	06/30/2022 1138
Pyrene	8.0	7.3		1	91	40-126	06/30/2022 1138
1,2,4,5-Tetrachlorobenzene	8.0	6.1		1	76	30-130	06/30/2022 1138
2,3,4,6-Tetrachlorophenol	8.0	7.5		1	94	30-130	06/30/2022 1138
1,2,4-Trichlorobenzene	8.0	5.5		1	69	20-90	06/30/2022 1138
2,4,5-Trichlorophenol	8.0	6.7		1	83	30-123	06/30/2022 1138
2,4,6-Trichlorophenol	8.0	7.0		1	88	30-125	06/30/2022 1138

Surrogate	Q	% Rec	Acceptance Limit
2-Fluorobiphenyl		80	37-129
2-Fluorophenol		38	24-127
Nitrobenzene-d5		67	38-127
Phenol-d5		58	28-128
Terphenyl-d14		91	10-148
2,4,6-Tribromophenol		90	35-144

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - MS

Sample ID: XF23073-001MS
Batch: 46231
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 06/27/2022 1107

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acenaphthene	ND	16	16		50	98	30-122	07/02/2022 0315
Acenaphthylene	ND	16	14		50	90	30-130	07/02/2022 0315
Anthracene	ND	16	17		50	105	30-123	07/02/2022 0315
Benzo(a)anthracene	ND	16	15		50	92	40-125	07/02/2022 0315
Benzo(a)pyrene	ND	16	12		50	76	40-128	07/02/2022 0315
Benzo(b)fluoranthene	ND	16	11		50	70	30-130	07/02/2022 0315
Benzo(g,h,i)perylene	ND	16	11		50	70	30-130	07/02/2022 0315
Benzo(k)fluoranthene	ND	16	13		50	84	30-130	07/02/2022 0315
4-Bromophenyl phenyl ether	ND	16	ND	N	50	0.00	30-124	07/02/2022 0315
Butyl benzyl phthalate	ND	16	54	N	50	340	54-135	07/02/2022 0315
Carbazole	ND	16	15		50	96	30-130	07/02/2022 0315
bis (2-Chloro-1-methylethyl) ether	ND	16	19		50	122	30-130	07/02/2022 0315
4-Chloro-3-methyl phenol	ND	16	20		50	122	30-130	07/02/2022 0315
bis(2-Chloroethoxy)methane	ND	16	ND	N	50	0.00	30-130	07/02/2022 0315
bis(2-Chloroethyl)ether	ND	16	26	N	50	162	30-130	07/02/2022 0315
2-Chloronaphthalene	ND	16	ND	N	50	0.00	30-130	07/02/2022 0315
2-Chlorophenol	ND	16	ND	N	50	0.00	30-130	07/02/2022 0315
4-Chlorophenyl phenyl ether	ND	16	ND	N	50	0.00	30-121	07/02/2022 0315
Chrysene	ND	16	13		50	84	30-130	07/02/2022 0315
Dibenzo(a,h)anthracene	ND	16	11		50	66	30-130	07/02/2022 0315
Dibenzofuran	ND	16	ND	N	50	0.00	30-118	07/02/2022 0315
1,2-Dichlorobenzene	ND	16	ND	N	50	0.00	30-130	07/02/2022 0315
1,3-Dichlorobenzene	ND	16	ND	N	50	0.00	30-130	07/02/2022 0315
1,4-Dichlorobenzene	ND	16	ND	N	50	0.00	30-130	07/02/2022 0315
3,3'-Dichlorobenzidine	ND	16	ND	N	50	0.00	10-126	07/02/2022 0315
2,4-Dichlorophenol	ND	16	ND	N	50	0.00	30-121	07/02/2022 0315
Diethylphthalate	ND	16	17		50	104	40-125	07/02/2022 0315
Dimethyl phthalate	ND	16	18		50	111	40-127	07/02/2022 0315
2,4-Dimethylphenol	36	16	60	N	50	148	20-125	07/02/2022 0315
Di-n-butyl phthalate	ND	16	17		50	108	40-127	07/02/2022 0315
4,6-Dinitro-2-methylphenol	ND	16	ND	N	50	0.00	30-130	07/02/2022 0315
2,4-Dinitrophenol	ND	32	120	N	50	364	30-130	07/02/2022 0315
2,4-Dinitrotoluene	ND	16	460	N	50	2900	30-130	07/02/2022 0315
2,6-Dinitrotoluene	ND	16	620	N	50	3850	30-130	07/02/2022 0315
Di-n-octylphthalate	ND	16	55	N	50	341	30-130	07/02/2022 0315
bis(2-Ethylhexyl)phthalate	ND	16	58	N	50	360	30-130	07/02/2022 0315
Fluoranthene	ND	16	15		50	94	40-128	07/02/2022 0315
Fluorene	2.3	16	16		50	85	30-124	07/02/2022 0315
Hexachlorobenzene	ND	16	ND	N	50	0.00	30-125	07/02/2022 0315
Hexachlorobutadiene	ND	16	ND	N	50	0.00	24-110	07/02/2022 0315
Hexachlorocyclopentadiene	ND	80	ND	N	50	0.00	30-130	07/02/2022 0315
Hexachloroethane	ND	16	60	N	50	376	30-130	07/02/2022 0315
Indeno(1,2,3-c,d)pyrene	ND	16	9.3		50	58	30-130	07/02/2022 0315
Isophorone	ND	16	72	N	50	449	30-130	07/02/2022 0315

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - MS

Sample ID: XF23073-001MS
Batch: 46231
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 06/27/2022 1107

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
2-Methylnaphthalene	33	16	49		50	100	40-132	07/02/2022 0315
2-Methylphenol	ND	16	20		50	128	30-130	07/02/2022 0315
3+4-Methylphenol	ND	16	18		50	115	30-130	07/02/2022 0315
Naphthalene	60	16	80		50	128	30-130	07/02/2022 0315
2-Nitroaniline	ND	16	ND	N	50	0.00	30-130	07/02/2022 0315
3-Nitroaniline	ND	16	ND	N	50	0.00	30-130	07/02/2022 0315
4-Nitroaniline	ND	16	ND	N	50	0.00	30-135	07/02/2022 0315
Nitrobenzene	ND	16	ND	N	50	0.00	30-130	07/02/2022 0315
2-Nitrophenol	ND	16	ND	N	50	0.00	30-130	07/02/2022 0315
4-Nitrophenol	ND	32	ND	N	50	0.00	30-130	07/02/2022 0315
N-Nitrosodi-n-propylamine	ND	16	ND	N	50	0.00	30-130	07/02/2022 0315
N-Nitrosodiphenylamine (Diphenylamine)	ND	16	ND	N	50	0.00	30-123	07/02/2022 0315
Pentachlorophenol	ND	32	24		50	76	30-130	07/02/2022 0315
Phenanthrene	ND	16	16		50	102	40-123	07/02/2022 0315
Phenol	ND	16	20		50	127	30-130	07/02/2022 0315
Pyrene	ND	16	14		50	89	40-126	07/02/2022 0315
1,2,4,5-Tetrachlorobenzene	ND	16	ND	N	50	0.00	30-130	07/02/2022 0315
2,3,4,6-Tetrachlorophenol	ND	16	ND	N	50	0.00	30-130	07/02/2022 0315
1,2,4-Trichlorobenzene	ND	16	ND	N	50	0.00	20-90	07/02/2022 0315
2,4,5-Trichlorophenol	ND	16	ND	N	50	0.00	30-123	07/02/2022 0315
2,4,6-Trichlorophenol	ND	16	ND	N	50	0.00	30-125	07/02/2022 0315

Surrogate	Q	% Rec	Acceptance Limit
2-Fluorobiphenyl		78	37-129
2-Fluorophenol		40	24-127
Nitrobenzene-d5	N	140	38-127
Phenol-d5		47	28-128
Terphenyl-d14		81	10-148
2,4,6-Tribromophenol	N	254	35-144

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - MSD

Sample ID: XF23073-001MD
Batch: 46231
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 06/27/2022 1107

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Acenaphthene	ND	16	17		50	107	9.3	30-122	40	07/02/2022 0341
Acenaphthylene	ND	16	12		50	78	15	30-130	40	07/02/2022 0341
Anthracene	ND	16	16		50	100	5.0	30-123	40	07/02/2022 0341
Benzo(a)anthracene	ND	16	16		50	101	8.9	40-125	40	07/02/2022 0341
Benzo(a)pyrene	ND	16	11		50	68	11	40-128	40	07/02/2022 0341
Benzo(b)fluoranthene	ND	16	12		50	73	3.9	30-130	40	07/02/2022 0341
Benzo(g,h,i)perylene	ND	16	11		50	67	4.1	30-130	40	07/02/2022 0341
Benzo(k)fluoranthene	ND	16	13		50	81	3.2	30-130	40	07/02/2022 0341
4-Bromophenyl phenyl ether	ND	16	ND	N	50	0.00	0.00	30-124	40	07/02/2022 0341
Butyl benzyl phthalate	ND	16	53	N	50	333	2.0	54-135	40	07/02/2022 0341
Carbazole	ND	16	15		50	91	5.3	30-130	40	07/02/2022 0341
bis (2-Chloro-1-methylethyl) ether	ND	16	17		50	106	14	30-130	40	07/02/2022 0341
4-Chloro-3-methyl phenol	ND	16	ND	N,+	50	0.00	200	30-130	40	07/02/2022 0341
bis(2-Chloroethoxy)methane	ND	16	ND	N	50	0.00	0.00	30-130	40	07/02/2022 0341
bis(2-Chloroethyl)ether	ND	16	25	N	50	154	5.4	30-130	40	07/02/2022 0341
2-Chloronaphthalene	ND	16	ND	N	50	0.00	0.00	30-130	40	07/02/2022 0341
2-Chlorophenol	ND	16	ND	N	50	0.00	0.00	30-130	40	07/02/2022 0341
4-Chlorophenyl phenyl ether	ND	16	ND	N	50	0.00	0.00	30-121	40	07/02/2022 0341
Chrysene	ND	16	15		50	92	9.5	30-130	40	07/02/2022 0341
Dibenzo(a,h)anthracene	ND	16	11		50	68	2.4	30-130	40	07/02/2022 0341
Dibenzofuran	ND	16	ND	N	50	0.00	0.00	30-118	40	07/02/2022 0341
1,2-Dichlorobenzene	ND	16	ND	N	50	0.00	0.00	30-130	40	07/02/2022 0341
1,3-Dichlorobenzene	ND	16	ND	N	50	0.00	0.00	30-130	40	07/02/2022 0341
1,4-Dichlorobenzene	ND	16	ND	N	50	0.00	0.00	30-130	40	07/02/2022 0341
3,3'-Dichlorobenzidine	ND	16	ND	N	50	0.00	0.00	10-126	40	07/02/2022 0341
2,4-Dichlorophenol	ND	16	ND	N	50	0.00	0.00	30-121	40	07/02/2022 0341
Diethylphthalate	ND	16	ND	N,+	50	0.00	200	40-125	40	07/02/2022 0341
Dimethyl phthalate	ND	16	ND	N,+	50	0.00	200	40-127	40	07/02/2022 0341
2,4-Dimethylphenol	36	16	58	N	50	140	2.2	20-125	40	07/02/2022 0341
Di-n-butyl phthalate	ND	16	ND	N,+	50	0.00	200	40-127	40	07/02/2022 0341
4,6-Dinitro-2-methylphenol	ND	16	ND	N	50	0.00	0.00	30-130	40	07/02/2022 0341
2,4-Dinitrophenol	ND	32	120	N	50	373	2.6	30-130	40	07/02/2022 0341
2,4-Dinitrotoluene	ND	16	460	N	50	2890	0.14	30-130	40	07/02/2022 0341
2,6-Dinitrotoluene	ND	16	620	N	50	3890	0.97	30-130	40	07/02/2022 0341
Di-n-octylphthalate	ND	16	54	N	50	337	1.1	30-130	40	07/02/2022 0341
bis(2-Ethylhexyl)phthalate	ND	16	58	N	50	364	0.98	30-130	40	07/02/2022 0341
Fluoranthene	ND	16	15		50	95	1.6	40-128	40	07/02/2022 0341
Fluorene	2.3	16	16		50	85	0.52	30-124	40	07/02/2022 0341
Hexachlorobenzene	ND	16	ND	N	50	0.00	0.00	30-125	40	07/02/2022 0341
Hexachlorobutadiene	ND	16	ND	N	50	0.00	0.00	24-110	40	07/02/2022 0341
Hexachlorocyclopentadiene	ND	80	ND	N	50	0.00	0.00	30-130	40	07/02/2022 0341
Hexachloroethane	ND	16	63	N	50	392	4.3	30-130	40	07/02/2022 0341
Indeno(1,2,3-c,d)pyrene	ND	16	9.4		50	58	1.1	30-130	40	07/02/2022 0341
Isophorone	ND	16	72	N	50	450	0.18	30-130	40	07/02/2022 0341

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Semivolatile Organic Compounds by GC/MS - MSD

Sample ID: XF23073-001MD
Batch: 46231
Analytical Method: 8270E

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 06/27/2022 1107

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
2-Methylnaphthalene	33	16	49		50	97	1.1	40-132	40	07/02/2022 0341
2-Methylphenol	ND	16	17		50	108	17	30-130	40	07/02/2022 0341
3+4-Methylphenol	ND	16	ND	N,+	50	0.00	200	30-130	40	07/02/2022 0341
Naphthalene	60	16	77		50	107	4.3	30-130	40	07/02/2022 0341
2-Nitroaniline	ND	16	ND	N	50	0.00	0.00	30-130	40	07/02/2022 0341
3-Nitroaniline	ND	16	ND	N	50	0.00	0.00	30-130	40	07/02/2022 0341
4-Nitroaniline	ND	16	ND	N	50	0.00	0.00	30-135	40	07/02/2022 0341
Nitrobenzene	ND	16	16	+	50	103	200	30-130	40	07/02/2022 0341
2-Nitrophenol	ND	16	ND	N	50	0.00	0.00	30-130	40	07/02/2022 0341
4-Nitrophenol	ND	32	210	N,+	50	663	200	30-130	40	07/02/2022 0341
N-Nitrosodi-n-propylamine	ND	16	ND	N	50	0.00	0.00	30-130	40	07/02/2022 0341
N-Nitrosodiphenylamine (Diphenylamine)	ND	16	16	+	50	102	200	30-123	40	07/02/2022 0341
Pentachlorophenol	ND	32	24		50	74	3.2	30-130	40	07/02/2022 0341
Phenanthrene	ND	16	17		50	106	4.0	40-123	40	07/02/2022 0341
Phenol	ND	16	16		50	100	23	30-130	40	07/02/2022 0341
Pyrene	ND	16	15		50	96	7.9	40-126	40	07/02/2022 0341
1,2,4,5-Tetrachlorobenzene	ND	16	ND	N	50	0.00	0.00	30-130	40	07/02/2022 0341
2,3,4,6-Tetrachlorophenol	ND	16	ND	N	50	0.00	0.00	30-130	40	07/02/2022 0341
1,2,4-Trichlorobenzene	ND	16	ND	N	50	0.00	0.00	20-90	40	07/02/2022 0341
2,4,5-Trichlorophenol	ND	16	ND	N	50	0.00	0.00	30-123	40	07/02/2022 0341
2,4,6-Trichlorophenol	ND	16	ND	N	50	0.00	0.00	30-125	40	07/02/2022 0341

Surrogate	Q	% Rec	Acceptance Limit
2-Fluorobiphenyl		80	37-129
2-Fluorophenol		43	24-127
Nitrobenzene-d5	N	142	38-127
Phenol-d5		37	28-128
Terphenyl-d14		90	10-148
2,4,6-Tribromophenol	N	283	35-144

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (screening) - MB

Sample ID: XQ46678-001
Batch: 46678
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 06/30/2022 1150

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TEH	ND		1	200	200	ug/L	07/05/2022 1405

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		101	40-140
1-Chloro-octadecane (aliphatic)		87	40-140
2-Fluorobiphenyl (fractionation 1)		101	40-140
o - Terphenyl (aromatic)		84	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (screening) - LCS

Sample ID: XQ46678-002
Batch: 46678
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 06/30/2022 1150

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TEH	1600	1200		1	80	40-140	07/05/2022 1414

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		101	40-140
1-Chloro-octadecane (aliphatic)		88	40-140
2-Fluorobiphenyl (fractionation 1)		101	40-140
o - Terphenyl (aromatic)		76	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (screening) - LCSD

Sample ID: XQ46678-003
Batch: 46678
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 06/30/2022 1150

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
TEH	1600	1300		1	82	3.6	40-140	25	07/05/2022 1424

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		98	40-140
1-Chloro-octadecane (aliphatic)		90	40-140
2-Fluorobiphenyl (fractionation 1)		98	40-140
o - Terphenyl (aromatic)		77	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aliphatics) - MB

Sample ID: XQ46731-001
Batch: 46731
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 06/30/2022 1150

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
C19 - C36 Aliphatics	ND		1	100	100	ug/L	07/05/2022 1108
C9 - C18 Aliphatics	ND		1	100	100	ug/L	07/05/2022 1108
TEH, post-fractionation	120	J	1	200	100	ug/L	07/05/2022 1108

Surrogate	Q	% Rec	Acceptance Limit
1-Chloro-octadecane (aliphatic)		73	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aliphatics) - LCS

Sample ID: XQ46731-002
Batch: 46731
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 06/30/2022 1150

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
C19 - C36 Aliphatics	400	340		1	84	40-140	07/05/2022 1117
C9 - C18 Aliphatics	300	150		1	52	40-140	07/05/2022 1117
TEH, post-fractionation	1600	1100		1	74	40-140	07/05/2022 1117

Surrogate	Q	% Rec	Acceptance Limit
1-Chloro-octadecane (aliphatic)		68	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
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Montana EPH (aliphatics) - LCSD

Sample ID: XQ46731-003
Batch: 46731
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 06/30/2022 1150

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
C19 - C36 Aliphatics	400	330		1	82	2.7	40-140	25	07/05/2022 1127
C9 - C18 Aliphatics	300	150		1	49	4.7	40-140	25	07/05/2022 1127
TEH, post-fractionation	1600	1200	+	1	74	200	40-140	25	07/05/2022 1127

Surrogate	Q	% Rec	Acceptance Limit
1-Chloro-octadecane (aliphatic)		64	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aromatics) - MB

Sample ID: XQ46732-001
Batch: 46732
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 06/30/2022 1150

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
C11 - C22 Aromatics	ND		1	100	100	ug/L	07/05/2022 1156

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		87	40-140
2-Fluorobiphenyl (fractionation 1)		86	40-140
o - Terphenyl (aromatic)		73	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aromatics) - LCS

Sample ID: XQ46732-002
Batch: 46732
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 06/30/2022 1150

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
C11 - C22 Aromatics	850	650		1	77	40-140	07/05/2022 1206

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		84	40-140
2-Fluorobiphenyl (fractionation 1)		84	40-140
o - Terphenyl (aromatic)		68	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana EPH (aromatics) - LCSD

Sample ID: XQ46732-003
Batch: 46732
Analytical Method: Montana EPH

Matrix: Aqueous
Prep Method: Montana EPH
Prep Date: 06/30/2022 1150

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
C11 - C22 Aromatics	850	670		1	78	2.4	40-140	25	07/05/2022 1216

Surrogate	Q	% Rec	Acceptance Limit
2-Bromonaphthalene (fractionation 2)		83	40-140
2-Fluorobiphenyl (fractionation 1)		83	40-140
o - Terphenyl (aromatic)		68	40-140

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aromatics) - MB

Sample ID: XQ46251-001
Batch: 46251
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Benzene	ND		1	5.0	0.51	ug/L	06/24/2022 1256
C9 - C10 Aromatics	ND		1	25	5.0	ug/L	06/24/2022 1256
Ethylbenzene	ND		1	5.0	0.62	ug/L	06/24/2022 1256
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	1.2	ug/L	06/24/2022 1256
Naphthalene	1.1	J	1	5.0	0.70	ug/L	06/24/2022 1256
Toluene	ND		1	5.0	0.53	ug/L	06/24/2022 1256
m+p - Xylenes	ND		1	5.0	1.2	ug/L	06/24/2022 1256
o - Xylenes	ND		1	5.0	0.58	ug/L	06/24/2022 1256

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (PID)		81	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aromatics) - LCS

Sample ID: XQ46251-002
Batch: 46251
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Benzene	25	24		1	96	70-130	06/24/2022 1159
C9 - C10 Aromatics	25	24		1	94	70-130	06/24/2022 1159
Ethylbenzene	25	24		1	94	70-130	06/24/2022 1159
Methyl tertiary butyl ether (MTBE)	25	22		1	87	70-130	06/24/2022 1159
Naphthalene	25	23		1	91	70-130	06/24/2022 1159
Toluene	25	24		1	96	70-130	06/24/2022 1159
m+p - Xylenes	50	49		1	97	70-130	06/24/2022 1159
o - Xylenes	25	24		1	96	70-130	06/24/2022 1159

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (PID)		93	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aromatics) - LCSD

Sample ID: XQ46251-003
Batch: 46251
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Benzene	25	24		1	94	1.3	70-130	25	06/24/2022 1228
C9 - C10 Aromatics	25	24		1	97	2.9	70-130	25	06/24/2022 1228
Ethylbenzene	25	23		1	94	0.85	70-130	25	06/24/2022 1228
Methyl tertiary butyl ether (MTBE)	25	23		1	93	6.7	70-130	25	06/24/2022 1228
Naphthalene	25	24		1	95	4.7	70-130	25	06/24/2022 1228
Toluene	25	24		1	95	0.84	70-130	25	06/24/2022 1228
m+p - Xylenes	50	49		1	97	0.21	70-130	25	06/24/2022 1228
o - Xylenes	25	24		1	97	0.83	70-130	25	06/24/2022 1228

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (PID)		93	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aliphatics) - MB

Sample ID: XQ46252-001
Batch: 46252
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
C5 - C8 Aliphatics, Adjusted	ND		1	75	15	ug/L	06/24/2022 1256
C9 - C12 Aliphatics, Adjusted	ND		1	75	15	ug/L	06/24/2022 1256

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		82	70-130

LOQ = Limit of Quantitation
DL = Detection Limit

ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aliphatics) - LCS

Sample ID: XQ46252-002
Batch: 46252
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
C5 - C8 Aliphatics, Adjusted	100	98		1	98	70-130	06/24/2022 1159
C9 - C12 Aliphatics, Adjusted	75	65		1	87	70-130	06/24/2022 1159

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		91	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aliphatics) - LCSD

Sample ID: XQ46252-003
Batch: 46252
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
C5 - C8 Aliphatics, Adjusted	100	99		1	99	0.81	70-130	25	06/24/2022 1228
C9 - C12 Aliphatics, Adjusted	75	65		1	87	0.15	70-130	25	06/24/2022 1228

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		94	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (TPH) - MB

Sample ID: XQ46254-001
Batch: 46254
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TPH	ND		1	180	35	ug/L	06/24/2022 1256

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		81	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (TPH) - LCS

Sample ID: XQ46254-002
Batch: 46254
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TPH	380	350		1	94	70-130	06/24/2022 1159

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		92	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Montana VPH (TPH) - LCSD

Sample ID: XQ46254-003
Batch: 46254
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
TPH	380	360		1	95	1.1	70-130	25	06/24/2022 1228

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		93	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aromatics) - MB

Sample ID: XQ46443-001
Batch: 46443
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Benzene	ND		1	5.0	0.51	ug/L	06/28/2022 1410
C9 - C10 Aromatics	ND		1	25	5.0	ug/L	06/28/2022 1410
Ethylbenzene	ND		1	5.0	0.62	ug/L	06/28/2022 1410
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	1.2	ug/L	06/28/2022 1410
Naphthalene	1.2	J	1	5.0	0.70	ug/L	06/28/2022 1410
Toluene	ND		1	5.0	0.53	ug/L	06/28/2022 1410
m+p - Xylenes	ND		1	5.0	1.2	ug/L	06/28/2022 1410
o - Xylenes	ND		1	5.0	0.58	ug/L	06/28/2022 1410

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (PID)		98	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aromatics) - LCS

Sample ID: XQ46443-002
Batch: 46443
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Benzene	25	24		1	94	70-130	06/28/2022 1314
C9 - C10 Aromatics	25	23		1	92	70-130	06/28/2022 1314
Ethylbenzene	25	23		1	94	70-130	06/28/2022 1314
Methyl tertiary butyl ether (MTBE)	25	21		1	84	70-130	06/28/2022 1314
Naphthalene	25	22		1	90	70-130	06/28/2022 1314
Toluene	25	24		1	96	70-130	06/28/2022 1314
m+p - Xylenes	50	48		1	95	70-130	06/28/2022 1314
o - Xylenes	25	23		1	93	70-130	06/28/2022 1314

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (PID)		95	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aromatics) - LCSD

Sample ID: XQ46443-003
Batch: 46443
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Benzene	25	23		1	93	1.3	70-130	25	06/28/2022 1342
C9 - C10 Aromatics	25	24		1	95	3.9	70-130	25	06/28/2022 1342
Ethylbenzene	25	23		1	92	1.3	70-130	25	06/28/2022 1342
Methyl tertiary butyl ether (MTBE)	25	22		1	89	6.5	70-130	25	06/28/2022 1342
Naphthalene	25	24		1	94	5.2	70-130	25	06/28/2022 1342
Toluene	25	24		1	94	1.7	70-130	25	06/28/2022 1342
m+p - Xylenes	50	48		1	96	0.21	70-130	25	06/28/2022 1342
o - Xylenes	25	24		1	94	1.3	70-130	25	06/28/2022 1342

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (PID)		92	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aliphatics) - MB

Sample ID: XQ46444-001
Batch: 46444
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
C5 - C8 Aliphatics, Adjusted	ND		1	75	15	ug/L	06/28/2022 1410
C9 - C12 Aliphatics, Adjusted	ND		1	75	15	ug/L	06/28/2022 1410

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		101	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aliphatics) - LCS

Sample ID: XQ46444-002
Batch: 46444
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
C5 - C8 Aliphatics, Adjusted	100	98		1	98	70-130	06/28/2022 1314
C9 - C12 Aliphatics, Adjusted	75	66		1	87	70-130	06/28/2022 1314

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		95	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (aliphatics) - LCSD

Sample ID: XQ46444-003
Batch: 46444
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
C5 - C8 Aliphatics, Adjusted	100	99		1	99	0.10	70-130	25	06/28/2022 1342
C9 - C12 Aliphatics, Adjusted	75	65		1	87	0.46	70-130	25	06/28/2022 1342

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		95	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (TPH) - MB

Sample ID: XQ46446-001
Batch: 46446
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TPH	ND		1	180	35	ug/L	06/28/2022 1410

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		89	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (TPH) - LCS

Sample ID: XQ46446-002
Batch: 46446
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TPH	380	350		1	94	70-130	06/28/2022 1314

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		95	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Montana VPH (TPH) - LCSD

Sample ID: XQ46446-003
Batch: 46446
Analytical Method: Montana VPH

Matrix: Aqueous
Prep Method: VPH

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
TPH	380	360		1	95	0.85	70-130	25	06/28/2022 1342

Surrogate	Q	% Rec	Acceptance Limit
2,5-Dibromotoluene (FID)		96	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - MB

Sample ID: XQ46690-001
Batch: 46690
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Methane	2.9	J	1	10	2.5	ug/L	07/01/2022 1032

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - LCS

Sample ID: XQ46690-002
Batch: 46690
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Methane	300	310		1	104	70-130	07/01/2022 0943

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Methane - LCSD

Sample ID: XQ46690-003
Batch: 46690
Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Methane	300	300		1	103	0.39	70-130	30	07/01/2022 0957

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

ICP-MS Metals - MB

Sample ID: XQ46079-001
Batch: 46079
Analytical Method: 6020B

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 06/24/2022 1234

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Iron	ND		1	50	13	ug/L	07/02/2022 2210
Manganese	ND		1	5.0	1.3	ug/L	07/02/2022 2210

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

ICP-MS Metals - LCS

Sample ID: XQ46079-002
Batch: 46079
Analytical Method: 6020B

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 06/24/2022 1234

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Iron	1000	1000		1	105	80-120	07/02/2022 2214
Manganese	100	100		1	105	80-120	07/02/2022 2214

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

ICP-MS - MB

Sample ID: XQ46558-001
Batch: 46558
Analytical Method: 6020B

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 06/29/2022 1340

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Dissolved Iron	ND		1	50	13	ug/L	07/06/2022 1142
Dissolved Manganese	ND		1	5.0	1.3	ug/L	07/02/2022 2331

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

ICP-MS - LCS

Sample ID: XQ46558-002
Batch: 46558
Analytical Method: 6020B

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 06/29/2022 1340

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Dissolved Iron	1000	980		1	98	80-120	07/06/2022 1146
Dissolved Manganese	100	99		1	99	80-120	07/02/2022 2339

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical®

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Number 135448

Client: Ramboll
Address: 333 W Wacker Dr. Ste #2700
City: Chicago | State: IL | Zip Code: 60606
Project Name: Calumet - AOC Performance Monitoring
Project No.:
P.O. No.:
Report to Contact: Ruta Deshpande
Sampler's Signature: X
Printed Name: K.T Carson
Telephone No. / E-mail: 630-849-9291
Analysis (Attach list if more space is needed)
Quote No.:
Page 1 of 1
XF23073
JSH

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Grab/Comp	Matrix: Aqueous	Soil	Non-Aqueous	No. of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	NaS2O3	Field Filtered	VOCs	SVOCs	VPH	EPH	Metals Fe, Mn (+ Dissolved)	Sulfate, Nitrate	BOD	Alkalinity	Dissolved Gases (Methane)	Remarks / Cooler I.D.
~~MW-415-22~~ KC																							
MW415-GW-220622	6.22.22		G	X			2			4				X	X	X	X						
MW106-GW-220622	↓		G	X			6		1	9				X	X	X	X	X	X	X	X	X	
MW105-GW-220622	↓		G	X			1			7				X	X	X						X	limited SVOCs (1 bottle)
TB-01-220622	✓		-	X										X									

KC 6.22.22 KC 6.22.22 KC 6.22.22

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ Standard ☐ Rush (Specify)
Sample Disposal ☐ Return to Client ☐ Disposal by Lab
Possible Hazard Identification ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown
QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by	6-22-22		1. Received by		
2. Relinquished by			2. Received by		
3. Relinquished by			3. Received by		
4. Relinquished by Fedex	6.23.22	1615	4. Laboratory received by	6.23.22	1615

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) Yes No Ice Pack
Receipt Temp. 4.4 °C
Temp Blank ☐ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s), PINK-Field/Client Copy

Document Number: ME003N2-01

PaceAnalytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
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Sample Receipt Checklist (SRC)

Client: Ramboll

Cooler Inspected by/date: KDRW / 06/23/2022 Lot #: XF23073

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: 21-852 Chlorine Strip ID: NA Tested by: KDRW

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

4.4 / 4.4 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☐ Yes	☑ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☑ No	☐ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☑ Yes	☐ No	☐ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc...) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote #

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA. Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: TEC Date: 06/23/2022

Comments: No collection time listed on COC. Used times from containers.

APPENDIX B
GROUNDWATER SAMPLING PURGE LOGS

Calumet Montana Refinery, LLC
Great Falls, Montana

Low Flow Groundwater Sampling Field Log

Monitoring Well - **MW-106**

Sampling Information

Date (MM/DD/YY) - **June 20, 2022**
Personnel - **Kit Carson**
Weather - **50s, overcast, rainy**
Sampling Device - **Geotech Peristaltic Pump**

Pump on - **16:23**
Pump off - **17:00**

Well Information

Well Casing PID - **--** ppm
Well Diameter - **2** inch
Screened Zone - **2 - 12** ft BGS

Measured Depth to Bottom - **--** ft BTOC
Depth to LNAPL - **--** ft BTOC
Depth to Water - **5.18** ft BTOC
Depth to Pump Intake - **8.9** ft BTOC

Well Evacuation Data

Stabilization Criteria			± 0.1 SU	± 3 %	± 10 % < 5 NTU	N/A	± 10 mV	± 10 % <0.5 mg/L	0.3 ft	
Time	**Vol.** L	**Rate** ml/min	**pH** Std	**Cond.** ms/cm	**Turb.** NTU	**Temp.** C	**ORP** mV	**DO** mg/L	**DTW** ft	**Appearance or Comments**
16:30	2.5	500	7.11	2.24	10.1	14.01	66	3.35	5.85	Clear
16:35	5.0	500	6.93	2.26	11.4	13.97	83	2.01	6.39	Clear
16:40	7.5	500	7.07	2.34	12.7	13.78	84	1.48	7.22	Clear
16:45	10.0	500	7.19	2.28	13.4	13.36	70	1.34	7.71	Clear
16:50	12.5	500	7.25	2.28	57.0	12.58	36	0.86	8.81	Slightly turbid
16:55	15.0	500	7.26	2.30	82.2	12.60	20	0.83	9.19	Slightly turbid
17:00	17.5	500	7.27	2.350	101	12.53	17	0.85	9.53	Slightly turbid
17:00	***SAMPLE***	500	7.27	2.35	101.00	12.53	17	0.85	9.53	Slightly turbid

Notes / Sample Information

Appearance at Start - **clear**
Appearance After Purging - **Slightly turbid**
Total Volume Purged - **17.5** L
Purge Rate - **500** ml/min

Sample ID - **CMR-MW106-220621**
Sample Time - **14:00**
Additional Sample - **None**
Additional Sample ID -

Analysis - VOCs (8260);
VPH (Montana VPH);
SVOCs (8270);
Dissolved gases (methane)

Equipment Information

Multi-Gas Meter / PID # - **NA**
Water Quality Meter # - **--**
Oil / Water Interface Probe # - **--**
Peristaltic Pump # - **CAL-1**

Notes **Approximately 4-5 well volumes purged. No bottleware due to shipping issues. Monitoring well was allowed to recharge. Due to issues with sample bottle delivery and staffing, the monitoring well was sampled on June 22, 2022.**

Low Flow Groundwater Sampling Field Log

Monitoring Well - **MW-41S**

Calumet Montana Refinery, LLC
Great Falls, Montana

Sampling Information

Date (MM/DD/YY) - **June 20, 2022**
Personnel - **Kit Carson**
Weather - **50s, overcast, rainy**
Sampling Device - **Geotech Peristaltic Pump**

Pump on - **17:01**
Pump off - **17:28**

Well Information

Well Casing PID - **--** ppm
Well Diameter - **2** inch
Screened Zone - **4 - 14** ft BGS

Measured Depth to Bottom - **16.70** ft BTOC
Depth to LNAPL - **--** ft BTOC
Depth to Water - **7.88** ft BTOC
Depth to Pump Intake - **12.0** ft BTOC

Well Evacuation Data

Stabilization Criteria			± 0.1 SU	± 3 %	± 10 % < 5 NTU	N/A	± 10 mV	± 10 % <0.5 mg/L	0.3 ft	
Time	**Vol.** L	**Rate** ml/min	**pH** Std	**Cond.** ms/cm	**Turb.** NTU	**Temp.** C	**ORP** mV	**DO** mg/L	**DTW** ft	**Appearance or Comments**
17:05	2.5	500	6.91	1.37	14.5	11.81	-130	1.71	9.40	Clear
17:10	5.0	500	6.82	1.36	13.5	11.91	-128	0.98	10.62	Clear
17:15	7.5	500	6.78	1.35	16.9	11.77	-127	0.77	12.52	Clear
17:20	10.0	500	6.83	1.37	19.7	11.41	-130	0.81	15.30	Clear
17:28	12.5	500	7.00	1.40	55.0	11.38	-123	2.99	16.52	Clear
17:28	***SAMPLE***	500	7.00	1.40	55.0	11.38	-123	2.99	16.52	Clear

Notes / Sample Information

Appearance at Start - **clear**
Appearance After Purging - **clear**

Sample ID - **CMR-MW41S-220621**
Sample Time - **13:15**

Total Volume Purged - **7.5** L
Purge Rate - **500** ml/min

Additional Sample - **None**
Additional Sample ID -

Analysis - VOCs (8260); VPH (Montana VPH); SVOCs (8270); EPH (Montan EPH)

Equipment Information

Multi-Gas Meter / PID # - **NA**
Water Quality Meter # - **--**

Oil / Water Interface Probe # - **--**
Peristaltic Pump # - **CAL-1**

Notes **Purged dry at 17:28 on June 20, 2022. Slight sheen in purge bucket. Due to issues with sample bottle delivery to the facility and staffing issues, the monitoring well was allowed to recovery and a sample was collected on June 22, 2022.**

Calumet Montana Refinery, LLC
Great Falls, Montana

Low Flow Groundwater Sampling Field Log

Monitoring Well - **MW-105**

Sampling Information

Date (MM/DD/YY) - **June 20, 2022**
Personnel - **Kit Carson**
Weather - **50s, overcast, rainy**
Sampling Device - **Geotech Peristaltic Pump**

Pump on - **17:40**
Pump off - **17:55**

Well Information

Well Casing PID - **--** ppm
Well Diameter - **2** inch
Screened Zone - **5 - 10** ft BGS

Measured Depth to Bottom - **9.91** ft BTOC
Depth to LNAPL - **--** ft BTOC
Depth to Water - **5.49** ft BTOC
Depth to Pump Intake - **7.8** ft BTOC

Well Evacuation Data

Stabilization Criteria			± 0.1 SU	± 3 %	± 10 % < 5 NTU	N/A	± 10 mV	± 10 % <0.5 mg/L	0.3 ft	
Time	**Vol.** L	**Rate** ml/min	**pH** Std	**Cond.** ms/cm	**Turb.** NTU	**Temp.** C	**ORP** mV	**DO** mg/L	**DTW** ft	**Appearance or Comments**
17:45	2.5	500	7.60	NA	16.6	12.16	-85	12.81	6.89	Clear
17:50	5.0	500	7.16	2.17	12.5	12.41	-98	1.76	8.72	Clear
17:52	7.5	500	7.31	2.16	12.9	12.30	-113	1.81	DRY	Clear
17:52	***SAMPLE***	500	7.31	2.16	12.9	12.30	-113	1.81	DRY	Clear

Notes / Sample Information

Appearance at Start - **Clear**
Appearance After Purging - **Clear**

Sample ID - **CMR-MW105-220621**
Sample Time - **14:45**

Total Volume Purged - **7.5** L
Purge Rate - **500** ml/min

Additional Sample - **None**
Additional Sample ID -

Analysis - VOCs (8260);
VPH (Montana VPH);
Modified Skinner Metals (6020B/7471B);
SVOCs (8270);
EPH (Montana EPH)
Suite of Biological Parameters

Equipment Information

Multi-Gas Meter / PID # - **NA**
Water Quality Meter # - **--**

Oil / Water Interface Probe # - **--**
Peristaltic Pump # - **CAL-1**

Notes **Purge well dry at 17:52 on June 20, 2022. Due to issues with sample bottle shipment to the facilty and staffing issues, the monitoring well was allowed to recovery and a sample was collected on June 22, 2022.**